SDG AT AIUB

American International University-Bangladesh (AIUB) is committed to achieve the United Nations 17 Sustainable Development Goals through different initiatives. These reports outline year-long different activities, such as research & publications, enhancing social inclusion, encouraging environmental sustainability, partnerships, good governance, and diversity among students and employees as well as its associated mapping to different SDGs.

American International University-Bangladesh (AIUB)

SDG Activity Report - 2022

SDG 9:

Industry, Innovation and Infrastructure

AIUB SDG Activity Report 2022

SDG 9: Industry, Innovation and Infrastructure

American International University-Bangladesh (AIUB) stands at the forefront of contributing to Sustainable Development Goal 9: Industry, Innovation, and Infrastructure. The university's commitment to fostering an environment of creativity, technological advancement, and academic excellence is exemplified through a myriad of university activities and faculty research initiatives.

In the realm of university activities, AIUB has curated a diverse range of events and workshops that underscore its dedication to innovation. Events like the "AIUB Hosted Space Robotics Workshop" and "Seminar on 'Prospects and Challenges of Fourth Industrial Revolution: Are We Ready?'" showcase the institution's forward-thinking approach to preparing students for the evolving landscape of technology. The university's involvement in the "AIUB CYBER GAMING FEST 2022" and the "BIZTECH 3.0 E-COMMERCE-FAIR" reflects its commitment to providing students with platforms to explore and showcase their technological prowess. AIUB's achievements in various competitions and challenges, such as "AIUB students became Runner-up in Two Segments of iTech Expo - IUBAT 2022" and "EEE Students won Soccer Bot Championship in AUST Rover Challenge 2022," highlight the practical application of knowledge in real-world scenarios. These accomplishments not only boost the morale of the AIUB community but also contribute to fostering a culture of competitiveness and excellence.

The university's focus on emerging technologies is evident in activities such as the "Lecture on 'Computational Modeling for photovoltaic Thermal System (PV/T)'" and the "Seminar on 'Introduction to VLSI Industry.'" These events not only provide students with insights into the latest trends but also offer a platform for industry experts to share their knowledge and experiences, bridging the gap between academia and industry. AIUB's involvement in organizing hackathons, business plan competitions, and seminars on topics like "Know your Laptops and Consoles, Powered by MSI" highlights its commitment to nurturing entrepreneurial spirit and business acumen among students. These activities contribute to creating a holistic educational experience, preparing students not just as job seekers but as future leaders and innovators.

The Faculty Research and Publication endeavors at AIUB are equally impactful, delving into cutting-edge technological advancements and addressing critical challenges. Research papers like "Investigation of Machine Learning Algorithms for Network Intrusion Detection" and "Dual Layer Encryption for IoT based Vehicle Systems over 5G Communication" showcase AIUB's commitment to advancing the field of technology and contributing to the development of secure and efficient systems.

The extensive Faculty Research and Publication endeavors span a wide array of technological domains, from machine learning and artificial intelligence to sustainable energy solutions and IoT-based systems. AIUB's faculty is actively engaged in producing impactful research that not only contributes to academic knowledge but also has practical implications for industries and society at large.

In summary, AIUB's commitment to SDG 9 is evident in its dynamic and forward-looking approach to education, innovation, and infrastructure development. Through a blend of robust university activities and impactful faculty research initiatives, AIUB is shaping a generation of technologically adept and socially conscious individuals who will undoubtedly contribute to the advancement of industries and the broader technological landscape.

Contents

University Activities

Drama on "Cyber Security and Internet Fraud" by FBA

The Department of Management Information Systems, Faculty of Business Administration FBA has arranged a drama on "Cyber Security and Internet Fraud" which took place on 13th December 2022 in Media Studio, Annex 2 at 3:30-5:00 pm and students who enrolled in "Cyber Security" course were the participants. Ms. Nazia Farhana, the course teacher of this course coordinated, and guided the students for the drama. All students of FBA were invited to enjoy the program. The drama served as a learning session on issues of cybersecurity as well as entertained the audience. A total of three shows were staged by the students, the scripts of which were written by the students themselves. This helped the students to understand the overall concepts of cybersecurity and enriched their social communication skill. This event raised self-confidence among the participants, fostered their creativity, improved their verbal and nonverbal communication skills, and encouraged cooperation and teamwork. It also increased cyber security awareness among the FBA community. The drama covered all the important topics related to cybersecurity, for example, the reasons for being hacked, the processes hackers may use to steal the information of the victims, and how a victim may become cautious of such attacks. Dr. Nisar Ahmed, Treasurer, Dr. Rezbin Nahar, Ms. Samia Shabnaz, Ms. Shahanaz Zarin Haque, Mr. Mehzabul Haque Nahid, Ms. Tamnna Nazneen Rahman and Ms. Azmery Sultana were present during the program.

Science Poster Contest – on the Occasion of Victory Day 2022

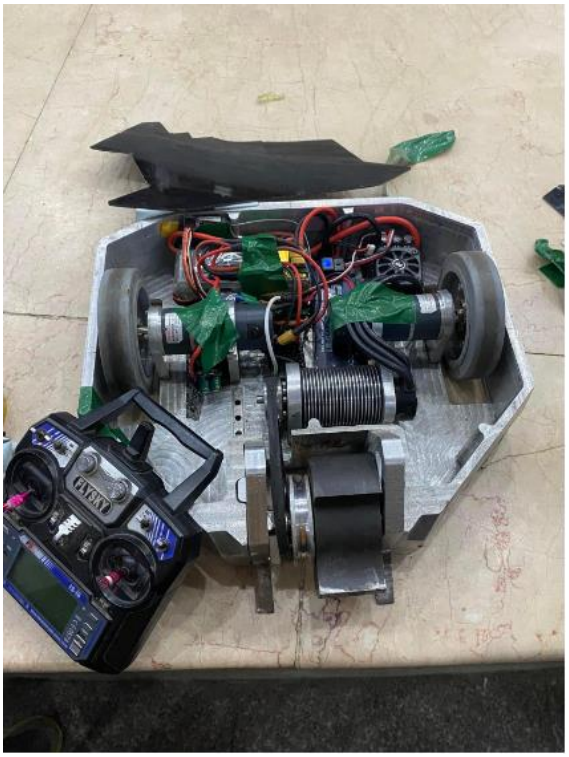
In the glorious month of victory of Bangladesh, the Department of Physics, Faculty of Science and Technology (FST), American International University-Bangladesh (AIUB), in association with AIUB Computer Club (ACC), arranged a "Science Poster Contest" on December 8, 2022. The purpose of the program was to bring out students' creative expression, stimulate their thinking processes, and acquaint them with scientific and scholastic trends. The program was inaugurated by Mr. Mashiour Rahman, honourable Associate Dean (FST), AIUB in the morning hour. The Poster session was then open to all. Total 53 posters were presented by the students who are enrolled in different physics courses in the Fall 2022-23 semester. Every single poster was evaluated by the experts and faculty members of Department of Physics. During the contest the students received effective feedback, shared opinions, thoughts, and gathered knowledge for future directions. Dr. Farzana Sabeth, from the Department of physics was the convener of the organizing committee of the "Science Poster Contest". Ms. Nusrat Jahan, from Physics Department, supervised the student volunteers in decorating the whole event with a creative approach. Ms. Rutaba Jania, and Ms. Israt Kabir, from the department anchored the award ceremony and the cultural fest, while all the faculty members of Department worked together, judged the posters, and provided necessary technical support to make the event successful.

Dr. Mohammed Nazrul Islam Khan, General Secretary, Bangladesh Physical Society, Editor and Chief Scientific Officer (Material Science Division), Bangladesh Atomic Energy Commission, Dhaka, adorned the closing and prize giving ceremony as the Chief Guest. He personally appreciated the passion and the enthusiasm of the participants and gave emphasis on nurturing scientific research activities among the students for the sustainable development of the country in his speech. The honourable Pro-Vice-Chancellor, Dr. Md. Abdur Rahman, encouraged the participants and delivered an engaging welcome speech. The honorable special guest, Professor Dr. Dip Nandi, Director of FST, acquainted the audience with a short overview of the whole program. Professor Dr. A B M Siddique Hossain, Dean of Faculty of Engineering, were also present as Special Guest and delivered a very persuasive speech. A total of 6 best posters (3 from each category and total 30 participants) were awarded with crests, certificates, T shirts and gifts and all the contestants got the certificate of appreciation.

A mindful cultural event, to celebrate the victory day 2022, was held with the participation of students and the teachers of the Department of Physics. The program concluded with the closing speech and the vote of thanks delivered by Dr. Humayra Ferdous, Head in charge, Department of Physics. Dr. Humayra expressed her heartfelt gratitude to the Guests for adorning the event with their presence. She narrated the necessity of Science Poster contest and acknowledged the contributions of all behind the event. She also thanked the sponsors of the events Sara Lifestyles, Rangs Limited, Adury Apparels-Thermax Group and Marina Trading Company for their kind support.

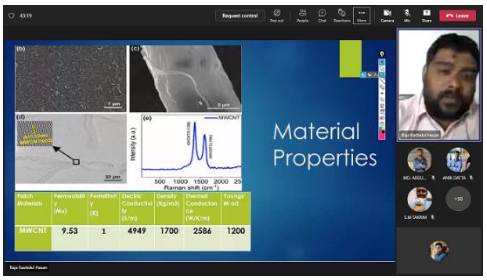
AIUB students became Runner up in Two Segments of iTech Expo - IUBAT 2022

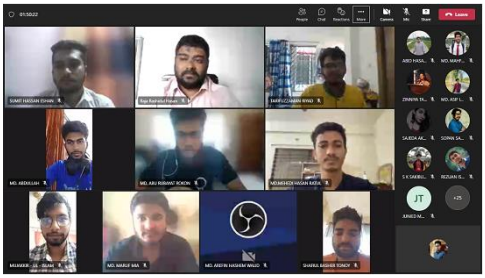
Team “Aim Bot Racing’’ and Team “Perceptron’’ became the runner-up in the segment named “Line Follower Robot Challenge” and “Robowar (15kg Segment)” respectively of iTech Expo - IUBAT 2022. The event was organized by IUBAT Robotics Club in association with Techfest, IIT Bombay. The event was held on 22nd and 23rd of November 2022. The member of the team “Aim Bot Racing” for the segment Line Follower challenge is: Md. Asif Imtiaz Anik (Student, Dept. of EEE, AIUB) and the members of the team “Perceptron” for the segment International Robo war” are: Md Mominul Islam (Student, Dept. of EEE, AIUB) , Khaliduzzaman Mredul (Student, Dept of CSE, AIUB), Rameen Mehraan (Student, Dept. of EEE,AIUB). Students were acknowledged with Certificates and Prize money. They are invited to participate in the final round of the competition in IIT Bombay



Workshop on "Advanced Design of Antenna using Novel Nanomaterials"

The AIUB Community of Engineering Students (ACES) organized a workshop titled " Advanced Design of Antenna using Novel Nanomaterials" on Saturday, November 26, 2022. The program began at 11:30 AM with the participation of 51 students through Microsoft Teams. The purpose of the workshop was to give students some practical experience on how they can design antennas in an advanced way. In his opening remarks, Mr. Raja Rashidul Hasan (Assistant Professor, Faculty of Engineering, Department of EEE, AIUB) discussed microstrip antennas. In addition, he mentioned some common materials those are used for antenna design. After that, a short question and answer session was held where he answered the queries raised by the participants. Later, Alumnus of Department of EEE, AIUB Mr. Sumit Hassan Eshan (R&D Engineer, Japan-Bangladesh Robotics and Advanced Technology Research Center -JBRATRC) demonstrated how to design antennas in the CST software. At the end of his session, another short question and answer session was held. After that, a virtual crest of appreciation was given to both the speakers. Finally, the webinar was concluded by thanking everyone for their participation and taking a group snapshot.





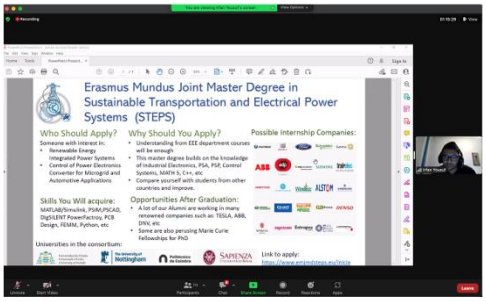
EEE Students of AIUB is the Winner of ULKASEMI presents VLSITHON 1.0

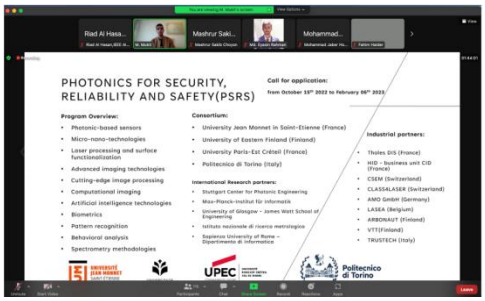
Team METAL-1 from AIUB became winner of ULKASEMI presents VLSITHON 1.0- Battle of IC Layout Design Engineers. The event was held at the United International University (UIU) campus on November 1-4, 2022, which was supported By IEEE UIU Student Branch. 50 teams from different public and private universities of Bangladesh participated in this event. Among them, Team METAL-1 secured the first place. Team members of Team METAL-1 are Md. Asif Adnan (Student, Dept. of EEE, AIUB), and Ashraful Islam (Student, Dept. of EEE, AIUB). On December 5, 2022, Mr. Enayetur Rahman (CEO, Ulkasemi) presented the certificates and prize money to the winners.

IEEE AIUB Student Branch successfully organized a webinar on “AIUBians On Erasmus”

On Saturday, December 10, 2022, The IEEE AIUB Student Branch organized a webinar on "AIUBians on Erasmus." This webinar's objective was to offer variety of useful insights and recommendations on the Erasmus Mundus scholarship from AIUB alumni on various Erasmus programs.

Dr. Mohammad Hasan Imam Sir, Counselor, IEEE AIUB Student Branch, Advisor, IEEE EMBS AIUB SB Chapter; Associate Professor, Faculty of Engineering, AIUB, inaugurated the seminar. He briefly talked about the Erasmus Mundus scholarship and the conveniences and opportunities of studying abroad. After the inauguration speech, Mashrur Sakib Choyon, Erasmus scholar, EMJMD in Smart Systems Integrated Solutions (SSIs) took the floor. He commenced his presentation by discussing the significance of the webinar for the attendees. Next, S M Ragib Shahriar, Erasmus Scholar, EMJMD in Medical Imaging and Applications (MAIA) talked about his master’s program in Medical Imaging and Applications. Next, Mohammad Irfan Yousuf, Erasmus Scholar, EMJMD in Sustainable Erasmus Transportation and Electrical Power System (STEPS) discussed his master’s program in sustainable transportation and electrical power system. Then Kazi Rony, Erasmus scholar, Master in Renewable Energy in the Marine Environment (REM+) presented details on his master’s program. After his presentation, Dewan Mahnaz Mahmud, scholar, EMJMD in Dynamic of Renewables-based Power Systems (DREAM) briefly talked about the application process of EMJMD and Career opportunities. Following his presentation, Jannatul Mawa Akanto, Erasmus scholar, EMJMD Smart Cities & Communities (SMACCs) talked about her master’s program on in smart cities and communities, the mobility in EMJMD and eligibility to apply for Erasmus. Then Mashrur Sakib Choyon added some important information. Which contained SECCLO, Erasmus + Master’s program in security and cloud computing, Innovation and R&D for focused curriculum and industry and research collaboration. Eyasin Rahman, Erasmus scholar, EMJMD in Embedded Computing Systems (EMECS) then talked about his master’s program, top ranked institutes, core, and elective programs. Next, M. Mukit, Erasmus scholar, EMJMD in Photonic Integrated Circuits, Sensors and NETworks-PIXNET discussed about his program in details, its applications, integrated circuits, sensors, and networks. The final speaker, Mohammad Jaber Hossain, Erasmus scholar, EMJMD in Computational Color and Spectral Imaging (CoSI) talked about computational color and spectral imagining, thesis, and internship. Then, Chowdhury Akram Hossain, Advisor, IEEE AIUB Student Branch, Associate Professor, Faculty of Engineering, Special Assistant, Office of Student Affairs (OSA) delivered the ending speech of the webinar. He talked about foreign scholarships for higher education. He also talked about the roles of IEEE in these fields of study. At the end, he presented virtual tokens of appreciations to all the speakers. The webinar began on ZOOM meeting platform at 6PM and was attended by 120+ attendees.





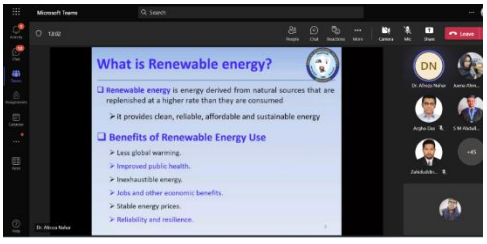
Lecture on “Computational Modeling for photovoltaic Thermal System (PV/T)”

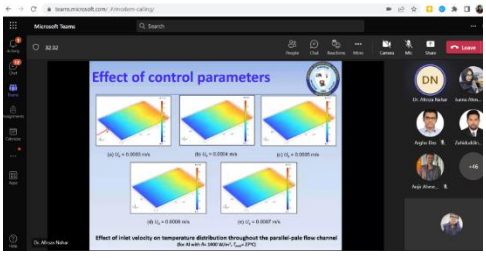
On Dec 8, 2022, the Department of Computer Science, AIUB organized the 14th Session of the Computing Lecture Series. The session was conducted through online platform MS Teams at 11:30 AM. The aim of the Computing Lecture series is to share and discuss research works of faculty members of computer science within the department to stay up to date with the current research trends. In addition, this type of event assists early-stage researchers and young faculty members of the department particularly, so that they can engage themselves with the experienced researchers of the department to better organize and structure their research activities.

In this 14th session, the research talk was presented by Dr. Afroza Nahar (Associate Professor, Dept. of Computer Science). Dr. Afroza Nahar has very good knowledge and experience on research works, especially in the field of Computational Modeling and Thermal System. As an experienced researcher, she presented her research talk on “Computational Modeling for photovoltaic Thermal System (PV/T)”.

There was a lively discussion session after the presentation where faculty members actively participated with their thoughts and views on the presented topic, particularly in the direction of photovoltaic Thermal System.

The event was graced by the presence of Mr. Mashiour Rahman (Sr. Associate Professor and Associate Dean, FST) and Prof. Dr. Dip Nandi (Professor and Director, FST). On behalf of Computer Science Department, the session was moderated by Dr. Md. Abdullah - Al - Jubair, Head In-Charge (Undergraduate), Department of Computer Science.





AIUB CYBER GAMING FEST 2022

Four-days-long "AIUB Cyber Gaming Fest-2022" was held at the American International University-Bangladesh (AIUB) from December 1 to December 4, 2022. It is an annual event organized by AIUB Computer Club (ACC) participated by the student gamers from numerous institutions of the country.

The Pro-Vice Chancellor of AIUB, Professor Dr. Md. Abdur Rahman inaugurated the event along with the Treasurer, Deans, Directors, Head of Departments, Faculty members, Officials and participating students from various institutions. About 1000 students from 100 educational institutes participated this year. They played the popular games like Dota-2, Valorant, FIFA, Football PES 2023, Bangbang, Need for Speed, etc. The event was sponsored by Gigabyte, Aorus, Club G1 IT.

The closing ceremony of the cyber gaming fest was held on Sunday, December 4, 2022 at the AIUB Auditorium. Dr. Carman Z. Lamagna, Vice Chancellor of AIUB distributed the certificates and prize money among the winners in presence of Mr. Khaza Md. Anas Khan, Country Manager, GIGABYTE, Mr. Mashiour Rahman, Associate Dean, Faculty of Science and Technology (FST), Mr. Manzur H Khan, Proctor and Director, Office of Student Affairs (OSA), Prof. Dr. Dip Nandi, Director (FST), Abhijit Bhowmik, Associate Professor & Special Assistant (OSA), Sharfuddin Mahmood, Assistant Professor & Special Assistant (OSA), Computer Science.

The representatives of the sponsors and media partners - GIGABYTE, AORUS, CLUB G1 IT, THE DAILY JUGANTOR, THE BUSINESS STANDARD, EKATTOR TV, and ICE TODAY were also present at the closing ceremony. Later the AIUB Performing Arts Club (APAC) staged a concert for all the participants at the Amphitheater of campus.

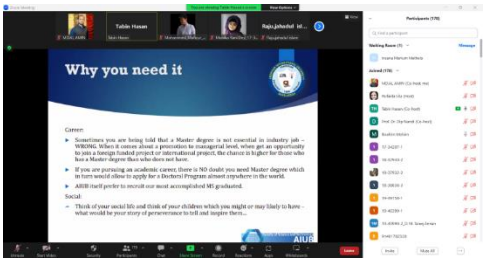

Webinar "Computer Science Career- What is Next?"

On Saturday (December 3, 2022), a webinar titled "Computer Science Career- What is Next?" was held via the online platform Zoom organized by the Department of Computer Science. The webinar was moderated by the Director of Faculty of Science & Technology, Prof. Dr. Dip Nandi. The webinar aimed to discuss the various career paths for CS Graduates while considering the current and probable future demands of industry and academia. The correlation status of CS curriculum (Both Undergraduate and Graduate) with industry and academia were highlighted & the need for relevant higher form of degrees (e.g., Master's) and certification courses in future career were distinguished. Faculty members of the CS department & around 200 final semester students (Registered Internship Students of Fall 2022-2023) were present in the webinar. Through the participation and enlightenment of distinguished speakers, various relevant career paths for CS graduates have been explored.

Prof. Dr. Khandaker Tabin Hasan, Head of Graduate Program, CS shared his valuable opinions on the webinar highlighting the career needs & about the future planning a fresh CS graduate should have. He stated about the excellent MScCS program of AIUB and the various specialization it offers and also enlightened on its relevance in today's world. Through his speech the students got the answer to the critical question - "Why is a relevant master's degree required and how it can help someone to achieve career goals?" Notable MScCS graduates and alumni were mentioned in his speech who are in the leading positions in their current fields.

Rofaida Kurshid Lita on behalf of Md. Manirul Islam, Associate Professor, CS and Director, Institute of Continuing Education (ICE) introduced the students to the AIUB Institute of Continuing Education, a top leading center for excellence in the South Asia region and the world class certification courses it offers that will certainly help a CS graduate to better prepare own self to better meet the industry and academia needs. She presented notable students and professionals who did various certification courses from ICE and are now moving forward with their careers.

The Associate Dean of Faculty of Science & Technology, Mashiour Rahman discussed on - "Why is there the need for relevant certification courses and higher degrees and what is their relevance in someone's career?" He encouraged the students to re-think and re-evaluate their future plans by considering the current and probable future demands in the job market. He also discussed the success moments of alumni students. Prof. Dr. Dip Nandi, Director, FST concluded the webinar by summarizing all the discussions and explained that from the webinar session how a final year student will have a better understanding on what to do next that will guide them to a delightful career.



AIUB Hosted Space Robotics Workshop

On October 22, 2022, the American International University-Bangladesh (AIUB) hosted an exceptional workshop titled "'Space Robotics Workshop" which was organized by the Bangladesh Innovation Forum and Space Innovation Camp. 100 children aged between 4 to 16 years from different schools participated in this event.

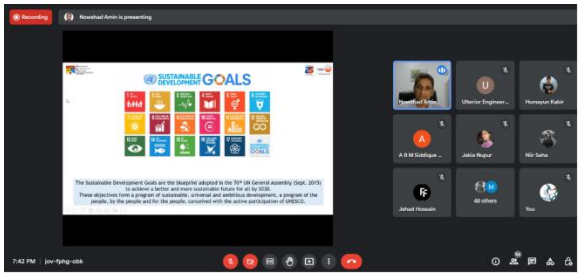
Bangladesh Innovation Forum President Mr. Ariful Hasan Apu welcomed all the participants and guests. He said, in this workshop, children will be shown the various activities of space robotics and also through this workshop they will learn teamwork and develop problem solving skills. The workshop started at 2 PM where all the participants gained hand on experience on how to make robots by themselves with the assistance of mentors. All children were divided into small groups led by mentor. Later they demonstrated the robot they made by themselves in front of the guests. Mr. Azadul Haque, the former system administrator of NASA, was present as the chief guest in the program. He said that the robotics workshop being held by these children today is sowing a seed of science and technology in the minds of the children. The results will start coming in 10 to 15 years by starting today. Professor Dr. Md. Abdur Rahman (Associated Dean, Faculty of Engineering, AIUB & Adviser, Bangladesh Innovation Forum) thanked Bangladesh Innovation Forum and Space Innovation Camp for organizing this innovative event at AIUB. He also thanked the guardians for encouraging their children to participate in this event.

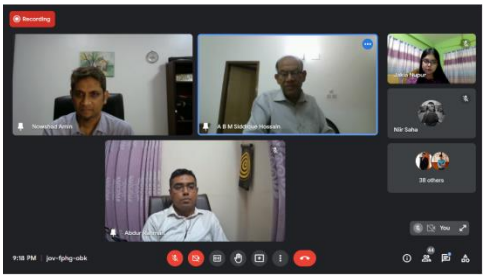
Webinar On "Solar PV Energy Towards Carbon Neutrality By 2050"

On Monday, November 7, 2022, the Engineering Students Association of Bangladesh (ESAB) AIUB Unit Face successfully organized a webinar on "Solar PV Energy Towards Carbon Neutrality By 2050" by using online platform google meet. The session began at 7:00 PM with more than 70 attendees. The program started with the opening remarks by Prof. Dr. A.B.M. Siddique Hossain (Dean, Faculty of Engineering, AIUB). In his speech, he emphasized the significance of carbon neutrality and the impact of solar PV on building a sustainable and environmentally friendly world.

After that, the floor was given to the distinguished speaker, Dr. Nowshad Amin (Professor, Institute of Sustainable Energy, Universiti Tenega Nasional |@UNITEN, The Energy University| & Chief Advisor Ulterior Engineering Intl). In his speech, he began by explaining the fundamentals of the solar cell and the potential of renewable energy to reduce the amount of carbon in the environment. In the middle, he discussed the various kinds of solar cells and their respective efficiencies. In addition, he addressed the evaluation of solar panel size, grid-connected solar PV residential systems, and several other problems. Aside from that, he spoke about the benefits of solar-powered technologies and their importance in the world's long-term development for people. Lastly, he talked about the steps we as humans need to take right now and the responsibilities that governments and other climate-related world organizations need to take to make the world a better place to live and ensure carbon neutrality by 2050.

After that, the Advisor of ESAB AIUB Unit Face, Prof. Dr. Md. Abdur Rahman (Associate Dean, Faculty of Engineering, AIUB), gave the closing remarks and shared his valuable experience and knowledge on solar PV and its importance to carbon neutrality by 2050 with the participants. Afterwards, a virtual token of appreciation was presented to the distinguished speaker.





Seminar On "Prospects and Challenges of Fourth Industrial Revolution: Are We Ready?"

On Monday, November 14, 2022, the Engineering Student Association of Bangladesh (ESAB) AIUB Unit Face successfully organized a seminar titled " Prospects and Challenges of Fourth Industrial Revolution: Are We Ready? ". The program started at 3:30 PM with more than 80 participants at Media Studio, Annex-2.

The session was begun with the opening remarks by Prof. Dr. A.B.M. Siddique Hossain (Dean, Faculty of Engineering, AIUB). He described how the Fourth Industrial Revolution is now building on the Third Industrial Revolution -the "digital revolution," which reflects new ways in which technology gets ingrained in communities and even the human body. After that, the honorable speaker, Prof. Dr. Md. Iqbal Mahmud (Chairman, Department of Mechanical Engineering, Mawlana Bhashani Science and Technology University), first discussed the features of 4IR. Then he also discussed the driving forces of industry 4.0, such as artificial intelligence, blockchain, robotics, the internet of things, big data analytics, nanotechnology, biotechnology, and many more. In addition, he went into detail on the possible effects and prospects of Industry 4.0, notably mentioning Bangladesh's potential benefits from the 4IR. Afterwards, he discussed the difficulties posed by 4IR in the labor market and education sector. Lastly, he addressed the top ten talents based on the 4IR and highlighted the actions taken by the Bangladeshi government to prepare its workforce for the 4IR.

After that, the advisor of ESAB AIUB Unit Face, Prof. Dr. Md. Abdur Rahman (Associate Dean, Faculty of Engineering, AIUB), gave the closing remarks and shared his valuable experience and knowledge on 4IR and how AIUB is contributing and preparing their students to face the biggest challenges and opportunities. Later, he handed over the token of appreciation and certificates to the speaker. He also presented a token of appreciation to honorable guest Mohammad Imran Hossain (Chairman of the Mars Group and Former DGM and HOD of Construction, Energypac Engineering Ltd.).

Seminar on Safe Internet for Academic Excellence

A seminar on “Safe Internet for Academic Excellence” was arranged by Internet Service Provider Association of Bangladesh (ISPAB) and the Computer Science Department, AIUB in association with the AIUB Computer Club (ACC) on Tuesday, 8 November 2022. Mr. Mustafa Jabbar, Honorable Minister, Post Telecommunications Division, Ministry of Post, Telecommunication and Information Technology was present as the Chief Guest. Mr. Ishtiaque Abedin, Founder member and Chairman, AIUB Board of Trustees, Dr. Hasanul A. Hasan, Founder Member, AIUB Board of Trustees, Dr. Carmen Z. Lamagna, Vice Chancellor, AIUB and Ms. Shania Mahia Abedin, Member, AIUB Board of Trustees received the honorable minister at the AIUB Campus.

The seminar took place in the AIUB Auditorium. Dr. Carmen Z. Lamagna, Vice Chancellor, AIUB presided over the program. Md. Emdadul Hoque, President, ISPAB and Director and COO, Optimax Communication Limited; Mr. Sakif Ahmed, Director, ISPAB and Director and CEO, InfoLink Ltd., Mr. Nazmul Karim Bhuiyan, Secretary General, ISPAB and Managing Director, KS Network Ltd.; and Mr. Iqbal Bahar Zahid Founder and President, Nijer Bolar Moto Ekta Golpo were present as special guests.

Prof. Dr. A B M. Siddique Hossain, Honorable Dean, Faculty of Engineering, AIUB delivered the welcome speech where he highlighted the need of incorporating topics like data science, AI, robotics, block chain, etc. in the curriculum. Later the specials guests, Mr. Iqbal Bahar Zahid, Mr. Sakif Ahmed, Mr. Nazmul Karim Bhuiyan, Mr. Emdadul Haque delivered their speeches where they shared their experiences, future plans of ISPAB, discussed on the current condition of internet services, cost and speed in the country. They also talked about highlighted how ISPs are contributing to the digital growth of the country.

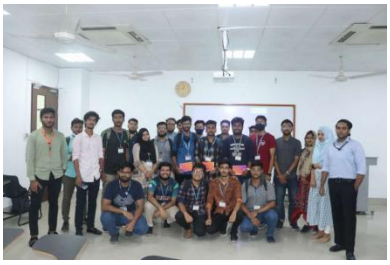
The chief guest and honorable minister, Mr. Mustafa Jabbar, in his valuable speech, started by sharing the story of Bijoy keyboard innovation. He also mentioned about "Mr. Hanif Uddin", the first Bangladeshi computer programmer. He further discussed about the Digital Bangladesh, the Bangabandhu Satellite, progression of 1G, 2G, 3G, 4G, 5G network in Bangladesh, two-step verification and internet security condition in the country. At the conclusion of the session, Dr. Carmen Z. Lamagna, Honorable Vice Chancellor of AIUB expressed her valuable thoughts about safe internet for the world and also thanked the organizers and the chief guest for being present in such a valuable seminar. At the end of the seminar, Dr. Carmen handed over crests and gift packs to the guests.

Workshop on design thinking and ideation on Applink

A workshop on "Design thinking and ideation on Applink" was arranged by the AIUB Computer Club (ACC) and was held on July 24th, 2022, at 11 p.m. The workshop was held in Annex 3, AIUB. The workshop was hosted by a member of the Applink team.

The main purpose of the workshop was to bring out interesting ideas for the new generation. All the participating students of the workshop divided into small teams each containing three members. Each team was given a task to generate idea that can improve the technology in Bangladesh. After brainstorming, all the teams presented their ideas and the Applink team chose the best 2 ideas from the students and were awarded gift hampers by the Applink team.

At 2 PM, when the workshop finished the audience highly appreciated the knowledge they gathered and thanked the applink team for their valuable time.



AIUB Computer Club Organized a Seminar on Blockchain Technology and Call for Participation in BCOLBD 2022

A Seminar on 'Blockchain Technology and Call for Participation in BCOLBD 2022' was arranged by AIUB Computer Club (ACC) that was held on 27th March 2022 at 2:30 PM. The Seminar was held in the Multipurpose Hall, D Building, AIUB. Mr. K Atique-e-Rabbani, Managing Director, The Computers Ltd and Chief, BARED-Blockchain Academy of Research, Education, and Development, Md. Al-Amin, Founder, Deepchain Labs, Lecturer, CS, Blockchain and web3 Architect, System Analyst, Technical Lead, Md Mehedi Hassan Onik, Lecturer, AIUB, Mr. Ashiq Zaman, Chief Advocacy Officer, BCOLBD, Executive Director, Peoples Energy Ltd & Director, Peoples, Abhijit Bhowmik, Co-Chairman of BASIS Standing Committee on Local Market, Chairman at Workspace Infotech, Association Professor, CS, AIUB, and Tahmina Sharmin, Secretary, BCOLBD, & Head of QAC, Technohaven Company Ltd were present as the speakers. The hosts of the seminar, Tahsinul Hoque, Assistant General Secretary - Media and Publication, ACC and Samiha Hossain, General Member, ACC welcomed everyone and invited Mr. Onik on stage for his speech.

Mr. Onik briefly introduced himself before describing the Blockchain Technology. He explained the method, pattern, and structures of blockchain with clarification. He also highlighted the impact of blockchain in future world. After his speech, Mr. Rabbani took the floor and started his speech with a song to cheer up the audience. He described the process of blockchain and how it works, how a system is

managed, protected, secured, and how privacy works through blockchain. He compared Blockchain with different phases of Computer Engineering. He mentioned AI, Database, Ethereum Development, and Blockchain in the seminar. How corruption could be prevented by Blockchain and how people could build their careers on Blockchain was also mentioned by the speaker. Mr. Al-Amin then talked about the Olympiad of Blockchain that is known as 'BCOLBD'. He gave detail information about the upcoming Olympiad. He also mentioned about the success of AIUB students in previous Olympiad, wherein the top 10 teams 5 were from AIUB. He informed about team formation and participation in the competition, like, how to work in a team, and how to manage given tasks. Later, Mr. Zaman showed the audience the procedures for registration for the next Olympiad of BCOLBD 2022. In the concluding speech, Ms. Sharmin highlighted how participation in the Olympiad could be helpful and beneficial for the students.



A Workshop on 'Android Development'

With the ever-growing popularity of portable devices, the demand for mobile based operating systems and applications is going up exponentially. Keeping this in mind the AIUB Computer Club (ACC) arranged a workshop on 'Android Development' to grow the interest of this demanding sector among ACC members. Abdul Al Mahmud Riaz, Junior Software Engineer, PencilTech and former Executive, BASIS AIUB Student's Chapter conducted the workshop on 13th June 2022 at the American International University-Bangladesh (AIUB) Campus.

Tanvir Ahmed, a general member of ACC commenced the workshop by giving a short introduction of the speaker. Mr. Riaz started the workshop with a brief discussion on Android Operating System. He mentioned the workshop is being conducted under the patronage of the Huawei Student Developers Community. He gave a brief demonstration on how to open a Huawei Developers account. The main topic of the session covered HMS Core Map Kit, use cases and features of the kit. He also described map interaction like icons and gestures on the system.

The session came to end with an interactive Q&A session. The speaker, Abdul Al Mahmud Riaz answered all the questions in details. There were 32 registered attendees in the workshop.


Workshop On “Industrial Automation Project & Career”

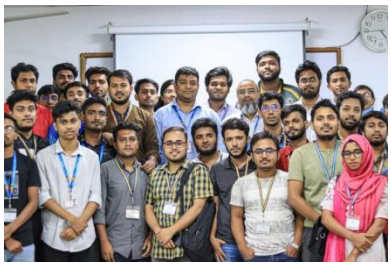
On Thursday, October 20, 2022, the Engineering Student Association of Bangladesh (ESAB) AIUB Unit Face successfully organized a workshop titled "Industrial Automation Project & Career". The program started at 9:30 AM with 46 pre-registered participants at DS0305, Building D, AIUB. The objective of organizing the workshop was to develop basic technical knowledge and industrial skills related to industrial automation and to understand industrial instrumentation among the participants. The workshop was split into two parts: one for theoretical understanding and the other for practical experience.

The program started with the lecture of Engr. Rafat Bin Ali (Certified Delta Automation, George University, Canada & CEO, Ulterior Engineering). In his speech, he talked about the automation road map, as well as the different types of circuit breakers, push buttons, switches, and so on. He also discussed and emphasized Relay Logic Control (RLC), Motor Control Center (MCC), Programming Logic Controller (PLC), and Variable Frequency Drive (VFD). After that, Engr. Fahim Shahriar Khan (Automation Instructor & Head Training Division, Ulterior Engineering) explained advanced automation, PLC and control system architecture, and a functional description of advanced PLC and operator station (OS). Moreover, he discussed the types and techniques of programming languages, interface devices, and software. Later, in the second portion of the workshop, all the participants got practical hands-on experience. They learned about some new industrial machinery in this section and conducted some experiments with those. At the end, there was a short Q&A session where both speakers answered questions from the participants.

After that, Advisor of ESAB AIUB Unit Face, Prof. Dr. Md. Abdur Rahman (Associate Dean, Faculty of Engineering, AIUB) gave the closing remarks and shared his valuable experience and knowledge on industrial automation with the participants. Later, he, along with Mentor of ESAB AIUB Unit Face, Mr. Md. Saniat Rahman Zishan (Associate Professor and Head, Dept. of CoE, AIUB), handed over the token of appreciation and certificates to both instructors. The event was also graced by the presence of Mr. Abul Hasnat (Senior Assistant Professor, Faculty of Engineering, AIUB).

Seminar on "2D Material based Smart Antenna Design and its Applications"

On October 17, 2022, the AIUB Community of Engineering Students (ACES) organized a seminar titled "2D Material based Smart Antenna Design and its Applications''. The program started at 3:40 PM with 70 pre-registered participants at Annex 3 (Room No.: 3202), AIUB. The purpose of the seminar was to give the students a wonderful opportunity to learn about the design of smart antennas and their applications. In his opening remarks, the speaker of the seminar Mr. Raja Rashidul Hasan (Assistant Professor, Faculty of Engineering, AIUB) briefly discussed about the overview of antenna. He highlighted the applications including wearable antenna made of textiles, antenna for capsule endoscopy, antenna on mobile phones and enlightened everyone on the status of the material-based antenna research currently underway. Then, a short Q/A session was held for the participants. Prof. Dr. Mohammad Abdul Mannan (Director, Faculty of Engineering, AIUB) concluded the seminar by thanking the speaker and presented a token of appreciation to the speaker.


AIUB Celebrated World Nanotechnology Day 2022

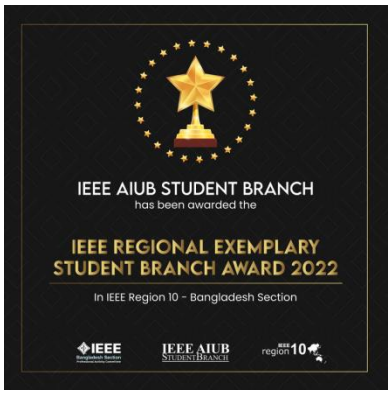
On the occasion of World Nanotechnology Day 2022, the Centre for Nanotechnology Research (CNR) of Dr. Anwarul Abedin Institute of Innovation, in collaboration with the IEEE AIUB Student Branch, successfully organized a seminar titled "A Journey of Unknowns in the Femto-Nano World". The event was held on Tuesday, October 18, 2022, at the Multipurpose Hall (level-10), D Building, American International University-Bangladesh (AIUB) to commemorate World Nanotechnology Day. This seminar aimed to deliver an informative and inspiring discussion regarding nano and Femto technologies.

The distinguished speaker along with the participants inaugurated the program at 4 PM with a cake-cutting ceremony to celebrate World Nanotechnology Day. Prof. Dr. A.B.M Siddique Hossain, Dean, Faculty of Engineering, AIUB & Advisor, IEEE AIUB Student Branch delivered the inaugural speech. He spoke briefly on nanotechnology and the definitions of nano and Femto. After the inaugural address, Dr. Mohammad Mahbub Rabbani, (Associate Professor, Department of Chemistry & Deputy Director, CNR, Dr. Anwarul Abedin Institute of Innovation, AIUB) delivered his remarks for the seminar session. He also thanked the speaker for giving his valuable time and welcomed him to the AIUB campus. Prof. Dr. Md

Tofazzal Islam, Professor, and Founding Director, Institute of Biotechnology and Genetic Engineering (IBGE); Bangabandhu Sheikh Mujibur Rahman Agricultural University; Fellow of The Fulbright, Commonwealth, JSPS, And Alexander Von Humboldt Foundation; began the seminar session by greeting everyone. Then he described the seminar's title, A Journey of Unknowns in the Femto-Nano World. There was an in-depth discussion regarding nanoparticles found in nature, nanotechnology, and the hypothetical Femto technology. He then briefly covered DNA structure, the Covid 19 vaccine, plant colonization. He also shared how he discovered the genetic identity and origin of the deadly wheat blast in Bangladesh. He mentioned some research works such as High-valued nano carbons from jute and bone charcoal, Novel nanomaterials as magnoliopsids, Novel nanomaterials as catalytic converters, and novel pathways for the conversion of biomass to high-valued biochemicals. In the end, he answered some questions from the participants and concluded the seminar. Following that, Dr. Mohammad Mahbub Rabbani, thanked and presented a token of appreciation to the honorable speaker. A total of 120+ participants attended the event.

IEEE Regional Exemplary Student Branch Award 2022 Awarded To Ieee Aiub Student Branch

The IEEE AIUB Student Branch has been awarded the “IEEE REGIONAL EXEMPLARY STUDENT BRANCH AWARD 2022” by the global IEEE Students Awards Committee. IEEE supports the interests of its members by recognizing significant achievements in relevant domains for the benefit of society. This award is given annually to student branches for their exceptional performance as an active IEEE Student Branch offering technical programs, activities, and professional networking opportunities that enable members to establish crucial skills. In the previous activity year 2021-2022, the IEEE AIUB Student Branch hosted 9 webinars, 2 distinguished lectures, and 1 workshop. The "IEEE Student Professional Awareness Venture", a signature event of the IEEE community, was also organized by the IEEE AIUB Student Branch. This award is a very prestigious achievement for IEEE AIUB Student Branch.



IEEE AIUB Student Branch Successfully Celebrated "IEEE Day 2022"

On Tuesday, 11th October 2022, the IEEE AIUB Student Branch organized a daylong event celebrating "IEEE Day 2022". This event aimed to bring all IEEE AIUB Student Branch members and supporters together to demonstrate how IEEE members in local communities collaborate on ideas that affect technology for a better tomorrow and contribute to making a difference.

At the first phase of the event, Alumnus of Department of EEE, AIUB Mr. Al Amin Hossain, Assistant Manager, Engineering and Design (Electrical), Reverie Power & Automation Engineering LTD, conducted the workshop titled "A Medium Voltage Substation Design Maintaining Proper Standard." He discussed about power systems, the working process of substations, outdoor and indoor components of a substation and their purpose, power triangle and load flow, load distribution, cost management, etc. Advisor of IEEE AIUB Student Branch, Md. Saniat Rahman Zishan, Associate Professor & Head, Department of COE, AIUB, delivered the ending speech of the workshop session and delivered the token of appreciation to the honorable instructor. The second phase of the IEEE Day celebration began with the cake cutting ceremony. Advisor of IEEE AIUB Student Branch, Prof. Dr. A.B.M Siddique Hossain, Dean, Faculty of Engineering, AIUB, inaugurated the seminar session. He congratulated IEEE AIUB SB on receiving the "IEEE Regional Exemplary Student Branch Award 2022". Then the honorable speaker Dr. Md. Raju Ahmed, Professor, Department of EEE, Dhaka University of Engineering & Technology, Director, Institutional Quality Assurance Celt (IQAC): Treasurer, IEEE Bangladesh Section: Life Fellow IEB, Member IEEE thanked the faculties and IEEE AIUB SB for inviting him to the session and congratulated them for receiving the award. He discussed the importance of protection in high-voltage engineering and related important topics. Finally, he did a Q&A session and ended his session by thanking everyone. Counselor of IEEE AIUB Student Branch, & Advisor of IEEE EMBS AIUB SB Chapter Dr. Mohammad Hasan Imam, Associate Professor, Faculty of Engineering, AIUB, presented the token of appreciation to the honorable speaker. Afterward, a cultural program was performed by APAC.

At the closing part of the event, Advisor of IEEE AIUB Student Branch, Prof. Dr. Md. Abdur Rahman Associate Dean, Faculty of Engineering, AIUB and Prof. Dr. Mohammad Abdul Mannan, Director, Faculty of Engineering, AIUB with IEEE AIUB SB executives declared the winner of the photo contest. Afterward, they presented a token of appreciation to the General Secretary of APAC for their soulful performances. Prof. Dr. Md. Abdur Rahman gave the closing remarks. He discussed the significant achievements of the IEEE AIUB SB and ended his speech by thanking everyone. After the closing remarks, a photo session was arranged, and food, kits, and certificates were gifted to promote the Program, which concluded the session. The event was attended by 150+ attendees, including 100+ IEEE members and 50+ non-members.

Seminar On "Introduction to VLSI Industry"

On September 27, 2022, the Center for VLSI and Embedded Systems (CVES) of the Dr. Anwarul Abedin Institute of Innovation, American International University-Bangladesh (AIUB) organized a seminar titled "Introduction to VLSI Industry". This seminar was supported by Engineering Students Association of Bangladesh (ESAB) AIUB Unit Face. The session began at 3:30 PM with around 100 attendees in the Multipurpose Hall of Building D.

The program started with the opening remarks by Prof. Dr. A.B.M. Siddique Hossain (Dean, Faculty of Engineering, AIUB). He discussed the fast-expanding VLSI sector and the prospects available to students who are interested in pursuing a career in this area. After that, an Alumnus of the Department of EEE, AIUB Md. Shoaib Sikder (Sr. Engineer, Analog circuit design and layout, Neural Semiconductor Limited) discussed about chip designing, semiconductor devices, and basic introduction about the VLSI industry. Another Alumnus of Department of EEE, AIUB M. Salman Morshed Abir (Sr. Engineer, Analog circuit design and layout, Neural Semiconductor Limited) later discussed about the whole architecture of the VLSI industry using real-world examples. He also highlighted the VLSI virtual designing tools like Cadence, Mentor Graphics and Synopsys. Finally, Saadman Afzal (Team Lead, Analog circuit design and layout, Neural Semiconductor Limited) emphasized that practical experience is more important than theoretical knowledge for VLSI or any other engineering field. He also shared his experience and elaborated the requirements and organizational culture of Neural Semiconductor Limited. At the end of the seminar, a short question and answer session was held where the speakers answered the queries raised by the participants.

Prof. Dr. Mohammad Abdul Mannan (Director, Faculty of Engineering, AIUB) concluded the seminar by thanking the speakers. Later, he along with Dr. Mohammad Nasir Uddin (Senior Associate Professor, Head (Graduate Program), Faculty of Engineering, AIUB) and Dr. Md. Jahid Hasan (Assistant Professor, Faculty of Engineering, AIUB) handed over the plaque of gratitude's to the honorable speakers.

Seminar on "Bangladesh at Space and James Webb Space Telescope."

On Wednesday, September 28, 2022, the IEEE AIUB Student Branch successfully organized a seminar titled "Bangladesh at Space and James Webb Space Telescope". The seminar focused on the current state of Bangladesh in the space industry, along with a brief discussion about the "Bangabandhu Satellite-1", and the noteworthy James Webb Space Telescope.

Mr. Nafiz Ahmed Chisty (Associate Professor and Head In-Charge, Dept. of EEE, AIUB), inaugurated the session. He greeted everyone and thanked IEEE AIUB Student Branch for organizing the event. He briefly talked about satellites and their importance. An Alumnus of the Department of EEE, AIUB Mr. Md Al Imran Sarkar, Assistant Manager (Satellite Control Engineer), Bangladesh Satellite Company Limited (BSCL), greeted and thanked everyone for joining the session. After introducing himself, he shared some stories from his experience working with Thales Alenia Space in France for the training of Bangabandhu Satellite – 1. Then he discussed about types of satellites, satellite architecture, design, types of equipment, purpose, and the working principles of Bangabandhu Satellite - 1. After that, he began his presentation on the James Webb space telescope (JWST). He talked about electromagnetic spectrums, infrared waves, and how JWST uses its hexagonal mirrors and infrared cameras to capture breathtaking pictures of interstellar space. At the end of the seminar a Question and Answer (Q&A) session took place.

Prof. Dr. Mohammad Abdul Mannan, Director, Faculty of Engineering, AIUB, delivered the closing speech where he mentioned satellite communication is a promising sector in the field of Communication Engineering. After that he handed over a token of appreciation to the speaker.

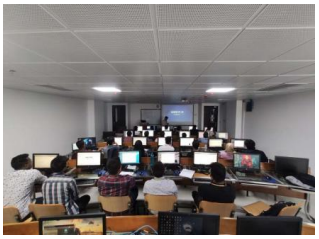


Workshop on “Glimpse of Industry Grade Layout Design”

On September 29, 2022, the Center for VLSI and Embedded Systems (CVES) of the Dr. Anwarul Abedin Institute of Innovation, AIUB organized VLSITHON Workshop titled "Glimpse of Industry Grade Layout Design”. This workshop was supported by AIUB Community of Engineering Students (ACES). The program started at 10 AM with 25 pre-registered participants at DN0209, Building D, AIUB.

The program started with the inauguration speech by Mr. Md. Muzammel Hosaain (Assistant Manager, Ulkasemi, Bangladesh) where future aspects of IC design engineering was emphasized. Moreover, he highlighted the current situation and the scarcity of well-trained Bangladeshi IC design engineers compared to other nations. After that, a short question and answer session was held where he and Ms Ruhana Parvin (Technical Manager, Silicon Engineering, Ulkasemi Pvt Ltd) answered the queries raised by the participants. Later, Mr. Shaer Ahmed (Senior Engineer, Ulkasemi USA Office) conducted the workshop using Cadence software where he trained students to create library folder and cell view, copying schematic to different cell views, designing the layout of an inverter etc. Afterwards, Dr. Md. Jahid Hasan (Assistant Professor, Faculty of Engineering, AIUB) concluded the workshop by thanking and presenting the token of appreciation to the speakers.

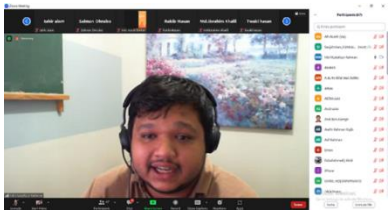




Webinar On "Career Discussion for Computer Science Students"

The Engineering Students Association of Bangladesh (ESAB) AIUB Unit Face successfully organized a webinar titled "Career Discussion for Computer Science Students" by using Zoom platform on October 1, 2022 (Saturday). The objective of the event was to provide computer science students with a comprehensive understanding of future careers and the job market. The program started at 7 PM with more than 85 participants.

This seminar was presented by an alumnus of AIUB Md Mustafizur Rahman (Software Engineer, Microsoft, Vancouver BC, Canada). He talked about the different areas of computer science as well as the skills required to become a successful software engineer. In the hour-long session, he enlightened the audience with his knowledge on the topic. In the latter portion of his speech, he described his journey from AIUB to Microsoft. Following the presentation, a long Question and Answer (Q & A) session was conducted for the attendees. The ESAB AIUB Unit Face expressed gratitude to the speaker for conducting the informative session. A virtual crest was presented as a token of appreciation to the speaker.

EEE Research Teams Qualifies for Top 100

Two student teams from the Department of EEE, AIUB has secured the "Top 100" position under “Smart Energy” and “Social & Health” categories in a prestigious innovative idea competition titled "Global Xplore 2023 Technology Award for a Sustainable World". This competition is organized by “Phoenix Contact GmbH & Co KG”, Germany. Phoenix Contact has stood for technological innovation for nearly 100 years. More than 170 Teams from 100+ institutes/companies of 30+ countries participated in the initial round. Out of these 100 teams are selected for the next round. Top 100 teams will receive a voucher for goods valued at over 3,000 Euros. From the top 100 teams, the international jury will nominate 25 finalists who will be invited to Germany.

The members of the research team under Social & Health category are Ruham Rofique, Md. Yasin Arafat Alif, Suprio Saha Himu and Fahmida Zahan Naima. This team has been mentored by Mr. Kawshik Shikder (Assistant Professor (on leave), Dept. of EEE, AIUB), Mr. Abul Hasnat (Senior Assistant Professor, Faculty of Engineering, AIUB) and supervised by Mr. Chowdhury Akram Hossain (Associate Professor, Dept. of EEE, AIUB).

The members of the research team Smart Energy category are Tonmoy Hassan, Debraj Das, Shahir Islam Rhyme and Supratik Bal. This team has been supervised by Dr. Md. Rifat Hazari (Senior Assistant Professor, Dept. of EEE, AIUB). All the members are final year students of EEE department, AIUB.

Inauguration of CTO Forum Innovation Hackathon 2022 at AIUB

The CTO Forum Innovation Hackathon 2022 was inaugurated by the Deputy Minister, Ministry of Education Barrister Mohibul Hasan Chowdhury MP, on Monday, 12th of September 2022 at the campus of American International University- Bangladesh (AIUB). This national event is committed to fostering an environment of trust, openness, and innovation where the most creative and innovative minds of today can come together to maximize the advantages of current and future technology for the country while paying close attention to addressing the technical issues and challenges. This event is dedicated to boost young mind's creativity in the creation of sustainable technologies for the benefit of the country. The Hackathon is scheduled to start on 29th of September 2022 with an idea round session in several divisions of Bangladesh such as Dhaka, Chittagong, Sylhet and Rajshahi.

Dr. Carmen Z. Lamagna, the honorable Vice-Chancellor of the American International University-Bangladesh (AIUB), delivered the welcome address on the occasion. She expressed her gratitude to all the attendees and wished the event a great success. She also appreciated the efforts of the Department of Computer Science, AIUB for supporting and participating in such a tremendous nationwide initiative. Mr. Tapan Kanti Sarker, President of the CTO Forum Bangladesh, in his address, mentioned that the development of digital Bangladesh will be successful if these young people are positively exploited, and their fresh ideas are appropriately encouraged.

The Special guest Prof. Dr. Md. Sazzad Hossain, member of the University Grants Commission, Bangladesh stated if university students are not prepared to tackle practical difficulties with their innovation, the country will not be able to stay up to date with the fast-evolving world of invention and technology. He claimed that the country is home to many intelligent young minds who should be given the proper opportunities, and this hackathon is one of them.

The Chief guest of the event, Barrister Mahibul Hasan Chowdhury MP, the Deputy Minister, Ministry of Education appreciated such well-timed initiative towards innovation. The deputy minister highlighted that developing a digital Bangladesh is not only dependent on academic knowledge, but also on the innovative thinking and spirit that these programs will foster. During the ongoing fourth industrial revolution, these sorts of events will advance the nation. He also mentioned that the CTO Forum's plan to use the strength of youth and technology to create a smart Bangladesh would have the full support of the Government. Among others Prof. Dr. H M Jahirul Haque, the Vice Chancellor, Canadian University of Bangladesh, Mr. Bikarna Kumar Ghosh, the Managing Director, Bangladesh HiTech Park Authority and Mr. Muttasim Diaan, Director and the CEO, Fair group also addressed the audience.

The inauguration ceremony was graced by the presence of Mrs. Nadia Anwar, Founder and Member, AIUB Board of trustees, Deans, Associate Deans, Directors, Head of the Departments, Faculty Members, Officials from AIUB and other Universities, Organizing Committee Members of the Hackathon, High officials from the Title sponsor Fair group, representatives from several Print and Electronic media and students.

BIF Organized Aviation Challenge at AIUB

On August 27, 2022, the American International University-Bangladesh (AIUB) hosted an exceptional event titled “Aviation Challenge Bangladesh” which was organized by the Bangladesh Innovation Forum and Space Innovation Camp. 89 children aged between 4 to 12 years from different schools participated in this event.

The event started with a workshop where all the participants gained hand on experience on how to make airplanes by themselves with the assistance of mentors. All children were divided into small groups led by one mentor. Later they flew the planes they made by themselves in the AIUB field. Along with history of the aero plane invention, the workshop gave the participants an insightful practical understanding of various aeronautical parts, how engine works, and how it flies.

Ms. Nahid Sultana Mallik (Joint Project Director, a2i & Joint Secretary, ICT Division) was the chief guest of this event. In her remarkable speech she said that this kind of event will develop the innovative thinking of children and make them interested in learning about new technologies. The program chair, Professor Dr. ABM Siddique Hossain (Dean, Faculty of Engineering, AIUB) emphasized on organizing more programs related to science and engineering for the young generation. Professor Dr. Md. Abdur Rahman (Associated Dean, Faculty of Engineering, AIUB & Adviser, Bangladesh Innovation Forum) thanked Bangladesh Innovation Forum and Space Innovation Camp for organizing this innovative event at AIUB. He also thanked the guardians for encouraging their children to participate in this event. President of Bangladesh Innovation Forum Mr. Ariful Hasan Opu mentioned that this program provided a platform for the children to learn science, technology, engineering. mathematics, problem solving, teamwork etc. together.

Aviation Challenge Bangladesh envisions that someday modern aircraft will be made in Bangladesh and Bangladesh will be the leader in the aviation industry. The children of today who will convert this vision into reality in the future expressed their conviction at the American International University-Bangladesh.


Workshop on "Prospects of VLSI Careers in Bangladesh"

On August 7, 2022 Center for VLSI and Embedded Systems (CVES) of the Dr. Anwarul Abedin Institute of Innovation, AIUB organized a workshop titled "Prospects of VLSI Careers in Bangladesh" which was supported by AIUB Community of Engineering Students (ACES). The program started at 2:30 PM with 60 participants at the 3202 (Annex-3), AIUB. The purpose of the workshop was to provide the students with a clear road map toward being a successful VLSI engineer specially at ULKASEMI.

The program started with the inauguration speech by Mr. Chowdhury Akram Hossain (Deputy Director, CVES & Associate Professor, Faculty of Engineering, AIUB) where the growing opportunities of large-scale integration sector and demands in Bangladesh were discussed. After that, Prof. DR. Mohammad Abdul Mannan (Director, Faculty of Engineering, AIUB) began his speech by outlining the lab facilities that AIUB provides. Later, Prof. DR. A.B.M Siddique hossain (Dean, Faculty of Engineering, AIUB) started his speech by complimenting the ULKASEMI engineers for their dedication and outstanding accomplishment in VLSI sector. After that, alumnus of Department of EEE, AIUB Mr. Fahim Rizwan (Engineer, IC Mask Design, ULKASEMI & Al) started the workshop by introducing other speakers. In addition, he gave a short overview over the workshop details and schedule. Then Mr. Pronob Sarker (Engineer, IC Mask Design, ULKASEMI) joined him and started the presentation about VLSI Industry growth and career scope at ULKASEMI. Following that alumna of Department of EEE, AIUB Ms. Moon Sadia Dipthee (Sr. Manager, IC Mask Design, ULKASEMI) discussed the basic knowledge requirement to apply as a VLSI engineer and encouraged the students to apply for ULKASEMI. After that, Ms.Devleena Gharami (Engineer, IC Mask Design, ULKASEMI) highlighted the VLSI virtual designing tools like Cadence, Mentor Graphics and Synopsys. And finally Mr.Abdullah Bin Sekander (Engineer, IC Mask Design, ULKASEMI) demonstrated and explained transistor circuits and highlighted the IC Layout design where he talked about the diffusion regions, polysilicon layers and metal interconnects layers. Afterwards, Mr. Fahim Rizwan elaborated the recruitment plan of ULKASEMI. Furthermore, a short pop quiz was taken for recruitment to ULKASEMI. At the end of the workshop, a short question and answer session was held where the speakers answered the queries raised by the participants.

Following that, Dr. Mohammad Nasir Uddin (Senior Associate Professor, Head [Graduate Program], Faculty of Engineering, AIUB) concluded the seminar by thanking the honorable speaker to conduct the session. The workshop was graced by the presence of Dr. Md. Jahid Hasan (Assistant Professor, Faculty of Engineering, AIUB).



'Skills to acquire for the development of students for 4IR' – A session of Dr. Anwarul Abedin Lecture Series arranged by FBA

The Department of Finance under the Faculty of Business Administration arranged a session of the Dr. Anwarul Abedin Lecture Series titled, "Skills to acquire for the development of students for 4IR". Mr. Syed Almas Kabir, the president of Bangladesh Metropolitan Chamber of Commerce and Industries (BMCCI), Managing Director of Metronet BD Ltd, a Director of Federation of Bangladesh Chamber of Commerce and Industries (FBCCI), and Ex-President of Bangladesh Association of Software and Information Services (BASIS), was the keynote speaker. It was held on Monday, 1st August 2022 in the AIUB Auditorium at 3:30 pm. The Dr. Anwarul Abedin lecture series is organized to commemorate the significant contribution of the late founding Chairman of AIUB towards the expansion of quality education in Bangladesh. Mr. Kabir highlighted the importance of specialization and inspired AIUB students to be passionate about what they choose to be in the future. He shared a few tips to help students prepare for the fourth Industrial revolution and build a successful career. The program was organized by Dr. Mohammed Kamrul Hasan (Associate Professor) under the Department of Finance and was facilitated by Ms. Shahnaz Zarin Haque, Assistant Professor. Prof. Dr. Tazul Islam, Dean, Faculty of Arts and Social Sciences (FASS) delivered the welcome address. Prof. Dr. A B M Siddique Hossain, Dean of Faculty of Engineering handed over a crest to Mr. Kabir as a token of appreciation for his valuable presentation. Prof. Dr. Nisar Ahmed, Director of the MBA Program delivered the vote of thanks and handed over a certificate of appreciation to the presenter. The program was attended by the faculty members and students of AIUB.

"Members' Orientation 2022 – IEEE AIUB Student Branch"

On August 7, 2022, IEEE AIUB Student Branch has successfully organized the orientation ceremony for the new members. The event took place from 4:30 pm to 6:30 pm at the Multipurpose Hall, D building, AIUB Campus. The objective of this event was to welcome the new members, volunteers, and the new executive committee for the year 2022 of the IEEE AIUB Student Branch.

Prof. Dr. A.B.M Siddique Hossain, Dean, Faculty of Engineering, AIUB; Advisor, IEEE AIUB SB; gave the inaugural speech. After that, Dr. Mohammad Hasan Imam Counselor, IEEE AIUB Student Branch; Associate Professor, Faculty of Engineering, AIUB; discussed about the IEEE AIUB Student Branch. Then Dr. M. Tanseer Ali, Associate Professor; Special Assistant, Faculty of Engineering, AIUB; Chairperson, IEEE Young Professionals Bangladesh 2022 emphasized communication skills development, the IEEE network, the professional network, and IEEE accomplishments. After that, Dr. Md. Abdul Mannan, Director, Faculty of Engineering, AIUB; spoke about the IEEE AIUB Student Branch, IEEE leadership, and the value of forging relationships with one another, and shared his aspirations for the IEEE AIUB Student Branch.

To share his experiences with IEEE AIUB SB, Moin Uddin, Former chairperson, IEEE AIUB SB 2018; was then invited to the stage. Following that, Kawshik Shikder, Motivator (2021), IEEE AIUB Student Branch; Assistant Professor, Faculty of Engineering, AIUB; shared the advantages of the IEEE membership and its local organizations. Next, Md. Tauhid Rahman, Former Chairperson, IEEE AIUB SB 2019; shared his experience with IEEE AIUB SB and explained the importance of communication.

After that, the Executive Committee members of the IEEE AIUB Student Branch of 2021, were given the certificate of appreciation by Dr. Mohammad Hasan Imam, and then he invited MD. Saniat Rahman Zishan, Advisor, IEEE AIUB Student Branch; Associate Professor, Head (Undergraduate Program), Department of COE, Faculty of Engineering, AIUB; and Chowdhury Akram Hossain Advisor, IEEE AIUB Student Branch; Associate Professor, Faculty of Engineering; Special Assistant, Office of Student Affairs (OSA), AIUB; to announce the new executive committee of IEEE AIUB Student Branch for the year of 2022. After that, MD. Saniat Rahman Zishan, introduced the new IEEE AIUB Student Branch volunteers for the year 2022. A fantastic cultural event and photo session followed that. Then participants were provided kits and meals.

The event was attended by 150+ attendees, including members as well as faculties, executives, and volunteers of the IEEE AIUB Student Branch.

Seminar on "Know your Laptops and Consoles, Powered by MSI"

The Department of Management Information Systems (MIS) of the Faculty of Business Administration, American International University – Bangladesh (AIUB), organized BizTech 3.0 on 27th and 28th July 2022 at AIUB premises. The two-day long event encompassed multidisciplinary events to instil managerial and leadership skills in students to find answers and leverage information technology within an organization to increase business value and profits. As part of the event a seminar titled, "Know your Laptops and Consoles, Powered by MSI" was held on 27th July 2022 from 12:00 to 2:30 pm in the Multipurpose Hall, Building D. The seminar "Know your Laptops and Consoles, Powered by MSI" was adorned by Mr. Fardeen Hossain, Marketing Manager, MSI Notebook-Bangladesh, Micro-Star International Co., Ltd (MSI) will. MSI is a world leader in gaming, content creation, business & productivity, and AIoT solutions. The company has been a sponsor for a number of esports teams. The resource speaker enlightened the audience with very time sensitive topics, market availability of computer devices and their usages. This event turned out to be a highly interactive session, with students pouring out their queries regarding all these latest devices. The seminar was attended by around 200 BBA students along with their faculty members. Mr. Mehzabul Hoque Nahid, Assistant Professor, MIS, coordinated the seminar. After the vote of thanks, the Resource speaker was handed over a small token of appreciation for making the event a success.

BIZTECH 3.0 E-COMMERCE-FAIR

The Department of Management Information Systems of the Faculty of Business Administration, American International University – Bangladesh (AIIB) organized BizTech 3.0 on 27th and 28th July 2022 at AIUB premises. The two-day long event encompassed multidisciplinary events to instil managerial and leadership skills in the students. Prof. Dr. Tazul Islam, Dean-In-Charge [FBA], Dean [FASS], AIUB, together with Danilo G. Morgia, Director, IT Operations; Dr. ABM Rahmatullah, Associate Dean of FASS; and Mr. Pius Costa, Registrar & Controller of Examinations, Mr. Manzur H. Khan, Director, Office of Student Affairs inaugurated BizTech 3.0. Prof. Dr. Nisar Ahmed; Director of MBA Program and Prof. Dr. Farheen Hassan, Director of BBA Program, Dr. Mohammad Faridul Alam, Head, Dept. of accounting & Finance, Dr. Khondaker Sazzadul Karim, Head of Marketing and International Business, and other distinguished guests visited the events and provided their invaluable opinion.

As part of the event an E-Commerce Fair was organized. The purpose of this E-commerce-Fair was to acknowledge and value the leadership qualities of students. The fair was open for all university students, regardless of their departments. This event gave students the opportunity to become E-commerce entrepreneurs for two days and consider their future alternatives and possibilities.

Twelve groups participated and were supplied with booths to showcase their wares. They adorned their booths exquisitely and displayed their merchandise in a very expert and eye-catching way. In addition, they created Facebook pages for their company, created several interactive digital items for their business, such as digital posters, promotional films, etc., and have been promoting their brand online since 20 July 2022. The E-commerce booths were put up on level 2 between annexes 2 and 3 in an open area.

Food and beverages, apparel, home décor, stationery, hair and beauty accessories, etc., were among the many items available for purchase. The visitors really enjoyed a number of the offerings and appreciated the stall-operators' efforts. Students and faculty members from several disciplines attended the fair and admired its vitality. As part of their campus tour of Biztech 3.0, hundreds of HSC students and faculty members from various colleges visited these stalls and gained valuable insights into the commitment of AIUB's Faculty of Business Administration for empowering students and bridging the gap between theory and practise in business education. The "Sweetcraft" and "Adjective-Bangladesh" teams were awarded the best stall prize for their unique advertising approach and overall station management competence. For nationwide coverage, Rtv and City FM 96.00 were as media and radio partner respectively. The program was organized and coordinated by Mr. Mehzabul Hoque Nahid, Ms. Nazia Farhana and Mr. Jubayer Suhan with the support from the Office of Students Affairs (OSA).

BIZ-Tech 3.0 Inter-College Business Plan Competition And Quiz Contest

The Department of Management Information Systems (MIS) of the Faculty of Business Administration, American International University – Bangladesh (AIUB), organized BizTech 3.0 on 27th and 28th July 2022 at AIUB premises. The two-day long event encompassed multidisciplinary events to instil managerial and leadership skills in the students. Prof. Dr. Tazul Islam, Dean-In-Charge [FBA], Dean [FASS], AIUB, together with Danilo G. Morgia, Director, IT Operations; Dr. ABM Rahmatullah, Associate Dean of FASS; and Mr.Pius Costa, Registrar & Controller of Examinations, Mr. Manzur H. Khan, Director, Office of Student Affairs inaugurated BizTech 3.0. Prof. Dr. Nisar Ahmed; Director of MBA Program and Dr. Farheen Hassan, Director of BBA Program, Dr. Mohammad Faridul Alam, Head, Dept. of accounting & Finance, Dr. Khondaker Sazzadul Karim, Head of Marketing and International Business, and other distinguished guests visited the events and provided their invaluable opinion.

On the second day of BizTech 3.0, Inter-College Technology based Smart Business Plan Competition and Quiz Contest on ICT in Bangladesh was held as part of the Outreach program of AIUB. The theme of the presentation was "Smart Business models under difficult economic conditions." Over 100 students and their faculty members from eleven colleges participated in this event. The "Biz-Tech 3.0 Smart Business model" exhibition was held at 11 a.m. on Thursday, July 28, 2022, in the Multipurpose Hall (D-Building). Ms. Nazia Farhana welcomed the students and guests and instructed them to create posters for the Technology-based Business Plan. During the exhibition, Dr. Nisar Ahmed, Director of the MBA, Dr. Farheen Hassan, Director of the BBA, and other department heads and faculty members were present. These mentors also took the visitors on a campus tour to demonstrate AIUB's culture, architecture, and facilities. The visitor felt enthusiastic and upbeat while walking around campus. The purpose of the event is to provide a forum for college students to share their creative business ideas with industry experts and invited corporate guests in order to receive feedback for the future development and implementation of their ideas. It also improves the students' analytical and problem-solving skills and fosters social responsibility. Three MIS students were assigned as mentors for each group to ensure meaningful experiences and to encourage and assist the participants in generating ideas for such time-consuming creative events. The distinguished guests and faculty members evaluated the business plans created by the students at the exhibition. The spectators admired the project posters and models' skilful presentation and well-executed handwork. The exhibition was only made possible by the tireless efforts of the respective teachers and students, as well as the support of AIUB Management. All of the students found the presence of the distinguished visitors to be very engaging. After the show, academic and industrial professionals picked the best posters. The Prize Giving ceremony was inaugurated by the welcome speech of Dr. Farheen Hassan, Director of BBA Program. Special Guest Mr Pius Costa, Registrar & Controller of Examinations entertained the audience with his delightful speech. After his brief speech, the Chief Guest Brigadier General TAEF UL HAQ, Principal, Rajuk Uttara Model College, handed over the crests to the competition winners. The event was also attended by the dignitaries from the sponsors. After closing ceremony, a pleasant cultural program was held by the AIUB Performing Arts Club [APAC]. For nationwide coverage, Rtv and City FM 96.00 were the media and radio partner respectively. The program was organized and coordinated by Mr. Mehzabul Hoque Nahid, Ms. Nazia Farhana and Mr. Jubayer Suhan with the support from the Office of Students Affairs (OSA).



ESAB AIUB organized Seminar on "Nanotechnology and Fourth Industrial Revolution"

On August 3, 2022 (Wednesday), ESAB AIUB Unit Face successfully organized a seminar titled "Nanotechnology and Fourth Industrial Revolution" which was held at the Multipurpose Hall (level-10), D Building, American International University-Bangladesh (AIUB). The tagline of the event was-"The next biggest thing is really small". The seminar started at 3:30 PM with the presence of 95 teachers and students.

The seminar was inaugurated with an opening remark by Prof. Dr. ABM Siddique Hossain, (Professor and Dean, Faculty of Engineering, AIUB). The seminar was presented by Dr. Mohammad Mahbub Rabbani, (Associate Professor, Department of Chemistry & Deputy Director, Center for Nanotechnology Research (CNR), Dr. Anwarul Abedin Institute of Innovation, AIUB). In his presentation, he briefly explored nanotechnology and its influence on the industrial revolution. He also talked about the challenges of the Fourth Industrial Revolution and how we should prepare to tackle this greatest challenge. Dr. Rabbani also highlighted the social, political, and economic implications of nanotechnology and 4IR. Several domains of nanotechnology and its applications were briefly presented in his speech. Afterwards, a short interactive discussion session was held where the speaker answered the queries of the participants. Following that, Prof. Dr. ABM Siddique Hossain, (Professor and Dean, Faculty of Engineering, AIUB) thanked the speaker and presented a token of appreciation to the speaker.

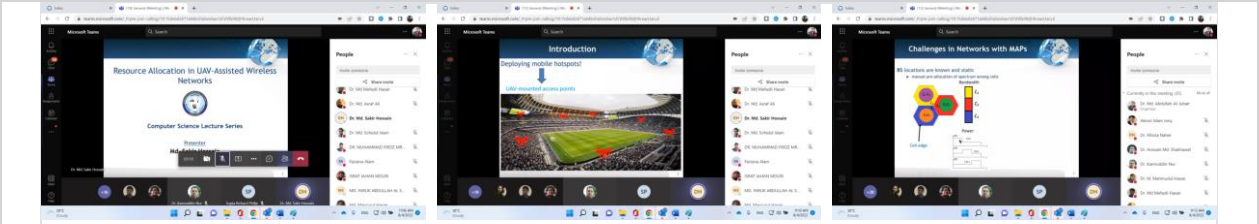

EEE Students won Soccer Bot Championship in AUST Rover Challenge 2022

MD MOMINUL ISLAM, KANIZ MOHOSINA TABASSUM, RAMEEN MEHRAAN, MEJBAHUL ISLAM JIM representing the Team Bumblebee from the Department of Electrical and Electronics Engineering (EEE), American International University-Bangladesh (AIUB) became the champion in the Soccer Bot segment of the Ahsanullah University of Science and Technology (AUST) Rover Challenge 2022. The event was organized by AUST Robotic Club on 4 August 2022. This event provided a platform for innovators across the country with 4 designated segments - Rover Challenge, Robot Hardware Challenge, Line Following Robot, and Soccer Bot. The efforts of the EEE students of Team Bumblebee were acknowledged with certificates, crests, and prize money.


Lecture on “Resource Allocation in UAV Assisted Wireless Networks”

On Aug 4, 2022, the Department of Computer Science, AIUB organized the 10th Session of the Computing Lecture Series. The session was conducted through online platform MS Teams at 11 AM. The aim of the Computing Lecture series is to share and discuss research works of faculty members of computer science within the department to stay up to date with the current research trends. In addition, this type of event assists early-stage researchers and young faculty members of the department particularly, so that they can engage themselves with the experienced researchers of the department to better organize and structure their research activities. In this 10th session, the research talk was presented by Dr. Md. Sakir Hossain (Associate Professor, Dept. of Computer Science). Dr. Md. Sakir Hossain has very good knowledge and experience on research works, especially in the field of computer networking. As an experienced researcher, he presented his research talk on “Resource Allocation in UAV Assisted Wireless Networks”.

There was a lively discussion session after the presentation where faculty members actively participated with their thoughts and views on the presented topic, particularly in the direction of self-supervised Writer Recognition System from Unlabeled Data. The event was graced by the presence of Mr. Mashiour Rahman (Sr. Associate Professor and Associate Dean, FST) and Prof. Dr. Dip Nandi (Director, FST). On behalf of Computer Science Department, the session was moderated by Dr. Md. Abdullah - Al - Jubair (Head In-Charge, Undergraduate, Department of Computer Science).



EEE Students wins Best Poster Award in the IEEE Region 10 Symposium (TENSYMP-2022)

Mr. Imtiaz Ahmed Prince, Mr. Md. Asif Adnan, Mr. Rafiul Islam Rifat, and Mr. Mohammed Samiul Islam, students of the Department of Electrical and Electronics Engineering (EEE), Faculty of Engineering, American International University-Bangladesh (AIUB) were awarded with the Best Poster Award in the IEEE Region 10 Symposium (TENSYMP). The IEEE Region 10 Symposium (TENSYMP) is one of the official annual conferences owned and organized by the IEEE REGION 10 (Asia Pacific). The 2022 IEEE Region 10 Symposium (TENSYMP 2022) was held in Indian Institute of Technology Bombay (IIT Bombay), India from July 1 to 3, 2022. The poster presented by Imtiaz Ahmed Prince, Md. Asif Adnan, Rafiul Islam Rifat, and Mohammed Samiul Islam on "IOT-based Monitoring Framework for a Novel Hydroponic Farm" was judged as the best poster in the Technical Poster Presentation (virtual) category. Their research work was supervised by Mr. S.M. Imrat Rahman (Assistant Professor, Department of EEE, Faculty of Engineering, AIUB). This prestigious award was presented in the form of prize money and achievement certificates.

EEE Students of AIUB are the Champion of Robo Wrestling at Robotronics 2.0

Mr. Md. Mominul Islam and Ms. Kaniz Mohosina Tabassum, students of the Department of Electrical and Electronics Engineering (EEE), Faculty of Engineering, American International University-Bangladesh (AIUB) won the Robo Wrestling Championship of Robotronics 2.0. The event was organized by the Department of Mechatronics Engineering, Rajshahi University of Engineering & Technology (RUET) from 29 to 30 June 2022. Various Robot related exciting events were arranged in this second edition of Robotronics, such as, Robo Wrestling, Mud Rover, Speed Battle, Poster Presentation, Project Showcasing, and many others. Teams from different universities of Bangladesh participated in the event to showcase their talent. Students from EEE, AIUB battled their way to the top with their robot and secured the championship title in the Robo Wrestling category. They were awarded with crests, prize money and certificates.

Seminar on “Career in End2End Quantum Computing”

The Faculty of Engineering, AIUB organized a seminar titled "Career in End2End Quantum Computing” on Sunday, July 4, 2022. The program started at 3:00 PM with 52 pre-registered participants at the Multipurpose Hall, Building D, AIUB. The purpose of the seminar was to prepare students to learn and adopt quantum computing abilities in their careers. The AIUB Community of Engineering Students (ACES) provided their active support in organizing the seminar.

In his inaugural speech, Professor Dr. Md. Abdur Rahman, Associate Dean, Faculty of Engineering, AIUB emphasized the benefits of attending such seminars for students and preparing themselves for the quantum computing industry. The keynote speaker Mr. Mujtaba Sattar Anonto (IBM certified Associate Developer, Quantum computation Using Qiskit V 0.2x, Founder & Convener, Bangladesh Quantum Computing Career Club) demonstrated how to perform experiments or research on quantum computer simply using the IBM quantum computing website. He provided a roadmap for the student on how to secure paid internship at IBM by achieving the course certification. After his presentation, a short question and answer session was held where the speaker answered the queries raised by the participants. Professor Dr. Engr. Muhibul Haque Bhuyan thanked the honourable speaker and encouraged students to explore more in the field of Quantum Computing. He also motivated students to take the opportunity to be IBM certified quantum computing professionals and adopt quantum computing skills in shaping their careers. The hour-long seminar ended at 4 pm leaving the participants intrigued about the presented topic. Mr. Md. Saniat Rahman Zishan (Associate Professor, Department Head, COE, Faculty of Engineering, AIUB), Mr. Mehedi Hasan (Assistant Professor, Faculty of Engineering, AIUB), Mr. Abir Ahmed (Assistant Professor, Special Assistant, Motivator, ACES, Faculty of Engineering, AIUB) and other faculty members were also present in the seminar.

AIUB holds a Seminar on "Cloud Technology and the Future Beyond" as a part of Dr. Anwarul Abedin's Lecture Series

Faculty of Business Administration (FBA), American International University-Bangladesh (AIUB), organized a seminar on Dr. Anwarul Abedin's Lecture Series titled "Cloud Technology and the Future Beyond" on July 3, 2022.

The program started with the inauguration speech by Dr. Dip Nandi, Professor, and Director, Faculty of Science and Technology, where he addressed the significance of cloud technology. Dr. Farheen Hassan, Director of the undergraduate program of FBA, paid tribute to the late Dr. Anwarul Abedin, Founder Chairman of AIUB. She also introduced the keynote speaker, Ms. Rubaba Dowla, Country Managing Director, Oracle Bangladesh, Nepal, and Bhutan. Ms. Rubaba Dowla is an experienced leader in the corporate sector with a successful track record of brand management, product innovations, service delivery, and corporate communication. She has been instrumental in building Grameenphone as the number one brand and market leader with more than USD 1 billion in revenue in the mobile telecommunication sector.

The session highlighted top strategic technology trends for 2022. The speaker introduced Oracle and its operations in Bangladesh. Ms. Rubaba Dowla highlighted Oracle cloud applications and infrastructure in detail. She suggested participants not to think from a technological perspective but to think from the customers' point of view and to focus on innovation in every aspect.

On behalf of AIUB, Dr. Tazul Islam, Dean-in-charge, Faculty of Business Administration, and Dean, Faculty of Arts and Social Sciences, handed over a certificate of appreciation and a crest to the distinguished speaker. Dr. Khandaker Tabin Hasan, Professor, and Head, Graduate Program, CS & Dept. of MIS, delivered the Vote of Thanks. Associate Deans, Directors, Heads, and faculty members of different departments, key officials, and students of different programs also attended and enjoyed the event.


Faculty of Engineering Organized an Industrial Tour to Rampura 230/132KV Substation

On 18th May,2022, Faculty of Engineering Organized an Industrial Tour to the Rampura 230/ 132 KV Substation, located in Jahurul Islam Project, Aftab Nagar, Dhaka, Rampura, Dhaka. A group of 50 enthusiastic students of AIUB along with 4 faculty members- Mr. Mohammad Khurshed Alam (Assistant Professor, Faculty of Engineering, AIUB), Ms. Susmita Ghosh (Assistant Professor, Faculty of Engineering, AIUB), Mr. S. M. Imrat Rahman (Assistant Professor, Faculty of Engineering, AIUB) and Mr. Mehedi Azad Shawon (Assistant Professor, Faculty of Engineering, AIUB) visited the substation in two groups.

The students were taken to the 132 KV and 230 KV substation. The students were guided by the senior engineers of the PGCB. The engineers provided the students first-hand knowledge of the transmission, distribution, protection, and switchgear systems used in the production of electric power. The students were brought to the control room, where a number of PLCs were being used to monitor the entire system of stepping-down the 230KV to 132KV. Afterwards, the senior engineers of PGCB answered various questions asked by the students. The students expressed their heartfelt gratitude towards the authority of the Power Grid Company of Bangladesh (PGCB) for their tremendous support and cooperation. The tour ended with a group photo with all the authorities and engineers, respected faculties and the participants. It was a great learning experience and successful tour for the engineering students.

Success of AIUB in IUPC 2022

AIUB made its way into securing the 5th position among all the universities of Bangladesh and 1st among the private universities in the RUET CSE Fest IUPC 2022. It was an inter university programming contest hosted by RUET, held on 4th of June 2022. 97 teams of more than 50 different universities of Bangladesh have taken part in the prestigious event. A trio of students named AIUB_Perplexed from the Department of Computer Science have shown remarkable performance of creativity, logical-thinking, and their capacity to perform under pressure. In addition, two more teams have participated from AIUB and secured 36th position (AIUB_Phantom_Troupe) and 43rd position (AIUB_Envisage). These young teams have shown great potential and promising performance throughout the competition. AIUB certainly stood as one of the highly esteemed programming competitors as it has achieved the 5th position in Synapse University ranking (Synapse university ranking is a rank list prepared considering the performance of all the universities in all the IUPCs including National Collegiate Programming Contest (NCPC) and International Collegiate Programming Contest (ICPC) held since 2015.).

Team members of AIUB Perplexed are:
1. Abdullah Al Mujahid (MsCS: 22-92340-1)
2. Sadi Md. Aziz Khan (BSc CSE: 16-31111-1)
3. Samiul Islam (BSc CSE: 17-35656-3)

Coach - Mashiour Rahman, Associate Dean and Associate Professor, Faculty of Science and Technology, AIUB
Mentor - Md. Kishor Morol, Lecturer, Department of Computer Science, AIUB

The table below shows the list of top ten Synapse University ranking:

#	Rank	University	Rating
1	1 (+0)	Bangladesh University of Engineering and Technology	3852 (+72)
2	2 (+0)	University of Dhaka	3745 (-20)
3	3 (+0)	Shahjalal University of Science and Technology	3432 (-2)
4	4 (+0)	Jahangirnagar University	2952 (-51)
5	5 (+2)	American International University Bangladesh	2868 (+64)
6	6 (+2)	Rajshahi University of Engineering and Technology	2862 (+144)
7	7 (-1)	Islamic University of Technology	2840 (-49)
8	8 (-3)	North South University	2747 (-167)
9	9 (+0)	Khulna University of Engineering and Technology	2729 (+65)
10	10 (+1)	Chittagong University of Engineering and Technology	2416 (+60)

Synapse university ranking can be found at: https://synapse0.com/

The Department of Computer Science, AIUB have experienced significant growth over the last few years as the Competitive Programming teams have shown stupendous performance in some of the recent national contests, repeatedly holding on the 1st position among the private universities. The Department emphasizes on conducting Competitive Programming classes for students with good programming skills and arranges intra-department programming contests to encourage students towards programming.

The details of the contests along with the rank list URL and more details can be found: https://docs.google.com/spreadsheets/d/1sR8OGV2IRDXhyzkwn9CB-wh-Im6TLzmQ7x92U4Rsm8w/edit?usp=sharing

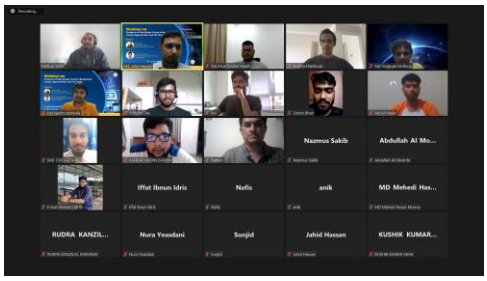
CVES, AIUB ORGANISED A WEBINAR ON "PROSPECTS OF CHIP DESIGN CAREER IN BANGLADESH: TRENDS, OPPORTUNITIES, AND THE FUTURE"

Center for VLSI and Embedded Systems (CVES), AIUB hosted their inaugural webinar on "Prospects of Chip Design Career in Bangladesh: Trends, Opportunities, and the Future" on June 19, 2022, Saturday. The webinar began at 7.00 PM with the participation of about 60 participants. CVES invited two experienced professionals in the chip design industry Mr. Mithun Saha, Senior Engineer, ARM, Greater Bristol Area, United Kingdom, and Mr. Md. Anait Ullah Akash, Senior Physical Design Engineer, Penang, Malaysia. The program was moderated by Dr. Md. Jahid Hasan, Assistant Professor, Department of EEE, AIUB.

Prof. Dr. Abdur Rahman, Associate Dean, Faculty of Engineering, AIUB, commenced the webinar with a warm welcome to the distinguished speakers, participants, and attendees. He expressed that with the collaboration of industrial partners and professionals, AIUB will contribute to the growth of the VLSI industry and assist Bangladesh in attaining its 2041 vision.

Next, Mr. Mithun Saha began his talk titled "Semiconductor Industry (FPGA/ASIC Enthusiast)" by relating his own journey to Arm. Then, he went on the skills and expertise required for entry into the VLSI industry, why semiconductor is important, and challenges and opportunities for the semiconductor industry. He concluded his presentation by discussing FPGA and ASIC design flow, semiconductor development, and production schedules. Later, Mr. Md. Anait Ullah Akash delivered his speech on "Place and Route Flow", which began with a description of the Automatic place and route and where it fits in the ASIC flow. Then, he detailed each step of the place and route, e.g., logic synthesis, floorpanning, placement, clock tree synthesis, signal routing, and timing closure. Finally, he outlined the course requirements and skills needed to pursue a physical design engineer career.

The webinar's last session included a roundtable discussion in which experts shared their perspectives on various aspects of the semiconductor industry and answered questions from participants. This session was graced by the participation of different industrial experts include Mr. Md. Nazimuddowla (Lead Design Engineer, Synapse, Bangladesh), Mr. Usama Mahboob (Senor Engineer, Arm, UK), Mr. Md. Sadman Ferdous (Design and Verification Engineer, DSI Ltd, Bangladesh), Mr. Avi Debnath (Custom Analog Design, GlobalFoundries, Germany), Mr. Md. Kamrul Hassan (Analog Layout Design, Ulkasemi), Mr. Sudipta Das (PhD Researchers, Imec, Belgium), and Mr. Akib Zaidi (Digital Functional Verification-MSc Thesis, Infenion, Germany). At the end of the webinar, Mr. Chowdhury Akram Hossain, Deputy Director, CVES and Associate Professor, AIUB, thanked everyone with his inspiring closing remarks and honored the presenters with tokens of appreciation.



Teams From AIUB Became Champion and Runner Up in Two Segments of MindSpark 22

Team "AIUB FURIOUS'' from Department of EEE, AIUB became the champion of the segments Robo Soccer and Robo Race of MindSpark 22. Another team from Department of EEE, AIUB named as "FURIOUS 2.0" became the Runner-up of the segments Robo soccer and Robo Race. The event was organized by the "Ahsanullah University of Science and Technology Innovation and Design Club (AUST IDC)" on 18th and 19th of June 2022. 63 Teams from different universities and colleges participated in RoboSoccer and 34 Teams participated in Robo Race to showcase their talent. The members of the team "AIUB FURIOUS" for the segment RoboSoccer &RoboRace are : MD MOMINUL ISLAM (Student, Dept. of EEE, AIUB) & KANIZ MOHOSINA TABASSUM (Student, Dept. of EEE, AIUB) and the members of team "FURIOUS 2.0" for the segment Robo Soccer & Robo Race are: RAMEEN MEHRAAN (Student, Dept. of EEE, AIUB), DIP GHOSH (Student, Dept. of EEE, AIUB), TANAY BANIK (Student, Dept. of EEE, AIUB) & MD ISMAIL HOSSAIN (Student, Dept. of EEE, AIUB). The efforts of the students were acknowledged with certificates, crests, and prize money.



Faculty of Engineering Organized an Industrial Tour to Bangladesh Machine Tools Factory (BMTF)

On 9th June 2022, Faculty of Engineering organized an industrial tour at Bangladesh Machine Tools Factory (BMTF) which is located at Joydebpur Gazipur District, Dhaka. Bangladesh Machine Tools Factory Limited (BMTF) is one of the largest state-owned commercial entity of its kind in Bangladesh. It is the leading conglomerate in the industrial hierarchy of the country run by Bangladesh Army. A group of 50 students with 5 faculty members of AIUB visited the industry. The team departed from AIUB permanent campus at 07:15 am and reached Bangladesh Machine Tools Factory at 09:00 am. Lt General Md Saiful Alam (Quarter Master General & Vice Chairman of BMTF Ltd) wholeheartedly greeted everyone with a short speech and a brief presentation on the mission and vision of Bangladesh Machine Tools Factory. After that, the students were taken to Vehicle Assembly Shop, Pole Factory, Steel Structure Manufacturing Shop, Footwear & Leather Factory, Furniture Factory, Electronic Assembly Shop, Galvanizing Plant by maintaining the safety precautions. Firstly, he explained the chain of production of all the factories. Next, he mentioned that every year the factory is adding huge amount of revenue to the national economy that plays a significant role in the overall development of the country. Afterwards, he answered various questions asked by the students. Dr. Ramit Azad (Professor, Faculty of Business Administration, AIUB), Dr. Md. Ehasanul Haque (Senior Assistant Professor, Faculty of Engineering, AIUB), Susmita Ghosh (Assistant Professor, Faculty of Engineering, AIUB) and Dr. Md. Mahadi Hasan (Assistant Professor, Faculty of Engineering, AIUB) also participated in this tour. The faculty members and students of AIUB expressed their heartfelt gratitude towards the authority of the Bangladesh Machine Tools Factory for their tremendous support and cooperation. The tour ended with a group photo with all the authorities, engineers, faculties, and the participants. It was a great learning experience and successful tour for the engineering students.



Dr. Anwarul Abedin Lecture Series “Point-of-Care and On-Site Diagnostics”

As a part of the "Dr. Anwarul Abedin Lecture Series", a regular development initiative of the American International University-Bangladesh (AIUB), a research talk titled "Point-of-Care and On-Site Diagnostics" was held at Multipurpose Hall, AIUB from 05:00 PM- 07:00 PM (BDT) on May 11, 2022. The Center for Nanotechnology Research (CNR), AIUB organized this event and invited prominent researcher Dr. Muhammad J. A. Shiddiky (Associate Professor, Griffith University, Queensland, Australia) as distinguished speaker and Dr. Md. Tofazzal Islam (Professor, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur) as session chair.

Dr. Muhammad J.A. Shiddiky began his speech describing how several biomarkers and biosensors function to detect tumours and infectious cells in the human body. Biosensors can readily identify illness at an early stage, and point-of-care and on-site diagnostic instruments are being developed throughout the world to do so. He went on to say that, like humans, early identification of diseases is critical for plants and also discussed several on-site diagnostic techniques for detecting plant diseases in the field. As session Chair, Dr. Md. Tofazzal Islam (Professor, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur) examined the issue given by Dr. Muhammad J.A. Shiddiky. Professor Tofazzal discussed prevalent plant infections, detection methodologies, and instruments, as well as Bangladeshi researchers' potential to contribute to agricultural development and crop output. He concluded by stating that abundant research money and patronising researchers may accelerate innovation.

Following that, Prof. Dr. A.B.M. Siddique Hossain (Professor & Dean, Faculty of Engineering, AIUB) admired the honourable speaker for his outstanding lecture on frontier technologies and appreciated the participants. He along with Dr. Md. Abdur Rahman (Professor & Associate Dean, Faculty of Engineering, AIUB) presented the token of appreciation to the honourable speaker. Dr. Mohammad Mahbub Rabbani (Associate Professor, Department of Chemistry, and In-Charge of CNR) moderated the lecture series.

The seminar was graced by the presence Dr. S. Mosaddeq Ahmed (Professor & Head, Department of Chemistry, AIUB), Dr. Humayra Ferdous (Associate Professor & Head-in-Charge, Department of Physics, AIUB), Dr. Md. Kamrul Hassan (Associate Professor, Faculty of Engineering, AIUB), Dr. Farzana Khalil (Assistant Professor, Department of Chemistry, AIUB), Dr. Md. Tariqul Islam (Senior Assistant Professor, Department of Chemistry, AIUB), Mr. Md. Saniat Rahman Zishan (Associate Professor & Head, Department of Computer Engineering, AIUB), Dr. Effat Jahan (Assistant Professor, Faculty of Engineering, AIUB), Dr. Md. Rifat Hazari (Assistant Professor, Faculty of Engineering, AIUB), Mr. Kawshik Shikder (Assistant Professor, Faculty of Engineering, AIUB), Mr. Abul Hasnat (Assistant Professor, Faculty of Engineering, AIUB), Mr. Md. Rabiul Islam (Lecturer, Faculty of Engineering, AIUB). Students and faculty members from other universities were present among the participants.



AIUB students visit Walton Hi-Tech Industries at Gazipur

On 13 April 2022, students of the Faculty of Business Administration of the American International University-Bangladesh visited Walton Hi-Tech Industries in Gazipur. The factory is located at Chandra, Kaliakair Upazila in Gazipur District. The 29 students were led by senior lecturer Mahir Abrar. Mohammad Alamgir Alam Sarker, the Deputy Managing Director, and Md, Easir Al-Imra, head of administration, spoke to the students and briefed them about the activities of Walton. Md. Kaisarul Islam, Frist Senior Deputy Director showed the students around the Walton compound. The students saw the manufacturing of refrigerators, air conditioners, compressors and metal forges. Md Al- Mamun, former alumni and Senior Additional Director of HRM Department, joined the tour and spoke to the students.

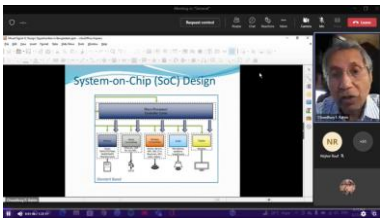
FACULTY OF ENGINEERING, AIUB ORGANISED A WEBINAR TITLED “PROSPECT OF MIXED SIGNAL IC DESIGN OPPORTUNITIES IN BANGLADESH”

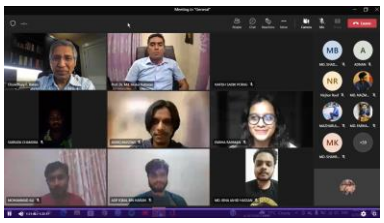
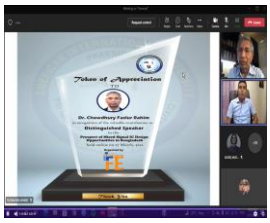
Faculty of Engineering, AIUB organised a webinar titled "Mixed Signal IC Design Opportunities in Bangladesh”, which was supported by AIUB Community of Engineering Students (ACES) on March 27, 2022 (Sunday). The program started at 09:00 PM with the participation of about 85 participants using the online platform Microsoft Teams. The purpose of this webinar was to prepare students for the anticipated opportunities and challenges in the IC design & development industries in the near future. Prof. Dr. A.B.M. Siddique Hossain (Professor, Dean, Faculty of Engineering, AIUB; Advisor, ACES) warmly welcomed Dr. Chowdhury Fazlur Rahim (President & CEO, Aromatix inc. USA, Part-time Faculty, UC Davis, USA) to begin his presentation.

Dr. Chowdhury Fazlur Rahim (President & CEO, Aromatix inc. USA, Part-time Faculty, UC Davis, USA) began his speech by acknowledging the revolutionary history of Mixed signal IC design. Firstly, he provided a brief introduction of mixed signal IC and used a flowchart to explain all of the stages of IC design of the Mixed signal based on system designer’s perspective. Furthermore, he emphasised signal conversion using system partitioning block diagram with proper illustration of the difference between analog and digital signal IC design. Later on, he discussed the aspects that may influence IC design decisions that include cost, power, and features. He also went through the process of offshore IC design and expressed his wish to see Bangladesh to be the next alternative in IC design manufacturing country. At the end of his speech, he motivated students to practise and analyse IC projects with strong dedication in order to establish their career in IC designing industries. Then a short Q&A session was held where the speaker answered the queries of the participants.

Following that, Dr. Md. Abdur Rahman (Professor, Associate Dean, Faculty of Engineering, AIUB) thanked honourable speaker and praised the commitment of the speaker towards Bangladeshi as well as AIUB students. He further informed the demand for IC designers as Bangladesh lacks in specialists on VLSI design. Finally, he advised students to focus on skill development more than just securing a job in order to meet the high demand in the job sector. He then presented the virtual token of appreciation to the honourable speaker.

The webinar was graced by the presence of Mr. Md. Saniat Rahman Zishan (Associate Prfessor and Head, Dept. of CoE, AIUB), Mr. Abir Ahmed (Assistant Professor, Faculty of Engineering, AIUB) and Mr.Nirjhor Tahmidur Rouf (Lecturer, Faculty of Engineering, AIUB).



WORKSHOP ON MODEL MAKING

A day-long workshop on architectural model making was organized by the Department of Architecture, AIUB on the 24th of March 2022, at the multi-purpose hall. Around 80 students from Studio III to VI participated in the workshop and a group of enthusiastic students from senior studios facilitated them as volunteers. The workshop was coordinated by the faculties of the department. Three-dimensional model is an essential tool used worldwide to show the quality of spaces in an architectural project. During the past two years of online classes, there was a deterioration in the overall model making skill of junior level students, who were enrolled during the Covid-period. So, the Department thought of conducting a workshop to assist students improve their model-making workmanship through hands-on demonstration. The workshop commenced with an opening speech from the Head of the Department, M. Arefeen Ibrahim. Following this, Assistant Professor Ar. Saiful Islam Tariq and senior Assistant Professor, Ar. Ashik Ikbal shared some model-making tips and strategies through power-point presentation and live demonstration. After that, organizers of the workshop Ar. Sariful Islam, Ar. Tabassum Zarin, Ar. Nazifa Zabeen, Ar. Rashed Hasan and Ar. Chowdhury Farah Zaki demonstrated the task assigned for workshop to students, with the help of drawings and power-point slides. Students, in a group of two, had to complete a sectional model of the "Azuma House" – an interesting piece of architecture that is situated in the dense urban setup of Osaka. Designed by eminent Japanese architect, Tadao Ando – the solid concrete exterior walls of this residence act as an envelope to ensure privacy of the residents but magical spaces are created inside these walls by integrating stair, courtyard and natural light. A sectional model of this house is a perfect example of how useful architectural models are to appreciate the quality and scale of spaces in a building. The colour scheme and required materials for the models were instructed before the workshop. Students brought their own tools and materials, and drawings were provided by the organizers. Each of the volunteers were assigned four to five groups for supervision. Faculties also went to each group's workspaces multiple times, to provide hands-on guidance on model-making. The Dean of Faculty of Engineering, Dr. A B M Siddique Hossain, encouraged the students with his presence and valuable speech. In the afternoon, honourable Vice Chancellor of AIUB, Dr. Carmen Z. Lamagna visited the workshop and appreciated this initiative in her speech. She also handed over some of the certificates to the participants. At the end of the workshop, the complete models were exhibited on the stage and the rest of the certificates were distributed to the participants by Head of the Department, M. Arefeen Ibrahim. Spontaneous participation of students and faculties, and cordial support from the University Administration made this workshop a vibrant and successful one, which was much required after the long-break in physical classes due to the pandemic.



Faculty of Engineering Organised an Industrial Tour to Jolshiri Abashon Substation Project

On 2nd April 2022, Faculty of Engineering organised an industrial tour at Jolshiri Abashon Substation project which is located at Rupganj Upazila, Narayanganj District, Dhaka. In 2010, Army Housing Scheme had purchased 1400 bigha for the Jolshiri residential project. Jolshiri Abashon is a Smart City in Bangladesh that is currently under construction. It is located to the east of Dhaka in a unique biological environment encircled by a water network, creating a rare urban paradise. Maj Gen Md Abu Sayed Siddique,SUP,SPP,afwc,psc,PhD (Chairman), Brigadier General Ohidul Alam Chowdhury,PPM,SPP,ndc,psc-(Managing Director), Lieutenant Colonel Mohammad Ariful Haque, PBGM(BAR) BIR (Project Director) and Lieutenant Colonel Md Rasel Kabir, PSC, Engr. (Director Development) of Jolshiri Abashon) has made a significant contribution to the construction of Jolshiri Abashon. A group of 99 students with 4 faculty members of AIUB visited the substation. The team was led by Dr Hasan Imam (Associate Professor, Faculty of Engineering, AIUB). The team departed from AIUB permanent campus at 07:00 AM. and reached Jolshiri Abashon at 07:45 AM.

Major Kazi Saifuddin Ahmed, Engr. (General Manager, Jolshiri Abashon), wholeheartedly greeted everyone with a short speech and a brief presentation on the design and construction of Jolshiri Abashon. After that, the students were taken to the distribution substation. The students were guided by Mr. Shantuno Roy (Deputy General Manager, Rural Electrification Board, Bangladesh). Firstly, he explained the national power policy for distributing from Power Development Board to Rural Electrification Board. Next, he explained the step-down power distribution process and illustrated the mechanism of the Current Transformers and Potential Transformers. Later on, he discussed the working principle of circuit breakers and Relay. Furthermore, he highlighted the colour code and wiring system of the three-phase distribution board and went on to explain the wire connection, coding and controlling system of the stationary central and power protection breaker board. All the parts of transformer were identified, and the mechanism was explained. Next, the students were taken to the controlling room of the substation. The 11 KV and 33 KV control panels were properly explained by Mr. Shantuno Roy (Deputy General Manager,Rural Electrification Board, Bangladesh). Afterwards, he answered various questions asked by the students.

Mr. Shuvra Saha (Assistant Professor, Faculty of Engineering, AIUB), Mr. S. M. Imrat Rahman (Assistant Professor, Faculty of Engineering, AIUB), Engr. Sanjay Kumar Sarker (Maintenance Engineer, Physical Plant and Infrastructure (Electrical) Division, AIUB), also participated in this tour. The faculty members and students of AIUB expressed their heartfelt gratitude towards the authority of the Jolshiri Abashon for their tremendous support and cooperation. The tour ended with a group photo with all the authorities, engineers, faculties, and the participants. It was a great learning experience and successful tour for the engineering students.



Faculty Research and Publication

Investigation of Machine Learning Algorithms for Network Intrusion Detection

Author: PROF. DR. DIP NANDI et al.

Brief Description:

Network intrusion is an increasing major concern as we are rapidly advancing in technology. To detect network intrusion, Intrusion Detection Systems are required. Among the wide range of intrusion detection technologies, machine learning methods are the most appropriate. In this paper we investigated different machine learning techniques using NSL-KDD dataset, with steps of building a model. We used Decision Tree, Support Vector Machine, Random Forest, Naïve Bayes, Neural network, adaBoost machine leaning algorithms. At step one, one-hot-encoding is applied to convert categorical to numeric features. At step two, different feature scaling techniques, including normalization and standardization, are applied on these six selected machine learning algorithms with the encoded dataset. Further in this step, for each of the six machine learning algorithms, the better scaling technique application outcome is selected for the comparison in the next step. We considered six pairs of better scaling technique with each machine learning algorithm. Among these six scaling-machine learning pairs, one pair (Naïve Bayes) is dropped for having inferior performance. Hence, the outcome of this step is five scaling-machine learning pairs. At step three, different feature reduction techniques, including low variance filter, high correlation filter, Random Forest, Incremental PCA, are applied to the five scaling-machine learning pairs from step two. Further in this step, for each of the five scaling-machine learning pairs, the better feature reduction technique application outcome is selected for the comparison in the next step. The outcome of this step is five feature reduced scaling-machine learning pairs. At step four, different sampling techniques, including SMOTE, Borderline-SMOTE, ADASYN are applied to the five feature reduced scaling-machine learning pairs. The outcome of this step is five over sampled, feature reduced scaling-machine learning pairs. This outcome is then finally compared to find the best pairs to be used for intrusion detection system.

Source: https://www.mecs-press.org/ijieeb/ijieeb-v14-n2/IJIEEB-V14-N2-1.pdf

Applying Scrum Development on Safety Critical Systems

Author: PROF. DR. DIP NANDI et al.

Brief Description:

Scaled agile approaches are increasingly being used by automotive businesses to cope with the complexity of their organizations and products. The development of automotive systems necessitates the use of safe procedures. SafeScrum® is a real example of how agile approaches may be used in the creation of high-reliability systems on a small scale. A framework like SAFe or LeSS does not facilitate the creation of safety-critical systems in large-scale contexts from the

start. User stories are a wonderful approach to convey flexible demands, the lifecycle is iterative, and testing is the initial stage in the development process. Scrum plus extra XP approaches may be used to build high reliability software and certification by the IEC 61508 standard is required for the software. This adds a slew of new needs to the workflow. Scrum's quality assurance measures proved to be inadequate in a recent industry situation. Our study's overarching goal is to provide light on the Scrum development process so that it may be improved for use with life-or-death systems. Our study of the business world was a mixed-methods affair. The findings demonstrated that although Scrum is helpful in ensuring the security of each release, it is less nimble in other respects. The difficulties of prioritization, communication, time constraints, and preparing for and accepting new safety standards were all discussed. In addition, we have had some helpful feedback from the business world, but the generality issue arising from this particular setting has yet to be addressed.

Source: https://www.mecs-press.org/ijitcs/ijitcs-v14-n5/IJITCS-V14-N5-4.pdf

A Comparison of Opinion Mining Algorithms by Using Product Review Data

Author: PROF. DR. DIP NANDI et al.

Brief Description:

After release of Web 2.0 in 2004 user spawned contents on the internet eminently in abundant review sites, online forums, online blogs, and many other sites. Entire user generated contents are considerable bunches of unorganized text written in different languages that encompass user emotions about one or more entities. Mainly predictive analysis exerts the existing data to forecast future outcomes. Currently, a massive amount of researches are being engrossed in the area of opinion mining, also called sentiment analysis, opinion extraction, review analysis, subjective analysis, emotion analysis, and mood extraction. It can be an utmost choice whilst perceiving the meaning and patterns in prevailing data. Most of the time, there are various algorithms available to work with polling. There are contradictory opinions among researchers regarding the effectiveness of algorithms. We have compared different opinion mining algorithms and presented the findings in this paper.

Source: https://www.mecs-press.org/ijieeb/ijieeb-v14-n4/IJIEEB-V14-N4-4.pdf

Dual Layer Encryption for IoT based Vehicle Systems over 5G Communication

Author: PROF. DR. DIP NANDI et al.

Brief Description:

In modern communication scenario of the 5G era, the service quality is the greatest concern for the users. Also, the concept of security can’t be neglected in this case. In the IoT oriented services

like vehicle and VANET systems, the security in the presentation layer of the network is required. This work is over the security mechanism of the service storage and fetching the files for service. A new scheme of multi layered file and content encryption has been produced in order to strengthen the security of the file and data to maintain integrity and confidentiality of the IoT enabled services implemented in 5G. The encryption scheme is designed for the password encryption through asymmetric key cryptography (RSA) along with an enhanced concern of internal content or data security with symmetric key (AES-128) cryptography. This encryption system of double layer for a file makes the study unique and differentiable than other security schemes.

Source: https://www.mecs-press.org/ijitcs/ijitcs-v14-n2/IJITCS-V14-N2-2.pdf

Uncertainty Awareness in Transmission Line Fault Analysis: A Deep Learning Based Approach

Author: DR. MOHAMMAD ABDUL MANNAN et al.

Brief Description:

With the expansion of the modern power system, it is of increasing significance to analyze the faults in the transmission lines. As the transmission line is the most exposed element of a power system, it is prone to different types of environmental as well as measurement uncertainties. This uncertainties influence the sampled signals and negatively affects the fault detection and classification performance. Therefore, an unsupervised deep learning framework named deep belief network is presented in this paper for fault detection and classification of power transmission lines. The proposed framework learns the beneficial feature information from the uncertainty affected signals with a unique two stage learning strategy. This strategy enables the proposed framework to extract lower level fault-oriented information which may remain unobserved for other alternative approaches. The efficacy of the proposed framework has been examined on the IEEE-39 bus benchmark topology. The in-depth accuracy assessment with different accuracy metrics along with exclusive case studies such as the influence of noise, measurement error as well as line and source parameter variations will be conducted in this paper to justify the real-world applicability of the proposed framework. Furthermore, the relative performance assessment with the cutting-edge rival techniques is also presented in this paper to verify if the proposed framework attains a state-of-the-art classification performance or not.

Source: https://www.sciencedirect.com/science/article/abs/pii/S1568494622005592

Design and Analysis of a Virtual Synchronous Generator Control Scheme to Augment FRT Capability of PMSG-Based Wind Turbine

Author: DR. MOHAMMAD ABDUL MANNAN et al.

Brief Description:

Massive integration of inverter dominated renewable energy systems (RESs), i.e., wind turbines (WTs), reduces the reliance on conventional alternator-based power stations. The system inertia and damping aspects of the power system were significantly decreased by this extensive integration of inverter-based WT system, which impacts on the fault ride-through (FRT) competence and thus precipitates the frequency instability. Modern grid code instructed to operate the WT system similar like conventional power plants. However, most of the conventional inverter controller failed to fulfil the requirement. To compensate for the issues, an advanced control method of a VSG for variable speed wind turbines with a permanent magnet synchronous generator (VSWT-PMSG) is proposed by this work. The proposed control scheme mimics the behavior of a conventional alternator and includes an active-power frequency control scheme with a governor model accompanied by an automatic voltage regulator (AVR) model, along with a current feedback loop system which enhance the system inertia and consider damping aspects of the system during serious fault conditions, i.e., three line to ground (3LG) fault. The suggested VSG-based inverter controller's functionality has been verified using the simulation model.

Source: https://www.astesj.com/v07/i06/p26/

Comparative Study of Single and Double Barrier GaAs Based Resonant Tunneling Diodes Considering NEGF

Author: DR. MD. KAMRUL HASSAN et al.

Brief Description:

Growth of pepped up determining demand of final consumers always forces devices and circuits to increase power and speed., only resonant tunneling diode can solve this problem and can be able to take a vital role in many nanoscale applications. This research paper demonstrates the simulations of the Resonant Tunneling Diode (RTD) by using Hartree Model for the single barrier (1B) and the double barrier (2B) Resonant Tunneling Diodes by the using of NEMO5 considering NEGF. In addition, switching applications also require Large Peak to Valley Voltage Ratio (PVVR) to reduce energy loss. In this article, it is been clearly explained that compared to the Thomas Fermi Model, Hartree Model improves the Peak to Voltage Valley Ratio (PVVR) by 21.21%. The results that are found with the Double Barrier RTD showed much better performance than the Single Barrier RTD. Furthermore, the I-V characteristic verified the notable improvement for Hartree model.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/507

Non-Invasive Heat-Induced Numerous Tissue Ablation Simulation in a Medical Environment Using Different Focal Length High Intensity Focused Ultrasound Apparatus

Author: DR. MOHAMMAD NASIR UDDIN et al.

Brief Description:

In the field of biomedical, HIFU is a non-invasive therapeutic method that employs non-ionizing acoustic waves to increase the temperature. According to its high efficiency and cheap cost, it has been the main focus of this research. The key stages of this tumor ablation include mechanical and thermal effects. Simulations on tissue ablation with HIFU were implemented in this research to investigate how multiple tissue ablation works and how to enhance tumor ablation while avoiding injury to surrounding healthy tissue by altering the optimal intensity, power, focal length and lens radius of curvature. In order to find the optimal features of the proposed model, this analysis employs clinical applications. Numerous soft and hard tissues from the human body were chosen for this analysis. At a specified acoustic power and exposure period, each tissues optimal frequency (1.6 MHz to 3.5 MHz) and power (120 W to 140 W) were obtained for effective tissue ablation. This research performed all computations by changing the focal length from 55 mm to 65 mm. The outcomes of this therapy might require several weeks to comfortably remove tumor. This optimum result indicates that HIFU tumor ablation procedure has a high probability of success.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/378

Design of high capacity 5.76 Tbits/s SDM-PDM-Nyquist superchannel WDM hybrid multiplexing in 3.1% Germania doped MMF

Author: DR. MOHAMMAD NASIR UDDIN et al.

Brief Description:

To dispatch the goal about walking towards the 4th Industrial Revolution, one of the main key materials that require alterations and enhancements is data communication and transmission. To keep up with the augmented rise in demand for data, fiber-optics communication and networks commence a significant role in the transfer of data at high speeds. This article exemplifies the expediency analysis of 5.76 Tbits/s SDM-PDM-Nyquist superchannel WDM hybrid multiplexing technique over a multimodal transmission link up to 10 km using C-band carrier frequencies. This system is designed to carry 48 channels of data that can be produced using 8 C-band carrier frequencies, 2 polarization states, and 3 LP modes through 3.1% Germania doped over pure silica step-index multimode fiber. The system exhibits a satisfactory performance (log BER -9.35, faithful Q-factor 6.09, extinction ratios 7.78, minimum OSNR 46.5 dB) up to a distance of 10 km. Each channel receives a satisfactory amount of power after the dual-stage amplification process in the transmission medium with an ultra-high spectral efficiency of 137% and a high bandwidth-distance product of 385 MHz.km

Source: https://ajse.aiub.edu/index.php/ajse/article/view/373

Risk Identification and Analysis in Software Development in Bangladesh IT Industry: A Hybrid Model

Author: ABHIJIT BHOWMIK et al.

Brief Description:

Software risk management is a critical and multi-stage process. All over the world, IT Industries face some threats during software risk management processes. Bangladesh is not exceptional. Our principal goal is to manage risk for Bangladesh's IT Industry. To gain a clear and transparent idea survey is the most effective way. And so, we arranged a survey questionnaire and collected data for risk impact areas on Bangladesh IT Industry. A workable and feasible risk management approach prompts an idea for the risk-mitigating plan. In any case, the high proportion of IT project failures demonstrates the futility of risk mitigation activities. From the survey, it is discovered that the most irritating obstructions behind software disappointment for the presence of covered-up and inconspicuous risks and lack of user communication, and lack of proper training on new technology which is overlooked in the greater part of the models. The proposed model works with the improvement of the risk mitigation plan through four phases, the DVC committee, and the NUT train-up team. Depending upon the survey replies added another unique feature called the NUT train-up team. The model considered all four phases of risk management, with the mitigation phase and training on new technologies receiving the greatest attention.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/308

Development of a low-cost textile sensor based insole to monitor foot pressure of diabetic patients.

Author: NUZAT NUARY ALAM et al.

Brief Description:

A common but preventable complication of diabetes is diabetic foot ulcer. If appropriate care is not provided such foot lesions progress to the most severe diabetic foot complication, like infection, gangrene, amputation and even death. Diabetic neuropathy results abnormal planter pressure points under the foot and triggers the tendency of foot ulcer. The aim of this paper is to present the development of a low cost, power efficient, soft, lightweight and simple in-shoe planter pressure measurement system. The system is capable to determine the average static pressure under ball and heel of the foot. The insole is comfortable due to the use of textile pressure sensor and its simple data acquisition method makes operation easy for the users. An experiment with 10 participants with and without diabetes was carried out to observe the outcome of the system. The practical implication of this study is to minimize the damage caused by foot ulcer by determining the pressure abnormality at earliest with a fully developed cost-effective design. The system is capable to identify the difference in average planter pressure values in different groups of participants. To monitor the foot health proactively, the proposed system is found to be a useful device and can successfully scan the planter pressure under ball and heel of the foot.

Source: https://www.tandfonline.com/doi/full/10.1080/03091902.2022.2041748

IOT Based Solar Powered Automated Fish Feeding System

Author: NUZAT NUARY ALAM et al.

Brief Description:

To minimize manual labor in aquaculture, this paper proposed an IoT-based solar-powered automated fish feeding system. Fish feeders will be readily managed from mobile phones utilizing the mobile app and the dashboard with only a click at a time and from anywhere. To create such a prototype, hardware components required are solar panels, solar charge controller, Arduino microprocessor along with DC gear motor and ESP32+SIM800L as GPS and GSM module. MATLAB Simulink software is used to analyze the system outcome. The DC power generation unit in Simulink monitored the data of DC voltage, current, power, etc. The prototype can operate remotely based on instruction given by user through a cell phone application. As Bangladesh is a subtropical region, the temperature hike in summer as per simulation did not affect the battery's voltage output or operation as the voltage fluctuation of the battery's input from the solar panel ranged between 12.3V to 11.3V based on an outside temperature of 18-degree Celsius to 40 degree Celsius. An auger used ensured controlled food dispersion over regulated time intervals.

Source: https://cigrjournal.org/index.php/Ejounral/article/view/8303

Design And Development Of Air Conditioner (AC) Monitoring And Management System

Author: DR. MD. SANIAT RAHMAN ZISHAN et al.

Brief Description:

Nowadays Air Conditioner (AC) has become a more important appliance in our life. Gas leakage, blockage in the evaporator and compressor coil, pipelines as well as dust in the air filters, are the major reasons behind AC explosion. Many people have been injured over the years due to AC blasts. In this paper a system is developed that uses sensor technology and smart devices to reduce AC blast. As a result, pipeline leaks or blockage fault detection system is planned and constructed using MQ-02, TTC 103, optical dust sensors for gas detection, temperature detection and for detecting dust density respectively. Also bacteria can be detected through MQ-3 gas sensor as it combines with AC refrigerant and produces ethanol. This system is also digitally connected to smart devices (cellphones) and a control device (RM MINI 3) so that user can receive a detection notification at any time and operate AC from any location. By implementing these sensors, the initial target was achieved. The work is low cost and environment friendly.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/260

Analysis of Fractional Thin Film Flow of Third Grade Fluid in Lifting and Drainage via Homotopy Perturbation Procedure

Author: DR. FATEMA TUZ ZOHRA et al.

Brief Description:

Analysis of thin film flows is an important topic in fluid dynamics due to the large number of industrial applications such as food processing, chip manufacturing, irrigation, oil refining process, painting finishing, etc. Analysis involves studying the effects of various parameters in absolute conditions. These parameters may be film thickness, volumetric flux, liquid velocity profile, viscosity, shear stress, gravity, density, and different boundary formations. We have expanded the formulations of non-Newtonian third grade fluid for lifting and draining in fractional space. Fractional calculus along with Homotopy Perturbation Method is used for the solution and analysis purposes. The suitability and consistency of the solutions is determined by detecting residuals in each case. Velocity profile, average velocity, and volume flow for lifting and drainage cases are calculated. To the best of authors knowledge, thin film flow of fractional third grade fluid is not attempted before in lifting and drainage. Investigation shows increase in value of fractional parameter that decreases the velocity profile in lifting while increases the velocity in drainage scenario. Also, the frictional parameter and the gravitational parameter have opposite, while material constant has direct relationship with the velocity profile in lifting case. All the parameters showed inverse effect on the velocity in drainage case.

Source: https://www.hindawi.com/journals/amp/2022/2847993/

Emergency Distribution Network Design & Analysis for Consecrated COVID 19 Hospital Zone

Author: ABU HENA MD. SHATIL et al.

Brief Description:

A power distribution network is always a key topic in a grid system because of more complexity. Rapidly or sudden load increasing to a particular one or two feeders can arise uncertainty and unbalance conditions in the system. Voltage fluctuations, Deviations, THD (total harmonic distortion), Reactive power imbalances can seriously unstable the grid for load increasing situations. In recent days due to COVID 19 condition, dedicated hospitals are connected to the distribution network. Because of its urgency and usefulness, a new type of distribution network called loop plus parallel has been presented in this paper. Finally, the simulation studies show better performance when comparing the traditional types of networks.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/206

A Robust Fault Diagnosis Scheme using Deep Learning for High Voltage Transmission Line

Author: ABU HENA MD. SHATIL et al.

Brief Description:

The transmission lines repeatedly face an aggregation of shunt-faults and its impact in the real time system increases the vulnerability, damage in load, and line restoration cost. Fault detection in power transmission lines have become significantly crucial due to a rapid increase in number and length. Any kind of interruption or tripping in transmission lines can result in a massive failure over a large area, which necessitates the need of effective protection. The diagnosis of faults help in detecting and classifying transients that eventually make the protection of transmission lines convenient. In this paper, we propose a deep learning-enabled technique for the detection and classification of transmission line faults. The faulty information are extracted using Discrete Wavelet Transform (DWT) and fed into the multilayer perceptron classification model. The results indicate that the proposed approach is capable of accurately classifying and detecting faults in transmission line with high precision.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/204

Development of a low-cost textile sensor based insole to monitor foot pressure of diabetic patients

Author: RETHWAN FAIZ et al.

Brief Description:

A common but preventable complication of diabetes is diabetic foot ulcer. If appropriate care is not provided such foot lesions progress to the most severe diabetic foot complication, like infection, gangrene, amputation and even death. Diabetic neuropathy results abnormal planter pressure points under the foot and triggers the tendency of foot ulcer. The aim of this paper is to present the development of a low cost, power efficient, soft, lightweight and simple in-shoe planter pressure measurement system. The system is capable to determine the average static pressure under ball and heel of the foot. The insole is comfortable due to the use of textile pressure sensor and its simple data acquisition method makes operation easy for the users. An experiment with 10 participants with and without diabetes was carried out to observe the outcome of the system. The practical implication of this study is to minimize the damage caused by foot ulcer by determining the pressure abnormality at earliest with a fully developed cost-effective design. The system is capable to identify the difference in average planter pressure values in different groups of participants. To monitor the foot health proactively, the proposed system is found to be a useful device and can successfully scan the planter pressure under ball and heel of the foot.

Source: https://doi.org/10.1080/03091902.2022.2041748

IOT Based Solar Powered Automated Fish Feeding System

Author: RETHWAN FAIZ et al.

Brief Description:

To minimize manual labor in aquaculture, this paper proposed an IoT-based solar-powered automated fish feeding system. Fish feeders will be readily managed from mobile phones utilizing the mobile app and the dashboard with only a click at a time and from anywhere. To create such a prototype, hardware components required are solar panels, solar charge controller, Arduino microprocessor along with DC gear motor and ESP32+SIM800L as GPS and GSM module. MATLAB Simulink software is used to analyze the system outcome. The DC power generation unit in Simulink monitored the data of DC voltage, current, power, etc. The prototype can operate remotely based on instruction given by user through a cell phone application. As Bangladesh is a subtropical region, the temperature hike in summer as per simulation did not affect the battery's voltage output or operation as the voltage fluctuation of the battery's input from the solar panel ranged between 12.3V to 11.3V based on an outside temperature of 18-degree Celsius to 40 degree Celsius. An auger used ensured controlled food dispersion over regulated time intervals.

Source: https://cigrjournal.org/index.php/Ejounral/article/view/8303

Board Composition and Internet Financial Reporting: Evidence from Bangladesh

Author: NIAZ MOHAMMAD et al.

Brief Description:

Internet financial reporting (IFR) can provide a low-cost mechanism for the listed company to reach a wider audience and reduce information asymmetry. This paper establishes several factors that are influencing IFR among selected listed firms in Bangladesh. The extent of IFR is determined using a disclosure index through content analysis. It was found that the overall IFR disclosure score is very low (17.77%) while low technology industries have disclosed more information on the internet. Regression results establish profitability as the most significant predictor of IFR. The proportion of independent directors on the board has a significant negative influence on IFR. The study incorporated the impact of internal governance mechanism on IFR. This research has important contributions toward educating stakeholders about the drivers of corporate internet financial reporting in Bangladesh. Future research can be initiated to determine the ability of IFR to complement audited annual reports as a green initiative.

Source: https://www.inderscience.com/info/inarticle.php?artid=121734

Multiwalled Carbon Nanotube-Based On-Body Patch Antenna for Detecting COVID-19-Affected Lungs

Author: RAJA RASHIDUL HASAN et al.

Brief Description:

A novel rectangular patch antenna based on multiwall carbon nanotubes has been designed and developed for assisting the initial detection of COVID-19-affected lungs. Due to their highly conductive nature, each nanotube echoes electromagnetic waves in a unique manner, influencing the increase in bandwidth. The proposed antenna operates at 6.63, 7.291, 7.29, and 7.22 GHz with a higher bandwidth classified as an ultrawide band and can be used on a human body phantom model because of its flexibility and decreased radiation qualities. Flame retardant 4 is chosen as a substrate with a uniform thickness of 1.62 mm due to its inexpensive cost and excellent electrical properties. The maximum specific absorption rate of the proposed antenna is obtained as 1.77 W/kg for 10 g of tissues. For testing purposes, a model including all the known features of COVID-19-affected lungs is developed. The designed antenna exhibits excellent performance in free space, normal lungs, and affected lung environments. It might be utilized as a first screening device for COVID-19 patients, especially in resource-constrained areas where traditional medical equipment such as X-ray and computerized tomography scans are scarce.

Source: https://pubs.acs.org/doi/10.1021/acsomega.2c02550

Sentence Boundary Extraction from Scientific Literature of Electric Double Layer Capacitor Domain: Tools and Techniques

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

Given the growth of scientific literature on the web, particularly material science, acquiring data precisely from the literature has become more significant. Material information systems, or chemical information systems, play an essential role in discovering data, materials, or synthesis processes using the existing scientific literature. Processing and understanding the natural language of scientific literature is the backbone of these systems, which depend heavily on appropriate textual content. Appropriate textual content means a complete, meaningful sentence from a large chunk of textual content. The process of detecting the beginning and end of a sentence and extracting them as correct sentences is called sentence boundary extraction. The accurate extraction of sentence boundaries from PDF documents is essential for readability and natural language processing. Therefore, this study provides a comparative analysis of different tools for extracting PDF documents into text, which are available as Python libraries or packages and are widely used by the research community. The main objective is to find the most suitable technique among the available techniques that can correctly extract sentences from PDF files as text. The performance of the used techniques Pypdf2, Pdfminer.six, Pymupdf, Pdftotext, Tika, and Grobid is presented in terms of precision, recall, f-1 score, run time, and memory consumption. NLTK, Spacy, and Gensim Natural Language Processing (NLP) tools are used to identify sentence boundaries. Of all the techniques studied, the Grobid PDF extraction package using the NLP tool Spacy achieved the highest f-1 score of 93% and consumed the least amount of memory at 46.13 MegaBytes.

Source: https://www.mdpi.com/2076-3417/12/3/1352

Predicting Young Imposter Syndrome Using Ensemble Learning

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

Background. Imposter syndrome (IS), associated with self-doubt and fear despite clear accomplishments and competencies, is frequently detected in medical students and has a negative impact on their well-being. This study aimed to predict the students' IS using the machine learning ensemble approach. Methods. This study was a cross-sectional design among medical students in Bangladesh. Data were collected from February to July 2020 through snowball sampling technique across medical colleges in Bangladesh. In this study, we employed three different machine learning techniques such as neural network, random forest, and ensemble learning to compare the accuracy of prediction of the IS. Results. In total, 500 students completed the questionnaire. We used the YIS scale to determine the presence of IS among medical students. The ensemble model has the highest accuracy of this predictive model, with 96.4%, while the individual accuracy of random forest and neural network is 93.5% and 96.3%, respectively. We used different performance matrices to compare the results of the models. Finally, we compared feature importance scores between neural network and random forest model. The top feature of the neural network model is Y7, and the top feature of the random forest model is Y2, which is second among the top features of the neural network model. Conclusions. Imposter syndrome is an emerging mental illness in Bangladesh and requires the immediate attention of researchers. For instance, in order to reduce the impact of IS, identifying key factors responsible for IS is an important step. Machine learning methods can be employed to identify the potential sources responsible for IS. Similarly, determining how each factor contributes to the IS condition among medical students could be a potential future direction.

Source: https://www.hindawi.com/journals/complexity/2022/8306473/

Application of machine learning algorithms to predict the thyroid disease risk: an experimental comparative study

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

hyroid disease is the general concept for a medical problem that prevents one's thyroid from producing enough hormones. Thyroid disease can affect everyone—men, women, children, adolescents, and the elderly. Thyroid disorders are detected by blood tests, which are notoriously difficult to interpret due to the enormous amount of data necessary to forecast results. For this reason, this study compares eleven machine learning algorithms to determine which one produces the best accuracy for predicting thyroid risk accurately. This study utilizes the Sick-

euthyroid dataset, acquired from the University of California, Irvine's machine learning repository, for this purpose. Since the target variable classes in this dataset are mostly one, the accuracy score does not accurately indicate the prediction outcome. Thus, the evaluation metric contains accuracy and recall ratings. Additionally, the F1-score produces a single value that balances the precision and recall when an uneven distribution class exists. Finally, the F1-score is utilized to evaluate the performance of the employed machine learning algorithms as it is one of the most effective output measurements for unbalanced classification problems. The experiment shows that the ANN Classifier with an F1-score of 0.957 outperforms the other nine algorithms in terms of accuracy.

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9044232/

A machine learning approach for Bengali handwritten vowel character recognition

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

Recognition of handwritten characters is complex because of the different shapes and numbers of characters. Many handwritten character recognition strategies have been proposed for both English and other major dialects. Bengali is generally considered the fifth most spoken local language in the world. It is the official and most widely spoken language of Bangladesh and the second most widely spoken among the 22 posted dialects of India. To improve the recognition of handwritten Bengali characters, we developed a different approach in this study using face mapping. It is quite effective in distinguishing different characters. The real highlight is that the recognition results are more efficient than expected with a simple machine learning technique. The proposed method uses the Python library Scikit-Learn, including NumPy, Pandas, Matplotlib, and support vector machine (SVM) classifier. The proposed model uses a dataset derived from the BanglaLekha isolated dataset for the training and testing part. The new approach shows positive results and looks promising. It showed accuracy up to 94% for a particular character and 91% on average for all characters.

Source:
https://www.researchgate.net/publication/361664178_A_machine_learning_approach_for_Bengali_handwritten_vowel_character_recognition

Evaluating keyphrase extraction algorithms for finding similar news articles using lexical similarity calculation and semantic relatedness measurement by word embedding

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

A textual data processing task that involves the automatic extraction of relevant and salient keyphrases from a document that expresses all the important concepts of the document is called keyphrase extraction. Due to technological advancements, the amount of textual information on the Internet is rapidly increasing as a lot of textual information is processed online in various domains such as offices, news portals, or for research purposes. Given the exponential increase of news articles on the Internet, manually searching for similar news articles by reading the entire news content that matches the user's interests has become a time-consuming and tedious task. Therefore, automatically finding similar news articles can be a significant task in text processing. In this context, keyphrase extraction algorithms can extract information from news articles. However, selecting the most appropriate algorithm is also a problem. Therefore, this study analyzes various supervised and unsupervised keyphrase extraction algorithms, namely KEA, KP-Miner, YAKE, MultipartiteRank, TopicRank, and TeKET, which are used to extract keyphrases from news articles. The extracted keyphrases are used to compute lexical and semantic similarity to find similar news articles. The lexical similarity is calculated using the Cosine and Jaccard similarity techniques. In addition, semantic similarity is calculated using a word embedding technique called Word2Vec in combination with the Cosine similarity measure. The experimental results show that the KP-Miner keyphrase extraction algorithm, together with the Cosine similarity calculation using Word2Vec (Cosine-Word2Vec), outperforms the other combinations of keyphrase extraction algorithms and similarity calculation techniques to find similar news articles. The similar articles identified using KPMiner and the Cosine similarity measure with Word2Vec appear to be relevant to a particular news article and thus show satisfactory performance with a Normalized Discounted Cumulative Gain (NDCG) value of 0.97. This study proposes a method for finding similar news articles that can be used in conjunction with other methods already in use.

Source: https://pubmed.ncbi.nlm.nih.gov/35875631/

ReSTiNet: On Improving the Performance of Tiny-YOLO-Based CNN Architecture for Applications in Human Detection

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

Human detection is a special application of object recognition and is considered one of the greatest challenges in computer vision. It is the starting point of a number of applications, including public safety and security surveillance around the world. Human detection technologies have advanced significantly in recent years due to the rapid development of deep learning techniques. Despite recent advances, we still need to adopt the best network-design practices that enable compact sizes, deep designs, and fast training times while maintaining high accuracies. In this article, we propose ReSTiNet, a novel compressed convolutional neural network that addresses the issues of size, detection speed, and accuracy. Following SqueezeNet, ReSTiNet adopts the fire modules by examining the number of fire modules and their placement within the model to reduce the number of parameters and thus the model size. The residual connections within the fire modules in ReSTiNet are interpolated and finely constructed to improve feature propagation and ensure the largest possible information flow in the model, with the goal of further improving the proposed ReSTiNet in terms of detection speed and accuracy. The proposed algorithm downsizes the previously popular Tiny-YOLO model and improves the following features: (1) faster detection speed; (2) compact model size; (3) solving the overfitting problems; and (4) superior performance than other lightweight models such as MobileNet and SqueezeNet in terms of mAP. The proposed model was trained and tested using MS COCO and Pascal VOC datasets. The resulting ReSTiNet model is 10.7 MB in size (almost five times smaller than Tiny-YOLO), but it achieves an mAP of 63.74% on PASCAL VOC and 27.3% on MS COCO datasets using Tesla k80 GPU.

Source: https://www.mdpi.com/2076-3417/12/18/9331

ReSTiNet: An Efficient Deep Learning Approach to Improve Human Detection Accuracy

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

Human detection is an important task in computer vision. It is one of the most important tasks in global security and safety monitoring. In recent days, Deep Learning has improved human detection technology. Despite modern techniques, there are very few optimal techniques to construct networks with a small size, deep architecture, and fast training time while maintaining accuracy. ReSTiNet is a novel small convolutional neural network that overcomes the problems of network size, detection speed, and accuracy. The developed ReSTiNet contains fire modules by evaluating their number and position in the network to minimize the model parameters and network size. To improve the detection speed and accuracy of ReSTiNet, the residual block within

the fire modules is carefully designed to increase the feature propagation and maximize the information flow in the network. The developed approach compresses the well-known Tiny-YOLO architecture while improving the following features: (i) small model size, (ii) faster detection speed, (iii) resolution of overfitting, and (iv) better performance than other compact networks such as SqueezeNet and MobileNet in terms of mAP on the Pascal VOC and MS COCO datasets.

ReSTiNet is 10.7 MB, five times smaller than Tiny-YOLO. On Tesla k80, mAP is 27.3% for MS COCO and 63.74% for PASCAL VOC. The validation of the proposed ReSTiNet model has been done on INRIA person dataset using the Tesla K80. All the necessary steps, algorithms, and mathematical formulas for building the net- work are provided. The network is small in size but has a faster detection speed with high accuracy.

Source:
https://pubmed.ncbi.nlm.nih.gov/36578294/#:~:text=ReSTiNet%20is%20a%20novel%20small,%2C%20detection%20speed%2C%20and%20accuracy.

Comparative Study of Single and Double Barrier GaAs/Al0.3Ga0.7As Based Resonant Tunneling Diodes Considering NEGF.

Author: MEHEDI HASAN et al.

Brief Description:

Growing high performance computing needs of end users are constantly pushing circuit and device technology to improve in terms of speed and power. At this moment the presence of resonant tunneling diode can over come this type of problem and take a big role in nanoscale applications.In this researh article, analytic Hartree model of resonant tunneling diode(RTD) is simulated for two different structures,i.e. single barrier(1B) RTD and double barrier(2B) RTD by using NEMO5 considering NEGF is to demonestrated. In addition, switching applications also require large Peak to Valley voltage ratio (PVVR), as a small valley current is needed to minimize the off-state power dissipation. In this article, using hartree model with respect to Thomas model PVVR improves 21.21%. In this article obtained Double barrier RTD dominated compare to single barrier RTD as well as hartree performing better than thomasfermi model. I-V characteristics shows singnificant improvement for Hartree model.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/507

Grading System Prediction of Educational Performance Analysis using Data Mining Approach

Author: MEHEDI HASAN et al.

Brief Description:

In the neoteric century, education holds the key to bringing tremendous upgradation to the world. In most Asian countries, it is very challenging to apply education data mining techniques due to the variety of institutional data categories. In this research, an efficient data collection technique has been designed to gather institutional data, analyse and pre-process the data and apply specific data mining methods to estimate students' progress. A real-time dataset has been designed from student transcript data, which helps to analyse the prediction of student quality. In our research, six traditional classification algorithms and a deep neural network (DNN) model is applied to perform prediction efficiency. Different classification models perform an accuracy of 90% ~ 94%. Our research predicts student education efficiency, analyses student patterns and introduces a generalized framework for an advanced level of study.

Source: https://mjsat.com.my/

A Comparative Study of Fixing One Barrier Varying Another Barrier for a Resonant Tunneling Diode.

Author: MEHEDI HASAN et al.

Brief Description:

In this research paper, effects of fixing one barrier and varying another barrier have been analyzed and compared for a GaAs/Al0.3Ga0.7As based double barrier resonant tunnelling diode for two different models - Hartree Quantum Charge model and semi-classical Thomas Fermi model. VI characteristic graphs are studied to assess the overall performance of both models. The simulations are carried out in a nanoelectronics modelling tool suite – Nano electronic Modelling 5 (NEMO5) considering Non-Equilibrium Green's Function (NEGF), at room temperature of 300K and biased voltage of 0 to 0.5 V. In this paper, it was demonstrated that a very larger amount of current is supplied by both models when the first barrier is varied and second barrier is fixed in comparison to the first barrier when kept fixed and second barrier is varied. But as quantum charge inside the quantum well is existed in the Hartree model, so overall Hartree model supplied a greater amount of current compared to the Thomas Fermi model. Quantum charge inside its quantum well is not present in the Thomas Fermi model. But a better NDR region is created by the Thomas Fermi model in both varied first barrier-fixed second barrier and fixed first barrier-varied second barrier cases compared to the Hartree model. This NDR region can be used for numerous digital applications. On the other hand, a vast range of analog applications can be used by the Hartree model that produced larger current per unit voltage.

Source: https://mjsat.com.my/index.php/mjsat/article/view/96

Technology Trends and Cyber Security in Bangladesh: Myths and Reality

Author: DR. MOHAMMAD MAHMUDUL HASAN et al.

Brief Description:

The world has now become truly a borderless territory with the rapid growth of Information and Communication Technology (ICT) in every sector of social and economic life. While the developed countries are very much concerned regarding ICT modernization and cybersecurity yet surprisingly most of the developing countries like Bangladesh are unaware of the maturity of their ICT use and vulnerability of cybercrimes. This study investigates the current trends and maturity of ICT use in various sectors in Bangladesh and their cybersecurity issues based on a literature review. The main contribution of this study is to assist the relative policymaker and tech leaders to understand the current situation regarding technology use and cybersecurity in Bangladesh in order to enact necessary action plans, policies, and regulations to the advancement of ICT and protect against cybercrimes.

Source: https://www.igi-global.com/article/technology-trends-and-cyber-security-in-bangladesh/304381

A Cluster Based Feasible Time Interval for Tracking Lost or Stolen Vehicle

Author: MD. MORTUZA AHMMED et al.

Brief Description:

The system for tracking and monitoring lost or stolen vehicle is challenging. This device is widely used to assess the vehicle's location using GPS technology. It can be used to track a vehicle or vehicle fleet and to obtain information about the vehicle's current location. There are various challenges for tracking and monitoring vehicles and finding lost vehicles due to the lack of proper real-time vehicle location and hence it is difficult to take necessary action in the immediate proper time after the vehicle has lost or stolen. In this paper a Cluster Based Feasible Time Interval for Vehicle Tracking (CFTVT) algorithm for measuring the minimum time interval for taking action after the vehicle has lost or stolen is proposed. This proposed model helps to imply any appropriate vehicle tracking algorithm in the exact proper time after the vehicle has been lost or stolen.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/201/128

In - Depth Case Study on Artificial Neural Network Weights Optimization Using Meta - Heuristic and Heuristic Algorithmic Approach

Author: VICTOR STANY ROZARIO et al.

Brief Description:

The Meta-heuristic and Heuristic algorithms have been introduced for deep neural network optimization in this paper. Artificial Intelligence and the most used Deep Learning methods are getting popularity in these days, thus we need faster optimization strategies for finding more accurate results in the future. Neural Network Optimization with Particle Swarm Optimization, Backpropagation (BP), Resilient Propagation (Rprop), and Genetic Algorithm (GA) have been used for numerical analysis of different datasets and compared with each other to find out which algorithms work better for finding optimal solutions by reducing training loss. Meta-heuristic algorithms GA and PSO are higher-level formulas and problem-independent techniques that may be used for a diverse number of challenges. The characteristic of heuristic algorithms has extremely specific features that vary depending on the problem. The conventional backpropagation (BP) based optimization, genetic algorithm, particle swarm optimization, and resilient propagation (Rprop) are all fully presented, and how to apply these procedures in artificial deep neural networks optimization is also thoroughly described. Applied numerical simulation over several datasets shows that the Meta-heuristic algorithm particle swarm optimization and also the genetic algorithm performed better than the conventional heuristic algorithm like backpropagation and resilient propagation over these datasets. Evaluation of these algorithms was done based on training epoch and their error convergence.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/379

A Comparison of Missing Value Imputation Techniques on Coupon Acceptance Prediction.

Author: KAWSER IROM RUSHEE et al.

Brief Description:

The In-Vehicle Coupon Recommendation System is a type of coupon used to represent an idea of different driving scenarios to users. Basically, with the help of presenting the scenarios, the people's opinion is taken on whether they will accept the coupon or not. The coupons offered in the survey were for Bar, Coffee Shop, Restaurants, and Take Away. The dataset consists of various attributes that capture precise information about the clients to give a coupon recommendation. The dataset is significant to shops to determine whether the coupons they offer are benefi-cial or not, depending on the different characteristics and scenarios of the users. A major problem with this dataset was that the dataset was imbalanced and mixed with missing values. Handling the missing values and imbalanced class problems could affect the prediction results. In the paper, we analysed the impact of four different imputation techniques (Frequent value, mean,

KNN, MICE) to replace the missing values and use them to create prediction mod-els. As for models, we applied six classifier algorithms (Naive Bayes, Deep Learning, Logistic Regression, Decision Tree, Random Forest, and Gradient Boosted Tree). This paper aims to analyse the impact of the imputation techniques on the dataset alongside the outcomes of the classifiers to find the most accurate model among them. So that shops or stores that offer coupons or vouchers would get a real idea about their target customers. From our research, we found out that KNN imputation with Deep Learning classifier gave the most accurate outcome for prediction and false-negative rate.

Source: https://www.mecs-press.org/ijitcs/ijitcs-v14-n5/IJITCS-V14-N5-2.pdf

Management Practice and Project Performance among Manufacturing Industries in Malaysia

Author: DR. KHONDAKER SAZZADUL KARIM et al.

Brief Description:

This research examines the factors influencing management practice and project performance in Malaysia's manufacturing industries. To accomplish the study's goal, the contractors who have been chosen are divided into two categories: outstanding and first-class. The target audience consisted of 21 construction companies. In the second place, the consulting engineering offices that have been registered with the Ministry of Commerce and Industry are targeted. The third target audience consisted of business owners or top-tier operators. A sample size of 443 respondents was utilized to evaluate respondents' perceptions of critical success factors and the impact of total quality management adoption in construction facilities projects in Malaysia's manufacturing industry. According to the findings of this research, continuous improvement is also beneficial when companies seek to enhance the performance of their employees. This is because manufacturing companies will satisfy their employees most suitably with constant progress. Using this measuring methodology, it was discovered that there are positive and significant interrelationships between a company's quality culture, resource management, management practice, and overall performance in Malaysia's manufacturing industries. Furthermore, the results may be applied to other developing nations and the governments of emerging economies to take advantage of economic possibilities in a meaningful way. The research will also be helpful to companies in terms of better understanding the benefits and difficulties connected with the implementation of comprehensive quality management in this industry in a timely and effective way.

Source: http://116.206.57.42/index.php/ajbe/article/view/96

Online Delivery Service in Bangladesh: Measuring the Determinants of Knowledge Management Strategy and Organizational Performance

Author: DR. KHONDAKER SAZZADUL KARIM et al.

Brief Description: This research examines the impacts of knowledge management strategy and organizational performance determinants on online delivery service in Bangladesh, using a structural equation modeling (SEM). The research technique used in this research is purely quantitative, with a total sample size of 546 participants drawn from a simple random sampling procedure. The structural model was used in this research to show the connections between the variables. The results show that knowledge management structure is favorably linked to knowledge management strategy and that knowledge management practice is similarly positively related to knowledge management strategy. However, it was shown that the knowledge management structure was not favorably linked to organizational performance. Unexpectedly, knowledge management practices were not statistically significant in terms of being positively related to organizational performance. However, knowledge management strategy is favorably associated with corporate performance, as has been discovered to be a reciprocal connection between knowledge management structure and practice. This research has added to the current knowledge by developing an experimentally verified model that can be used to forecast the organizational performance of an organization.

Source: https://ajbe.aiub.edu/index.php/ajbe/article/view/104

Consumers' Awareness and Acceptance of Grocery Shopping from the Online Platforms

Author: ZIARAT HOSSAIN KHAN et al.

Brief Description: According to the Central Bank of Bangladesh's report, the growth and total e-Commerce transactions held during the Covid-19 pandemic were remarkable (Bangladesh Bank, 2021). Studies indicated that due to technological advancements and customers' interests, "Online Shopping" has gained substantial popularity. Grocery products are considered one of the prime items in consumers' shopping lists. During the Covid-19 pandemic, people have experienced various convenient purchasing options from online marketplaces. Therefore, the researchers have taken this initiative to analyze and identify the dimensional factors that impact consumers' awareness and acceptance of purchasing their grocery items from online platforms. The researchers followed the quantitative approach to collect and analyze the data using a non-probability purposive sampling method. A total of 673 responses were analyzed in Bangladesh's urban, suburban, and rural areas. In addition, a self-administrated questionnaire was created on the prior studies related to the Unified Theory of Acceptance and Use of Technology (UTAUT). The collected data were analyzed with SPSS 23 version. The study outcomes show a significant positive relationship between the customers' awareness and acceptance of online grocery shopping. The results identified that the behaviors of the consumers are highly affected by the User Influence, User Experience, Facilitating Conditions for enhancing consumers' awareness, and the Payment Methods and Awareness factors, respectively, impact the acceptance of online grocery shopping. The significant findings would eventually benefit online marketers in articulating effective strategies to penetrate the market for future business sustainability.

Source: https://ajbe.aiub.edu/index.php/ajbe/article/view/124

Comparative Advantage, Export Diversification, Intra- Industry Trade, and Economic Growth Nexus: Evidence from Bangladesh's Textile and Clothing Industry

Author: ZIARAT HOSSAIN KHAN et al.

Brief Description:

The primary goal of this research is to determine the short-term and long-term consequences of regional export growth, regional export diversification, regional intra-industry trade, and regional revealed comparative advantage on Bangladesh's GDP growth from 1990 to 2017. In the first phase, trade indices like regional export growth (EXG), regional export diversification (RED), regional intra-industry trade (RIIT), and regional revealed comparative advantage (RRCA) for Bangladesh's textile and clothing industry in the North American market were calculated based on data from the World Integrated Trade Solution (WITS) and World Trade Organization (WTO). GDP growth is used as a proxy measure for Bangladesh's overall economic development. To check the data series' stationarity, we used several unit roots tests (e.g., ADF and PP). To ensure robustness, the Johansen cointegration test, Engle-Granger Causality test, and ARDL bound test approach were used. The results revealed that the variables have substantial long-run cointegration. In addition, the findings revealed that an improvement in regional export diversification, regional intra-industry trade, and regional revealed comparative advantage increase Bangladesh's GDP growth. In contrast, the increase in regional export growth hinders the GDP growth of Bangladesh in the long-run. According to the facts, Bangladesh's government and policymakers should be concerned about diversification among established product categories and the exploration of new regional markets for the country's long-term economic growth.

Source: https://ajbe.aiub.edu/index.php/ajbe/article/view/130/114

Decentralized Payment Aggregator: Hyperledger Fabric

Author: MD. AL-AMIN et al.

Brief Description:

Blockchain has become a great trend and very popular in the present era. There are two types of Blockchain technology, centralized and decentralized. In this research, the main concern is about the decentralized payment gateway, which is a trustworthy architecture and does not depend on third parties. For recording the transaction, decentralized payment systems use distributed ledger. Previously, Bitcoin and Ethereum payment systems were used to verify the consistency of the ledger of blockchain and also the transaction data along with the sender-receiver address and transaction value, but as all the payment system is public, so the transaction mode is also public. However, here the main concern is privacy and security. Because anyone can easily access the network, the attacker can also attack the network and the identity and transaction records and the address of the user identity, which is a privacy challenge. This research incorporates the Hyperledger Fabric, which is private, to overcome this challenge. Moreover, no one can access it from outside of the network. The transaction cost is low and the timing is fast during transactions. Considering the above scenario, this research proposes a decentralized payment system architecture using Hyperledger Fabric.

Source:
https://thesai.org/Publications/ViewPaper?Volume=13&Issue=10&Code=IJACSA&SerialNo=101

Green synthesis and characterization of silver nanoparticles by using Bryophyllum pinnatum and the evaluation of its power generation activities on bio-electrochemical cell

Author: BITHI PAUL et al.

Brief Description:

In this work, silver nanoparticles (Ag NPs) have been synthesized through an eco-friendly, cost-effective green approach by using Bryophyllum pinnatum leaves (BPL) extract and the power generation activity of the BPL bio-electrochemical cell has been investigated with these Ag NPs. The formation of Ag NPs was probed by X-ray diffraction (XRD), UV–visible spectroscopy, Fourier transforms infrared (FT-IR), Energy dispersion X-ray spectroscopy (EDX), and Field emission scanning electron microscopy (FESEM). The XRD studies indicated the formation of face-centered cubic (FCC) Ag NPs of an average crystallite size of about 18 nm. The FESEM images have shown spherical Ag NPs, and the average particle size was found as 35.49 nm after size distribution analysis. A significantly broad absorption peak centered at around 465 nm was revealed by the UV–visible spectra of Ag NPs, which indicated the formation of Ag0 from Ag+. Moreover, the NPs have been applied on BPL bio-electrochemical cells to examine the power generation performance of the cell. It is observed that Ag NPs exhibited a potential role in improving open circuit voltage, short circuit current, and the power generation of BPL bio-electrochemical cells. This study demonstrates a simple, cost-effective, and eco-friendly synthesis approach of Ag NPs and the excellent performances of Ag NPs on electricity generation systems of bio-electrochemical cells. The impact of Ag NPs in the bio-electrochemical cell is a meaningful research work that may open a new platform to develop potential bio-electrochemical cells.

Source:
https://www.sciencedirect.com/science/article/abs/pii/S0254058422002498?via%3Dihub

Nano-bio effects: Interaction of ZnO and DNA-bases

Author: BITHI PAUL et al.

Brief Description:

In this study, we report on the complex formation and characterization of nano-bio conjugates synthesized by the sol–gel chemical method. The nano-bio conjugates, consisting of inorganic ZnO nanoparticles (NPs) and organic nitrogenous bases of DNA (Thymine and Cytosine), are investigated using electron microscopies, molecular vibrational analysis and X-ray spectroscopies. In this experimental investigation, we used two basic nitrogenous bases of DNA – Cytosine, and Thymine. The X-ray diffraction patterns of both ZnO NP and the nanoconjugate (NJ) reveal a highly phase pure ZnO structure with negligible changes in the unit cell dimensions. The Raman peaks due to the molecular vibration of C2=O7 and C4=O8 sites of Thymine and C=O and N-H sites in Cytosine are shifted due to the cation affinity after the

interaction with ZnO NPs. The shifted XPS spectra towards higher binding energies of the NJ divulge the atomic level interaction between the DNA bases and ZnO NPs at the surface. Moreover, the formation of NJs reduces the surface defect states of the ZnO NPs and increases the fluorescence properties by quenching the oxygen vacancy concentration. Thus, the current study on the interfacial properties of organic–inorganic conjugate materials opens new frontiers for developing novel nano-bio conjugate materials and their integration for targeted drug delivery, biomolecular sensing and therapeutic tools medicine applications.

Source: https://www.sciencedirect.com/science/article/abs/pii/S2352507X2200035X

AR Lab/Practical Simulation Book for Physics Chemistry & Computer Science

Author: DR. MD. ABDULLAH - AL - JUBAIR et al.

Brief Description:

Practical / Lab AR Simulation book for physics, chemistry and computer science is an important part for practical simulation learning. For the development of the system/framework/Application on AR Simulation book, the Public University/Private University practical lab manuals, NCTB registered practical book as the case study for this study because there is often difficult to understand as well as trouble to interpret when viewing a Practical Simulation book's images. To overcome this problem there is a need to be further study how to reinterpret this problem with a better understanding using AR system/framework/Application. Students always have a problem to interact with the practical knowledge in their text-book. As a developing country, education system (for both public and private) and the quality of education in Bangladesh is limited.[24] The practical simulation is very costly in terms of buying the correct equipment. Sometimes the limited number of equipment is insufficient, as an example, the numbers of students in School/College/University with respect to the teachers or faculties. The ratio is not maintained. This study reviewed previous approaches of Simulation based AR system in education to identify drawbacks and strengths in Education base practical simulation. From the review of this study to engage students in more interactive way to learn their practical simulation in their domain of study. The goal is to implementing an Augmented Reality based simulation book where the proposed AR system will reduce the difficulties during practical work that most of the students are facing. This study proposes to design an Augmented Reality based framework for Simulation Book and thus the development of proposed AR system using the framework where the students can utilized the AR system with simulation book for their practical work effectively. This research/study is focused on the development of 3D/2D objects, audio-visual and interaction in Augmented Reality that allows students to understand the scientific practical solution with the proposed AR framework. This framework been conducted by a group of users through a survey. The study shows evaluation of how effective AR Practical simulation book in practical learning education. The evaluation on Practical/Lab AR simulation book is very much effective (overlays more information using AR) for a better understanding of practical lab simulation in comparison with the manual simulation books.

Source: https://dl.acm.org/doi/abs/10.1145/3542954.3542969

Entrepreneurship Development in SMEs in Bangladesh: Supply and Demand Side Challenges

Author: DR. KAMRUL HASAN et al.

Brief Description:

SME plays a vital role in economic development of a developing country like Bangladesh. SMEs contribution to the GDP is on an average 8 percent and growth rate of SMEs in Bangladesh is more than 7 percent per year. In achieving the Sustainable Development Goal (SDG) in Bangladesh entrepreneurship development in SMEs is a sin qua non. The current study has been focused on the supply and demand side challenges faced by the SMEs in Bangladesh. The study found the major challenges faced by supply side are improper audited financial statements, insufficient collateral, unsatisfactory quality of information, centralized loan approval system, government intervention and the like. On the other hand, from demand side viewpoint the study found several challenges like, high interest rate, bureaucratic loan procedure, high collateral requirement and too much information requirement in approving a loan.

Source: https://ajbe.aiub.edu/index.php/ajbe/article/view/105/102

Effect of N doping on the Optical and Electrical properties of Thermal Spray pyrolysed ZnO Thin Films

Author: DR. MD. EHASANUL HAQUE et al.

Brief Description:

This paper considers the experimental study of Nitrogen doped ZnO (ZnO:N) thin films deposited on a glass substrate at 350ºC using low cost homemade thermal spray pyrolysis technique in a typical environmental condition. In this study the average reflectance, transmittance, and absorbance were experimentally measured 20%, 35%, and 45%, respectively. Absorption coefficient is obtained 3.5x104 cm-1for N doped ZnO sample. However, direct bandgapenergy varies from 3.08 to 2.99 eV and indirect band gapenergy varies from 2.86 to 2.67 eV. XRD analysis showsthat the (002) plane is present in the experimental sampleand the average grain size decreases with the increasingN concentration. Surface morphology of the sample isstudied by Scanning Electron Microscopy. It is seen thatfew voids are present in the hexagonal crystal grains. Thesurface exhibits more or less uniform surfacemorphology with some clusters on the whole surface.Hall Effect study confirms that Nitrogen doped ZnO(ZnO:N) thin films using Vander Pauws method weremade at room temperature at a constant field of 9.75 KG.Experimentally (1, 2, 3, and 4) % N doped ZnO thin filmshave shown negative Hall Constant (RH), which exhibitsN-type characteristics. RHand Hall concentration (n)increase with increasing N doping concentration.

Source: https://ajse.aiub.edu/index.php/ajse

Analyzing Different Software Project Management Tools and Proposing A New Project Management Tool Using Process Re-Engineering on Open-Source and SAAS Platforms for A Developing Country

Author: FARZANA BENTE ALAM et al.

Brief Description:

This paper analyzes and evaluates different software project management tools that help the team to plan, manage, optimize resources, and monitor the project progress. The ICT industry in Bangladesh has immense prospects in driving the country's economy, and it has grown by 28%-40% annually since 2010 each year. But though we have huge benefits over low development costs, clients of the developed country are not very satisfied with the quality of the software. So in this paper, we are proposing an open source-based project management tool that will serve small to medium-sized software firms at no cost. The software firms will maintain the software engineering best practices by using the software. As "openness" becomes one of society's hallmarks in the 21st century and extends into innovation, research, and standards-setting, an open-source system has become an integral part of the business. Because of the speed and the scale at which it has happened, open-source is central to strategy today. But we do not have any cloud access in an Open-source system. For that reason, in this paper, we also have tried to propose the same tool with more options in the Software as a Service (SaaS) environment.

Source: https://iraj.doionline.org/dx/IJAECS-IRAJ-DOIONLINE-18831

Detection of Paddy Blast: An Image Processing Approach with Threshold based OTSU

Author: TANVIR AHMED et al.

Brief Description:

If rice infections spread, the agricultural industry as well as the people who eat rice as their primary food grain suffer greatly from production and financial losses as well as food shortages. One of the deadliest diseases that can affect paddy plants at any stage of development and hinder the growth of rice plants is paddy leaf blast. Because the brown spot and the leaf blast have the same appearance but distinct shapes, it is quite difficult to distinguish between them. In this case, paddy leaf blast is detected using computer vision methods. But because of their resemblance to other spots and poor color channel selection, previous procedures are difficult, time-consuming, and poorly able to detect blasts. In this article, an effective and automated image analysis method has been proposed to identify paddy leaf blasts that can identify leaf blasts by utilizing various shapes. Additionally, the process minimized pointless data exploration and provided superior accuracy of 95.34 percent.

Source: https://mjsat.com.my/index.php/mjsat/article/view/77

An Intelligent Examination Monitoring Tool for Online Student Evaluation

Author: ANEEM AL AHSAN RUPAI et al.

Brief Description:

The global reach of online education has increased due to a pandemic or other unique circumstances. As online education got more popular, it became crucial to ensure the quality of evaluation. This study's goal is to find a solution to the issue of monitoring during online exams. We have used behavioural biometrics through students' interaction with an Intelligent Examination Monitoring Tool (IEMT), which was developed, even though many studies concentrate on using video analysis. The test-taking prototype uses mouse, touch, and keyboard interfaces to administer multiple-choice questions with a variety of information and events. Students who used additional sources to answer questions were later discovered during an online interview. We built a prediction model that can determine if a student is answering on his own or using any other sources using the events through input interaction when these students are sorted. The Machine Learning (ML) techniques Decision Tree, Random Forest, K-Nearest Neighbour, and Naive Bayes were used to generate a few models. After evaluating the performance of the models, we find that random forest performs best, with an accuracy of about 91 percent.

Source: http://www.mjsat.com.my/index.php/mjsat/article/view/62

Moth Flame optimization for Transmission loss Minimization in Optimal Power Flow Using Renewable Energy

Author: MOHAMMAD KHURSHED ALAM et al.

Brief Description:

The reduction of line losses due to current heating is known as loss minimization in optimal power flow (OPF). This is accomplished by selecting and enhancing an existing power solution from the system's past cost reduction. This paper offers a collection of methods for assessing congested power networks to achieve the lowest operating cost with the fewest line losses. The approaches are computer-simulated in MATLAB, and convergence is reached at ranges. As a result, the focus of this research is on designing appropriate OPF algorithms to address the 'congestion management quandary.' To evaluate the efficacy of the suggested method, simulations are run on the IEEE 57-bus system. For network security, transmission line capacity and bus voltage restrictions, as well as generator capacities and limited working zones for thermal devices, are all considered. Moth Flame Optimization (MFO) outperforms other stochastic algorithms in terms of solution quality and practicality, indicating its use and expertise. The results are promising, indicating that the MFO is a highly successful optimization tool for dealing with a wide range of OPF problems.

Source:
https://www.researchgate.net/publication/363466288_Moth_Flame_optimization_for_Transmission_loss_Minimization_in_Optimal_Power_Flow_Using_Renewable_Energy

IoT Based Health Monitoring System and Its Challenges and Opportunities

Author: MD. MASUM BILLAH et al.

Brief Description:

With the incarnation of novel COVID-19, health care is getting more preference in each country. IoT-based health monitoring systems might be the best option to monitor infected patients and be helpful for elderly population. In this paper, analyzed different IoT-based health monitoring systems and their challenges. Searched through established journal and conference databases using specific keywords to find scholarly works to conduct the analysis. Investigated unique articles related to this analysis. The selected papers were then sifted through to understand their contributions/research focus. Then tried to find their research gap and challenges, created them into opportunities and proposed a GSM-based offline health monitoring system that will conduct with the healthcare providers through communication networks. Hopefully, this model will work as an absolute pathway for the researchers to establish a sustainable IoT-based health monitoring system for humankind.

Source: https://link.springer.com/chapter/10.1007/978-3-030-90618-4_19#citeas

Design and implementation of a feasible model for the IoT based ubiquitous healthcare monitoring system for rural and urban areas

Author: MD. MASUM BILLAH et al.

Brief Description:

The Internet of Things (IoT) based real-time health monitoring system has contributed towards a brilliant human welfare both in urban and rural areas. Many of such solutions are not well applicable in developing countries like Bangladesh due to lack of uninterrupted communication system. In this paper, we present an IoT-based real-time health monitoring system that can measure, monitor and report people's health condition online and offline from anywhere. Our proposed IoT based solution is capable to transmit the sensitive health information to medical centres and caregivers in real time. The proposed system has been designed with Arduino UNO, Nodemcu, and Global System for Mobile Communication (GSM) modules to measure body temperature, pulse rate, Oxygen saturation, room temperature, and air quality in a smart home setting. The system can also provide the patient's historical health records. Our implementation was tested on some test cases which works excellent with accuracy. The proposed system has high potentiality for the rural and urban areas in developing countries.

Source: https://ieeexplore.ieee.org/abstract/document/9869637/authors#authors

An Approach to Recognize Vehicles Context Flow For Smartphone-Based Outdoor Parking Using Supervised Machine Learning Classifiers

Author: MD. NAZMUL HOSSAIN et al.

Brief Description:

Finding an available parking space in outdoor environments such as university campuses and roadsides need a good parking system. In a general parking system, detecting a vehicle entering leaving the parking premise is one of the major steps. Currently, there are parking systems that use cameras or external sensors to detect the leaving and entering of the automobiles. External sensors-based systems require a costly sensor installation at each parking slot while the camera-based systems require sophisticated camera setup. Both parking systems need very high cost of deployment and maintenance. Besides, the additional need for network setup and hardware capacity increases the complexity that makes the system difficult to be implemented in an outdoor environment that typically involve a bigger coverage area. To encounter the issues, paper presents a parking system for outdoor parking systems using only smartphone-oriented sensors. The proposed approach does not require additional sensors installation nor manpower support. The proposed system takes the inputs from smartphones to detect the driver's context that is used to recognize the flow of the vehicle. Context flow recognition indicates whether a driver is parking or unparking his/her vehicle. Supervised classifiers like support vector machines (SMV) and decision trees (DT) are used to recognize the parking or unparking actions to enable vehicles tracking in the parking area. Outcome of the proposed approach is a significant contribution for outdoor parking system as it solely utilizes the sensors embedded in smartphones to detect parking behaviors.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/316

An Intelligent Examination Monitoring Tool for Online Student Evaluation

Author: MD. NAZMUL HOSSAIN et al.

Brief Description:

The global reach of online education has increased due to a pandemic or other unique circumstances. As online education got more popular, it became crucial to ensure the quality of evaluation. This study's goal is to find a solution to the issue of monitoring during online exams. We have used behavioural biometrics through students' interaction with an Intelligent Examination Monitoring Tool (IEMT), which was developed, even though many studies concentrate on using video analysis. The test-taking prototype uses mouse, touch, and keyboard interfaces to administer multiple-choice questions with a variety of information and events. Students who used additional sources to answer questions were later discovered during an online interview. We built a prediction model that can determine if a student is answering on his own or using any other sources using the events through input interaction when these students are sorted. The Machine Learning (ML) techniques Decision Tree, Random Forest, K-Nearest Neighbour, and Naive Bayes were used to generate a few models. After evaluating the performance of the models, we find that random forest performs best, with an accuracy of about 91 percent.

Source: https://mjsat.com.my/index.php/mjsat/article/view/62

Comparative Study of Single and Double Barrier GaAs/Al0.3Ga0.7As Based Resonant Tunneling Diodes Considering NEGF

Author: MAHFUJUR RAHMAN et al.

Brief Description:

The growth of pepped-up determining demand of final consumers always forces devices and circuits to increase power and speed. Only resonant tunneling diode can solve this problem and can be able to take a vital role in many nanoscale applications. This research paper demonstrates the simulations of the Resonant Tunneling Diode (RTD) by using Hartree Model for the single barrier (1B) and the double barrier (2B) Resonant Tunneling Diodes by the using of NEMO5 considering NEGF. In addition, switching applications also require a Large Peak to Valley Voltage Ratio (PVVR) to reduce energy loss. In this article, it has been clearly explained that compared to the Thomas Fermi Model, Hartree Model improves the Peak to Voltage Valley Ratio (PVVR) by 21.21%. The results of the Double Barrier RTD showed much better performance than the Single Barrier RTD. Furthermore, the I-V characteristic verified the notable improvement for the Hartree model.

Source: https://doi.org/10.53799/ajse.v21i3.507

Convoher2: A Deep Neural Network for Multi-Stage Classification of Her2 Breast Cancer

Author: DR. MD. ASRAF ALI et al.

Brief Description:

Generally, human epidermal growth factor 2 (HER2) breast cancer is more aggressive than other kinds of breast cancer. Currently, HER2 breast cancer is detected using expensive medical tests are most expensive. Therefore, the aim of this study was to develop a computational model named convoHER2 for detecting HER2 breast cancer with image data using convolution neural network (CNN). Hematoxylin and eosin (H&E) and immunohistochemical (IHC) stained images has been used as raw data from the Bayesian information criterion (BIC) benchmark dataset. This dataset consists of 4873 images of H&E and IHC. Among all images of the dataset, 3896 and 977 images are applied to train and test the convoHER2 model, respectively. As all the images are in high resolution, we resize them so that we can feed them in our convoHER2 model. The cancerous samples images are classified into four classes based on the stage of the cancer (0+, 1+, 2+, 3+). The convoHER2 model is able to detect HER2 cancer and its grade with accuracy 85% and 88% using H&E images and IHC images, respectively. The outcomes of this study determined that the HER2 cancer detecting rates of the convoHER2 model are much enough to provide better diagnosis to the patient for recovering their HER2 breast cancer in future.

Source: https://arxiv.org/abs/2211.10690

Walking Speed Classification from Marker-Free Video Images in Two-Dimension using Optimum Data and A Deep Learning Method

Author: DR. MD. ASRAF ALI et al.

Brief Description:

Walking speed is considered a reliable assessment tool for any movement-related functional activities of an individual (i.e., patients and healthy controls) by caregivers and clinicians. Traditional video surveillance gait monitoring in clinics and aged care homes may employ modern artificial intelligence techniques to utilize walking speed as a screening indicator of various physical outcomes or accidents in individuals. Specifically, ratio-based body measurements of walking individuals are extracted from marker-free and two-dimensional video images to create a walk pattern suitable for walking speed classification using deep learning based artificial intelligence techniques. However, the development of successful and highly predictive deep learning architecture depends on the optimal use of extracted data because redundant data may overburden the deep learning architecture and hinder the classification performance. The aim of this study was to investigate the optimal combination of ratio-based body measurements needed for presenting potential information to define and predict a walk pattern in terms of speed with high classification accuracy using a deep learning-based walking speed classification model. To this end, the performance of different combinations of five ratio-based body measurements was evaluated through a correlation analysis and a deep learning-based walking speed classification test. The results show that a combination of three ratio-based body measurements can potentially define and predict a walk pattern in terms of speed with classification accuracies greater than 92% using a bidirectional long short-term memory deep learning method.

Source: https://www.mdpi.com/2306-5354/9/11/715

Dual Layer Encryption for IoT based Vehicle Systems over 5G Communication

Author: MD SAJID BIN-FAISAL et al.

Brief Description:

In modern communication scenario of the 5G era, the service quality is the greatest concern for the users. Also, the concept of security can't be neglected in this case. In the IoT oriented services like vehicle and VANET systems, the security in the presentation layer of the network is required. This work is over the security mechanism of the service storage and fetching the files for service. A new scheme of multi layered file and content encryption has been produced in order to strengthen the security of the file and data to maintain integrity and confidentiality of the IoT enabled services implemented in 5G. The encryption scheme is designed for the password encryption through asymmetric key cryptography (RSA) along with an enhanced concern of internal content or data security with symmetric key (AES-128) cryptography. This encryption system of double layer for a file makes the study unique and differentiable than other security schemes.

Source: https://www.mecs-press.org/ijitcs/ijitcs-v14-n2/IJITCS-V14-N2-2.pdf

Towards a secured smart IoT using light weight blockchain: An aim to secure Pharmacy Products

Author: MD. FARUK ABDULLAH AL SOHAN et al.

Brief Description:

Blockchain has proven a very developed and secured technology. It ensures data integrity with authentic connected nodes. Now-a-days, blockchain with IoT is a great combination for secured and smart end to end product delivery. This observation has motivated the research to develop a conceptual model to provide a secure pharmaceutical product delivery by developing a IoT integrated with lightweight blockchain. The undeveloped and most of the developing countries are facing problems such as drug counterfeits, shortages, opiates and tracking them became difficult because of less transparency. Also, nature sensitive medicines need to be stored under controlled temperature known as cold-chain shipping. The storage of these information in the recent software is done in the centralized databases that is prone to data manipulations and hacks. Due to less production drugs needed to be imported with maintaining drug supply chain regulations by law. This paper proposes a lightweight blockchain model for pharmaceutical industries by using IoT. This model ensures traceability of drugs within a very simple way which is less complex compared to the existing ones.

Source:
https://browse.arxiv.org/pdf/2206.06925.pdf#:~:text=This%20paper%20proposes%20a%20lightweight,%2C%20manipulation%2C%20production%2C%20traceability

Identifying optimised speaker identification model using hybrid GRU-CNN feature extraction technique

Author: K. M. IMTIAZ-UD-DIN et al.

Brief Description:

Extracting vigorous and discriminative features and selecting an appropriate classifier model to identify speakers from voice clips are challenging tasks. Thus, we considered signal processing techniques and deep neural networks for feature extraction along with state-of-art machine-learning models as classifiers. Also, we introduced a hybrid gated recurrent unit (GRU) and convolutional neural network (CNN) as a novel feature extractor for optimising the subspace loss to extract the best feature vector. Additionally, space-time is contemplated as a computational parameter for finding the optimal speaker identification pipeline. Later, we have inspected the pipeline in a large-scale VoxCeleb dataset comprising 6,000 real world speakers with multiple voices achieving GRU-CNN + R-CNN for the highest accuracy and F1-score as well as GRU-CNN + CNN for maximum precision and LPC + KNN for the highest recall. Also, LPCC + R-CNN and MFCC + R-CNN are accomplished as optimal in terms of memory usage and time respectively.

Source:
https://www.researchgate.net/publication/358795981_Identifying_optimised_speaker_identification_model_using_hybrid_GRU-CNN_feature_extraction_technique

Study of an n-MOSFET by Designing at 100 nm and Simulating using SILVACO ATLAS Simulator

Author: DR. MUHIBUL HAQUE BHUYAN et al.

Brief Description:

In this paper, the design steps of an n-MOSFET have been described and then the electrical characterization of this MOSFET is simulated at 100 nm by using the SILVACO ATLAS software, which is a process and device simulation software tool. The MOS device is virtually fabricated using ATHENA in SILVACO and simulations have been performed with help of ATLAS software, and all graphs are plotted using TONYPLOT in the SILVACO. The simulated results are then analyzed to study the n-MOSFET device's mesh structure, transfer and output characteristics of the same, doping and carrier concentration plot, etc. From the simulation study, we found that the designed device is working well for various bias conditions

Source: https://www.iosrjournals.org/iosr-jvlsi/papers/vol12-issue1/Ser-1/B12010715.pdf

Water Chemistry beneath Graphene: Condensation of a Dense OH–H2O Phase under Graphene

Author: DR. MOHAMMAD ALIF ARMAN et al.

Brief Description:

Room temperature oxygen hydrogenation below graphene flakes supported by Ir(111) is investigated through a combination of X-ray photoelectron spectroscopy, scanning tunneling microscopy, and density functional theory calculations using an evolutionary search algorithm. We demonstrate how the graphene cover and its doping level can be used to trap and characterize dense mixed O–OH–H2O phases that otherwise would not exist. Our study of these graphene-stabilized phases and their response to oxygen or hydrogen exposure reveals that additional oxygen can be dissolved into them at room temperature creating mixed O–OH–H2O phases with an increased areal coverage underneath graphene. In contrast, additional hydrogen exposure converts the mixed O–OH–H2O phases back to pure OH–H2O with a reduced areal coverage underneath graphene.

Source: https://doi.org/10.1021/acs.jpcc.1c10289

Meta-analysis of the Impact of Financial Constraints on Firm performance

Author: DR. FATEMATUZ TAMANNA AHAMED et al.

Brief Description:

A large number of studies have investigated the relationship between financial constraints and firm performance. However, due to heterogeneity in study design factors, such as choice of measures for constraints and performance, control variables, estimation methods and study sample, the empirical results have been mixed. To mitigate this issue, this paper reports a meta-analysis of the association between financial constraints and firm performance. To assess the overall direction of the relationship and the sources of heterogeneity, we apply meta-analytic methods to 26 studies (providing 189 effect sizes) on the association between financial constraints and financial performance in listed companies. Our result shows that, overall, there is a positive relationship between financial constraints and firm performance. In addition, meta-regression results suggest that return on assets (ROA) and return on equity (ROE) as measures of financial performance, and external finance and size as measures of financial constraints, have a significant negative impact on the relationship between financial constraints and firm performance relative to the mean impact on effect size. Similarly, all of North America and Asia as regional differences, control of size and corporate governance as control variables, and journal quality as strength of results, also have a significant negative impact. On the other hand, market value as a measure of financial performance, and the Whited & Wu index as a measure of financial constraints, have significant positive impact relative to the mean impact. Similarly, cross-country and Europe as regional differences, and publication status as strength of results, all have significant positive impact. Given that firm performance is of fundamental importance to investors, this study therefore helps researchers and policymakers to understand the variation in the empirical results on the impact of financial constraints.

Source: https://onlinelibrary.wiley.com/doi/full/10.1111/acfi.12923

Effect of the Covid-19 Pandemic on the Purchasing Behavior of Consumers

Author: DR. BIKASH BARUA et al.

Brief Description:

The COVID-19 pandemic and the mandates for lockdown and social distancing have affected the purchasing and shopping patterns of consumers. New patterns are being learned by customers. The eruption of the coronavirus (COVID-19) is very much novel viral disease and one of the foremost human disaster worldwide, impacting the lives of millions of people. The purpose of this paper is to discuss the effect of the COVID-19 crisis on the online purchasing behavior of fresh vegetables by consumers after two months of lockdown in Dhaka City. The research is focused on the analysis of the responses obtained from the Dhaka city (N =252) through a nationwide online questionnaire survey. The initial point of this paper is the study of socio-

demographic factors prior to the declaration of lockdown in Dhaka city (26 March 2020) on the purchasing decision of fresh vegetables online. Further study was carried out by interpreting the shifts in the buying intentions of these products caused by the COVID-19 crisis before and after the end of the subsequent crisis. The chi-square test and descriptive statistics were employed to explore the changing behavior of consumers. The study found significant changes in consumer behavior while purchasing fresh vegetables through online. The findings indicate digital transformation of consumer behavior due to COVID-19. The findings of the research has important bearing in understanding the changes in consumer behavior that can affect the digital transformation of fresh vegetables supply chains. The study is of the first kind in Bangladesh that explores digital transformation of consumer of fresh vegetables hence, not without limitations. Limitations and future research scope are therefore delineated.

Source: https://ajbe.aiub.edu/index.php/ajbe/article/view/106

OADC: An Obstacle-Avoidance Data Collection Scheme Using Multiple Unmanned Aerial Vehicles

Author: SHAKILA RAHMAN et al.

Brief Description:

Unmanned aerial vehicles (UAVs) are used widely for data collection in wireless sensor networks (WSNs). UAVs visit the sensors to collect the data. UAV-aided data collection is a challenging problem because different paths of a UAV, i.e., visiting orders of sensors, affect energy consumption and data delivery times. The problem becomes more difficult when there are obstacles in the path of the UAV. Thus, the UAV needs to take a detour to avoid them, resulting in different travel distances and times. Therefore, this study formulated the obstacle-aware path planning problem of UAVs, i.e., the obstacle-constrained distance minimization (OCDM) problem, as an integer linear programming problem (ILP) to minimize the total traveling distances of all UAVs while considering the UAVs' flight time constraints. First, a possible detour-points-selection algorithm called vector rotation-angle-based obstacle avoidance (VRAOA) is proposed to find the detour points around each obstacle in the environment. Then, a genetic algorithm with VRAOA (GA w/VRAOA)is developed to find the trajectories of the UAVs, using the VRAOA and Dijkstra algorithm to find a detour path if there is an obstacle between any two sensors. Finally, simulations were performed for algorithm variants, where GA w/VRAOA outperformed others.

Source: https://www.mdpi.com/2076-3417/12/22/11509

Energy-efficient charging of sensors for UAV-aided wireless sensor network

Author: SHAKILA RAHMAN et al.

Brief Description:

Lack of sufficient battery capacity is one of the most important challenges impeding the development of wireless sensor networks (WSNs). Recent innovations in the areas of wireless energy transfer and rechargeable batteries have made it possible to advance WSNs. Therefore, in this article, we propose an energy-efficient charging of sensors in a WSN scenario. First, we have formulated the problem as an integer linear programming (ILP) problem. Then a utility function-based greedy algorithm named UGreedy/UF1 is proposed for solving the problem. Finally, the performance of UGreedy/UF1 is analyzed along with other baseline algorithms: UGreedy/UF2, 2-opt TSP, and Greedy TSP. The simulation results show that UGreedy/UF1 performs better than others both in terms of the deadline missing ratio of sensors and the total energy consumption of UAVs.

Source: http://koreascience.or.kr/article/JAKO202234161123021.page

Investigation on structure, thermodynamic and multifunctional properties of Ni-Zn-Co ferrite for Gd3+ substitution

Author: DR. MD. SAROWAR HOSSAIN et al.

Brief Description:

This study presents a modification of structure-dependent elastic, thermodynamic, magnetic, transport and magneto-dielectric properties of a Ni–Zn–Co ferrite tailored by Gd3+ substitution at the B-site replacing Fe3+ ions. The synthesized composition of Ni0.7Zn0.2Co0.1Fe2−xGdxO4 (0 ≤ x ≤ 0.12) crystallized with a single-phase cubic spinel structure that belongs to the Fd[3 with combining macron]m space group. The average particle size decreases due to Gd3+ substitution at Fe3+. Raman and IR spectroscopy studies illustrate phase purity, lattice dynamics with cation disorders and thermodynamic conditions inside the studied samples at room temperature (RT = 300 K). Ferromagnetic to paramagnetic phase transition was observed in all samples where Curie temperature (TC) decreases from 731 to 711 K for Gd3+ substitution in Ni–Zn–Co ferrite. In addition, Gd3+ substitution reinforces to decrease the A-B exchange interaction. Temperature-dependent DC electrical resistivity (ρDC) and temperature coefficient of resistance (TCR) have been surveyed with the variation of the grain size. The frequency-dependent dielectric properties and electric modulus at RT for all samples were observed from 20 Hz to 100 MHz and the conduction relaxation processes were found to spread over an extensive range of frequencies with the increase in the amount of Gd3+ in the Ni–Zn–Co ferrite. The RLC behavior separates the zone of frequencies ranging from resistive to capacitive regions in all the studied samples. Finally, the matching impedance (Z/η0) for all samples was evaluated over an extensive range of frequencies for the possible miniaturizing application.

Source: https://doi.org/10.1039/D1RA04762K

Influence of Eu3+ substitution on structural, magnetic and dielectric properties of Bi0.9La0.1FeO3

Author: DR. MD. SAROWAR HOSSAIN et al.

Brief Description:

Enhanced magneto-electrical (ME) properties of BiFeO3 multiferroics are attained by the modification of structural morphology that is essential for the possible applications in multifunctional devices like miniaturization. This study focused on the improvement of the magnetic and dielectric properties in an ideal BiFeO3 achieved by the gradually substitution of Eu3+in place of Fe3+ (B-site) with slight addition of La3+ replacing Bi3+ (A-Site). In this regards the composition Bi0.9La0.1Fe1-xEuxO3 (x = 0, 0.02, 0.05, 0.07, 0.10 and 0.15) were synthesized by solid state reaction method. XRD patterns indicate the samples crystallize with the normal distorted rhombohedral phase (R3c space group) and oxygen vacancies are significantly suppressed by the increase of Eu3+ amount. The lowest porosity (1.9%) is observed in the sample for x = 0.07. The crystallite sizes are increased due to 15% Eu doping. The average size of the grains are observed to be increased in the micrograph for Eu doping compared to the undoped one. The strongest absorbance peak around 560 cm−1 in FTIR spectroscopy for all the samples confirm the octahedral FeO6 bonding while a pair of feeble peaks around 370 cm−1 and 440 cm−1 confirm the existence of BiO6 octahedral phase adjacent with FeO6 group. The magnetic saturation (Ms) is 0.89 emu/g for the undoped Bi0.9La0.1FeO3 and Ms increases for Eu3+ substitution at the Fe-site of the compound. The maximum Ms (1.58 emu/g) is observed in the sample for x = 0.07. The permeability (μ) and permittivity (ε) are highly affected by the reformed structure with various grain sizes and porosities (%) which have been reported in this work. The composition for 7% Eu3+ doping shows an excellent matching between μ’ and ε’ (μ’/ε’=0.9) with lower magnetic loss (tanδμ = 0.0133) over the frequency range from 1 MHz to 100 MHz.

Source: https://doi.org/10.1016/j.jmmm.2022.169350

Structure-based magnetic, electrical and transport properties of Ni–Zn–Co ferrite by V5+ substitution

Author: DR. MD. SAROWAR HOSSAIN et al.

Brief Description:

This article presents the modification of structure-dependent elastic, thermodynamic, magnetic properties along with the conduction mechanism and its relaxation process in a Ni-Zn-Co ferrite tailored by V5+ substitution at B-site replacing Fe3+ ions. The composition Ni0.7Zn0.2Co0.1Fe2-xVxO4 (0≤x≤0.12) was synthesized by standard solid-state reaction method and all samples were crystallized with a single-phase cubic spinel structure belonging to the $Fd\bar{3}m$ space group. The lattice constants decreased gradually from 8.3673 Å to 8.3602 Å for substituting V5+ ions. The average grain size (D_SEM) decreased and porosities (P_i and P_S) increased due to the

substitution of V5+ for Fe3+ at B-site. The bond lengths and force constants of ions have been estimated from Raman and infrared spectra. The absorption peaks of FTIR spectra have been utilized to evaluate the elastic and thermodynamic properties of the studied samples. Magnetic phase transition temperature shifted to the lower temperature with V5+ substitution. The activation energy (E_a) obtained from the temperature dependence DC resistivity was found to be higher with V5+ substitution. The conduction mechanism of the prepared samples has been evaluated from the electric modulus and AC conductivity (σ_ac) from 20 Hz to 100 MHz. Localization of relaxation mechanism in the studied samples has been derived from the imaginary part of the impedance (Z^'') and electric modulus (M^''). The RLC behavior and phase angles between 20 Hz and 100 MHz indicate that pure Ni-Zn-Co ferrite is fully resistive below 100 Hz while V doped samples ranging from inductive to capacitive type. The contributions of the capacitance, as well as resistance from the grains and grain boundaries were calculated from the relaxation peaks of Z'' and M^''.

Source: https://doi.org/10.1016/j.cap.2022.05.012

Highly Directive Graphene Based Hybrid Plasmonic Nanoantenna for Terahertz Applications

Author: RICHARD VICTOR BISWAS et al.

Brief Description:

To satisfy the necessity for elevated data transmission rates in 5G and beyond networks, terahertz band communication (0.1 -10 THz) is envisaged as a crucial wireless technology. Two-dimensional graphene nanomaterial is being extensively integrated into the plasmonic antennas as it allows them to resonate in the terahertz wave spectrum. A graphene-based hybrid terahertz plasmonic nano-scale antenna has been modeled to acquire a maximum gain and directivity of 8.1 dB and 8.23 dBi, respectively, by varying the conductivity of graphene via gate bias voltage. Moreover, a combination of several tailored radiating layers of silver, SiO2and graphene sheets is arranged in the proposed nanoantenna in such a way that the return loss (S11) of -26.595 dB and wider bandwidth of 1241.3 GHz are obtained. It is evident that the proposed graphene-based hybrid plasmonic nanoantenna could be considered an ideal candidate for terahertz communication owing to its excellent radiation characteristics.

Source: https://ajse.aiub.edu/index.php/ajse/article/view/290

Drivers of Consumers' Online Purchase Intention in Bangladesh

Author: MD. MASUD RANA et al.

Brief Description:

E-commerce, though a recent invention, is now growing significantly all over the world because of the easy availability of the internet and other technological advancements. Holding a positivist philosophy, this study intends to measure the impact of five independent variables, taken from literature, on the online buying behavior of Bangladeshi consumers. The Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM) are two of the highly recognized theories used to explain purchase intention. Combining both theories, the study has taken five variables, including perceived behavioral control, perceived ease of use, attitude, perceived usefulness, and subjective norms to understand their impacts on the online buying decision of Bangladeshi consumers. After synthesizing existing literature, items have been developed to measure the impact validly and reliably. This study analyzes responses from 155 online consumers through an online questionnaire survey using the snowball sampling technique. This study finds that there are significant relationships among attitude, perceived ease of use, subjective norms, and perceived behavioral control with customer purchase intention. However, the study has not found any association between perceived usefulness and customers' online purchase intention. Methodologically, this study extends the study of consumer purchase behavior through the PLS-SEM method. Practically, it points out the key dimensions that online marketers should focus on grasping the attention of their existing and potential customers.

Source: https://www.du.ac.bd/publication/MAN

Role of artificial intelligence-internet of things (AI-IoT) based emerging technologies in the public health response to infectious diseases in Bangladesh

Author: SAMIRA SALAM et al.

Brief Description:

Digital technologies are the need of today to predict, prevent and control emerging infectious diseases. Bangladesh is one of the world's poorest and most densely populated countries and faces a double burden of two deadly diseases, COVID-19 and dengue. In response to both these diseases, the absence of a digital healthcare system and insufficient preparedness, lack of public awareness pose unique challenges and a large threat to the population, resulting in epidemics of escalating severity. This paper suggests a digital health care and surveillance system based on the internet of things (IoT) and artificial intelligence (AI) for timely identification of COVID-19 and dengue cases and improving the prevention and control strategies in the country.

Source: https://doi.org/10.1016/j.parepi.2022.e00266

Joint topology control and routing in a UAV swarm for crowd surveillance

Author: DR. MUHAMMAD MORSHED ALAM et al.

Brief Description:

Aerial surveillance using unmanned aerial vehicles (UAVs) provides an on-demand and cost-effective solution to smart-city monitoring needs, owing to their three-dimensional positioning adjustment and autonomy. The optimal deployment of a UAV swarm, also known as a flying ad hoc network (FANET), to achieve on-demand coverage of mobile ground targets (MGTs) is challenging in terms of controlling UAV mobility to maximize coverage while maintaining quality of service. Data routing from UAVs to a base station (BS) without awareness of the updated topology causes link breakages, excessive retransmissions, high congestion, and energy holes. Therefore, we propose a joint topology control and routing (JTCR) protocol comprising three modules to perform crowd surveillance. The first JTCR module provides virtual force-based mobility control (VFMC), which controls the mobility of UAVs to track MGTs, ensuring stable bi-connectivity. The second module provides energy-efficient mobility-aware fuzzy clustering that clusters the FANET to aggregate the sensed data to each cluster head (CH) by utilizing the UAV mobility provided by the VFMC. The third module provides topology-aware Q-routing, which routes the aggregated data from CH UAVs to the BS by selecting an optimal path in terms of delay, path stability, and energy consumption. According to our performance study, the proposed JTCR outperforms existing routing protocols in terms of tracking-coverage rate, connectivity rate, the number of retransmissions, packet delivery ratio, end-to-end delay, and energy consumption. This is mainly enabled by the realistic mobility control of the UAV swarm at the reasonable cost of control overhead.

Source: https://www.sciencedirect.com/science/article/pii/S1084804522000844

Thermodynamic and dynamic stability in a new potential Cs2AgAsCl6 perovskite: insight from DFT study

Author: TUSAR SAHA et al.

Brief Description:

In the present study, we propose a novel type of lead-free double halide perovskite Cs2AgAsCl6 material exhibiting exceptional photovoltaic and photocatalytic properties.

Source: https://pubs.rsc.org/en/content/articlelanding/2022/cp/d2cp03152c

Effect of tungsten doping on the microstructure, optical and photocatalytic activity of titanium dioxide thin films deposited by spray pyrolysis

Author: TUSAR SAHA et al.

Brief Description:

In this study, pristine titanium dioxide (TiO2) and tungsten (W) doped TiO2 (W: TiO2) thin films with concentrations of 2, 4, 6 and 8 at. % has been deposited on a soda lime glass substrate at 450 °C using a simple spray pyrolysis (SP) technique.

Source: https://www.sciencedirect.com/science/article/abs/pii/S0925346722011028#:~:text=We%20reported%20the%20influence%20of,gap%20owing%20to%20W%20doping

Survey on Q-Learning-Based Position-Aware Routing Protocols in Flying Ad Hoc Networks

Author: DR. MUHAMMAD MORSHED ALAM et al.

Brief Description:

A flying ad hoc network (FANETs), also known as a swarm of unmanned aerial vehicles (UAVs), can be deployed in a wide range of applications including surveillance, monitoring, and emergency communications. UAVs must perform real-time communication among themselves and the base station via an efficient routing protocol. However, designing an efficient multihop routing protocol for FANETs is challenging due to high mobility, dynamic topology, limited energy, and short transmission range. Recently, owing to the advantages of multi-objective optimization, Q-learning (QL)-based position-aware routing protocols have improved the performance of routing in FANETs. In his article, we provide a comprehensive review of existing QL-based position-aware routing protocols for FANETs. We rigorously address dynamic topology, mobility models, and the relationship between QL and routing in FANETs, and extensively review the existing QL-based position-aware routing protocols along with their advantages and limitations. Then, we compare the reviewed protocols qualitatively in terms of operational features, characteristics, and performance metrics. We also discuss important open issues and research challenges with potential research directions.

Source: https://doi.org/10.3390/electronics11071099

Analysis of the influence of trivalent Cr3+ doping on the structural and electromagnetic properties of Cu0.5Mg0.5CrxFe2−xO4 nanoferrites

Author: SUMI AKTER et al.

Brief Description:

In this inspection, the structural, microstructural, electrical, and magnetic properties of Cr-doped Cu0.5Mg0.5CrxFe2−xO4 (x = 0.0, 0.04, 0.08, 0.12, and 0.16) composites were examined, which were prepared using the sol–gel technique. The x-ray diffraction patterns of the samples sintered at 700 °C for 5 h demonstrate the production of single-phase spinel ferrite.

Source: https://pubs.aip.org/aip/adv/article/12/9/095015/2819630/Analysis-of-the-influence-of-trivalent-Cr3-doping

A Comparative Study among Steel Building, Normal R.C.C Building and R.C.C Building with All around Shear Wall for Same Frame

Author: MD. SALEHIN FERDOUS KADER et al.

Brief Description:

— The principle objective of this research is to analyze and compare an 15 storied building for different types of building using ETABS version 9.6 and STAAD.Pro v8i. We designed three types of building for one is RCC with and without shear wall and the other steel building for all possible load combinations [dead, live, wind and seismic loads]. All dimension were same of this building. The design involves load calculations manually and analyzing the whole structure by ETABS and staad-pro. The response of different type building of same dimension has been studied for same condition. The structure was subjected to self-weight, dead load, live load, wind load and seismic loads under the load combination of BNBC. The supports at the base of the structure were specified as fixed. Codes of practice to be followed were also specified for design purpose with other important details. After completion of the analysis, we made compare on column force, column moment, story displacement and shown the variation of them. The results shows average column force and beam force.

Source: http://irjaes.com/wp-content/uploads/2022/03/IRJAES-V7N1P295Y22.pdf

Traffic Congestion in Dhaka City

Author: MD. SALEHIN FERDOUS KADER et al.

Brief Description:

Dhaka faces severe traffic congestion due to rapid-fire and unbridled development by an inferior position of difference in transportation demand and force script performing in environmental declination as well. To assess the inflexibility of the being traffic system engulfed by tremendous traffic congestion in Dhaka city a study was conducted by the Civil and Environmental Engineering department of Fareast International University throughout the time (2022). In the study, congestion volume count, check of road figure and computation of inflow capacity, and rambler count was performed. Applicable secondary data was also collected. The study revealed that Mirpur-10 to New Market link, the core link of the capital city was planted as the busiest, link. Critical one shows the maximum congestion volume at a rate of 3582 PCU/h. Two business traffic peaks, first at 09.00 to10.00 substantially by the office, business and education passages and the alternate at 17.00 to 18.00 due to congestion and shopping passages were observed. traffic congestion was substantially passed by gharry and oxcart, which was followed by tempo (5 percent), and private auto (30 percent). Illegal occupations on the roadside by peddlers, mobile shops, etc. (25 percent) were among the major causes of business traffic in the city. The maximum rambler movement was planted at the New Market link running through the only busy marketable zone of the city. The Roadway Traffic Index (RCI) of 2.03 indicated the Inflexibility of traffic congestion in Dhaka City. Such a detailed script of the congestion paradigm of the civic conglomeration of a developing country is depicted in this paper.

Source: http://irjaes.com/wp-content/uploads/2022/04/IRJAES-V7N2P92Y22.pdf

Enhancement of the HILOMOT Algorithm with Modified EM and Modified PSO Algorithms for Nonlinear Systems Identification

Author: DR. MOHAMMAD ABDUL MANNAN et al.

Brief Description:

Developing a mathematical model has become an inevitable need in studies of all disciplines. With advancements in technology, there is an emerging need to develop complex mathematical models. System identification is a popular way of constructing mathematical models of highly complex processes when an analytical model is not feasible. One of the many model architectures of system identification is to utilize a Local Model Network (LMN). Hierarchical Local Model Tree (HILOMOT) is an iterative LMN training algorithm that uses the axis-oblique split method to divide the input space hierarchically. The split positions of the local models directly influence the accuracy of the entire model. However, finding the best split positions of the local models presents a nonlinear optimization problem. This paper presents an optimized HILOMOT algorithm with enhanced Expectation–Maximization (EM) and Particle Swarm Optimization (PSO) algorithms which includes the normalization parameter and utilizes the reduced-parameter vector. Finally, the performance of the improved HILOMOT algorithm is compared with the existing algorithm by modeling the NOx emission model of a gas turbine and multiple nonlinear test functions of different orders and structures.

Source: https://www.mdpi.com/2079-9292/11/5/729

Positive planar satisfiability problems under 3-connectivity constraints

Author: DR. MD. MANZURUL HASAN et al.

Brief Description:

A 3-SAT problem is called positive and planar if all the literals are positive and the clause-variable incidence graph (i.e., SAT graph) is planar. The NAE 3-SAT and 1-in-3-SAT are two variants of 3-SAT that remain NP-complete even when they are positive. The positive 1-in-3-SAT problem remains NP-complete under planarity constraint, but planar NAE 3-SAT is solvable in (1.5log) time, where n is the number of vertices. In this paper we prove that a positive planar NAE 3-SAT is always satisfiable when the underlying SAT graph is 3-connected, and a satisfiable assignment can be obtained in linear time. We also show that without 3-connectivity constraint, existence of a linear-time algorithm for positive planar NAE 3-SAT problem is unlikely as it would imply a linear-time algorithm for finding a spanning 2-matching in a planar subcubic graph. We then prove that positive planar 1-in-3-SAT remains NP-complete under the 3-connectivity constraint, even when each variable appears in at most 4 clauses. However, we show that the 3-connected planar 1-in-3-SAT is always satisfiable when each variable appears in an even number of clauses.

Source:
https://www.sciencedirect.com/science/article/abs/pii/S0304397522001578?via%3Dihub

Approximation of the Inverse of Fine-Structure Constant Using Golden Ratio (Φ), Euler's Number (e) and Pi (π)

Author: NAFISH SARWAR ISLAM et al.

Brief Description:

The fine structure constant got its name from Arnold Sommerfield, who introduced it in 1916 [2]. It is noted that when an electron orbits the nuclei in different energy shells, the energy levels of each individual shell split into much finer ones. And the gaps between the fine layer of these energy levels are directly proportional to the square of number of protons in the nucleus multiplied by α [3]. And thus it got its name. The value of fine structure constant can be derived from other constants like: G (Newton's constant), c (Einstein's constant), ħ (reduced Planck's constant), KB (Boltzmann's constant), KE (Coulomb's constant), & e (Charge of an electron).

Source: https://www.questjournals.org/jram/papers/v8-i2/A08020109.pdf

Concept Network Using Network Text Analysis

Author: MD. MASUM BILLAH et al.

Brief Description:

A network-text analysis is a way to extract the knowledge from texts and then generate a network of words. A central premise is that the network represents a mental model of the author. After transforming an unstructured text into a structured network, it is possible to use text analytic methods for analyzing the network, conducted by specific networks. Moreover, this kind of information representation can be one technique to achieve the underlying semantic structure of a text and make mental models of different authors comparable. In evolving knowledge resources such as wiki articles, the extracted networks can be utilized to compare the uncovering misconceptions, knowledge conflicts between authors, or the identification of latent relations between concepts of a particular knowledge domain. A network text analysis and visualization are used for the concept network. There are three main steps in the process concept identification, relation identification, and network generation. Various techniques are available for each of these steps. Identified concepts for extracting concepts and relations is based on an open information extraction tool (ClausIE). Three steps supported to extract labeled relations between concepts: extraction of candidate relations and a-posteriori filtering by the user. The solution which can be easily incorporated in existing process chains for network extraction from texts is compatible with arbitrary approaches for concept extraction.

A network-text analysis is a way to extract the knowledge from texts and then generate a network of words. A central premise is that the network represents a mental model of the author. After transforming an unstructured text into a structured network, it is possible to use text analytic methods for analyzing the network, conducted by specific networks. Moreover, this kind of information representation can be one technique to achieve the underlying semantic structure of a text and make mental models of different authors comparable. In evolving knowledge resources such as wiki articles, the extracted networks can be utilized to compare the uncovering misconceptions, knowledge conflicts between authors, or the identification of latent relations between concepts of a particular knowledge domain. A network text analysis and visualization are used for the concept network. There are three main steps in the process concept identification, relation identification, and network generation. Various techniques are available for each of these steps. Identified concepts for extracting concepts and relations is based on an open information extraction tool (ClausIE). Three steps supported to extract labeled relations between concepts: extraction of candidate relations and a-posteriori filtering by the user. The solution which can be easily incorporated in existing process chains for network extraction from texts is compatible with arbitrary approaches for concept extraction.

Source: https://easychair.org/publications/preprint/HQwS

Identifying Optimized Speaker Identification Model using Hybrid GRU-CNN Feature Extraction Technique

Author: K. M. IMTIAZ-UD-DIN et al.

Brief Description:

Extracting vigorous and discriminative features and selecting an appropriate classifier model to identify speakers from voice clips are challenging tasks. Thus, we considered signal processing techniques and deep neural networks for feature extraction along with state-of-art machine-learning models as classifiers. Also, we introduced a hybrid gated recurrent unit (GRU) and convolutional neural network (CNN) as a novel feature extractor for optimising the subspace loss to extract the best feature vector. Additionally, space-time is contemplated as a computational parameter for finding the optimal speaker identification pipeline. Later, we have inspected the pipeline in a large-scale VoxCeleb dataset comprising 6,000 real world speakers with multiple voices achieving GRU-CNN + R-CNN for the highest accuracy and F1-score as well as GRU-CNN + CNN for maximum precision and LPC + KNN for the highest recall. Also, LPCC + R-CNN and MFCC + R-CNN are accomplished as optimal in terms of memory usage and time respectively.

Source: https://www.researchgate.net/publication/358795981_Identifying_optimised_speaker_identification_model_using_hybrid_GRU-CNN_feature_extraction_technique

Influence of heavy Hf doping in CeO2: Prediction on various physical properties

Author: DR. MD. MOZAHAR ALI et al.

Brief Description:

This work employs density functional theory for calculating the structural, mechanical, anisotropic, thermal, electronic, and optical properties of Ce1-xHfxO2 (x = 0, 0.25, 0.5, and 0.75) to explore the heavy substitutional doping effects of Hf. The cubic phase of CeO2 is transformed to tetragonal when 50% Ce is replaced by Hf. The computed formation energy and elastic constants demonstrate the phase stability of studied materials. The present calculation demonstrates the ductility of both undoped and Hf-doped CeO2, but the tetragonal Ce0.5Hf0.5O2 reveals highest ductility as compared to other phases. Moreover, the tetragonal phase is the most anisotropic one than that of other phases. Interestingly, both pure and doped phases are acceptable for thermal barrier coating, however doping with 75% Hf at Ce-site makes it even more suitable. The semiconducting nature of CeO2 is evolved because of having band gap in the electronic band structure, which is supported by its experimental report. The band gap is increased with increasing doping of Hf. The optical absorption and conductivity reconfirm the semiconducting nature of the titled materials. Furthermore, the overall optical nature predicts the efficient uses of Ce1-xHfxO2 in microelectronics, integrated circuits, and solar panel.

Source: https://www.sciencedirect.com/science/article/pii/S2211379722002935

Post-pandemic talent management

Author: DR. SHIBLI AHMED KHAN et al.

Brief Description:

The theoretical perspectives on talent management are built on the development of the concept of human capital. It connects the human capital concept with the conceptions of strategic human resource management, sustained competitive advantage-based organizational development, impact-focused leadership and sustainable development, new institutionalism and the open system.

Source: https://www.emerald.com/insight/content/doi/10.1108/LBSJMR-12-2022-048/full/html#sec001

Development of a low-cost textile sensor based insole to monitor foot pressure of diabetic patients

Author: DR. MD. HASAN IMAM et al.

Brief Description:

A common but preventable complication of diabetes is diabetic foot ulcer. If appropriate care is not provided such foot lesions progress to the most severe diabetic foot complication, like infection, gangrene, amputation and even death. Diabetic neuropathy results abnormal planter pressure points under the foot and triggers the tendency of foot ulcer. The aim of this paper is to present the development of a low cost, power efficient, soft, lightweight and simple in-shoe planter pressure measurement system. The system is capable to determine the average static pressure under ball and heel of the foot. The insole is comfortable due to the use of textile pressure sensor and its simple data acquisition method makes operation easy for the users. An experiment with 10 participants with and without diabetes was carried out to observe the outcome of the system. The practical implication of this study is to minimise the damage caused by foot ulcer by determining the pressure abnormality at earliest with a fully developed cost effective design. The system is capable to identify the difference in average planter pressure values in different groups of participants. To monitor the foot health proactively, the proposed system is found to be a useful device and can successfully scan the planter pressure under ball and heel of the foot.

Source: https://pubmed.ncbi.nlm.nih.gov/35212583/

A Review on The Design And Implementation Of A Robotic Arm For Collecting Covid-19 Samples

Author: NAFIZ AHMED CHISTY et al.

Brief Description:

The Covid-19 virus first infected humans around the end of 2019, and since then, people worldwide have witnessed the infection's terrible history. Many scientific treatments have been explored to stop the COVID-19 virus from spreading. However, if they are in close proximity to the victim, their chances of getting the virus increase. Therefore, a robotic arm may be designed and implemented for the safety of medical staff during Covid sampling. The robotic arm can grip the swap and obtain a sample from the suspect's mouth. This will allow sampling without contacting the suspect, preventing virus transmission. This paper explores the history of the robotic arm and reviews over 50 important scientific papers on the distinguishing characteristics of a robotic arm.

Source: https://engineeringjournals.stmjournals.in/index.php/JoITI/issue/view/1092

Consumers' Awareness and Acceptance of Grocery Shopping from the Online Platforms

Author: STANLEY SUMON RODRICK et al.

Brief Description:

According to the Central Bank of Bangladesh's report, the growth and total e-Commerce transactions held during the Covid-19 pandemic were remarkable (Bangladesh Bank, 2021). Studies indicated that due to technological advancements and customers' interests, "Online Shopping" has gained substantial popularity. Grocery products are considered one of the prime items in consumers' shopping lists. During the Covid-19 pandemic, people have experienced various convenient purchasing options from online marketplaces. Therefore, the researchers have taken this initiative to analyze and identify the dimensional factors that impact consumers' awareness and acceptance of purchasing their grocery items from online platforms. The researchers followed the quantitative approach to collect and analyze the data using a non-probability purposive sampling method. A total of 673 responses were analyzed in Bangladesh's urban, suburban, and rural areas. In addition, a self-administrated questionnaire was created on the prior studies related to the Unified Theory of Acceptance and Use of Technology (UTAUT). The collected data were analyzed with SPSS 23 version. The study outcomes show a significant positive relationship between the customers' awareness and acceptance of online grocery shopping. The results identified that the behaviors of the consumers are highly affected by the User Influence, User Experience, Facilitating Conditions for enhancing consumers' awareness, and the Payment Methods and Awareness factors, respectively, impact the acceptance of online grocery shopping. The significant findings would eventually benefit online marketers in articulating effective strategies to penetrate the market for future business sustainability.

Source: https://ajbe.aiub.edu/index.php/ajbe/article/view/124

A Novel Approach of Marine Ecosystem Monitoring System with Multi-Sensory Submarine on Robotic Platform for Visualizing the Climate Change Effect over Oceanic Environment

Author: AMINUN NAHAR et al.

Brief Description:

It is obvious that the whole world is so much concerned about the terrifying escalation of climate change in the recent time period. This climate change effect can be visible in the land, atmospheric and oceanic area simultaneously. Though there have been multiple attempts of proposing solutions concerning the protection for the land area environmental balance, monitoring and surveillance. But unfortunately there have been a very handful of research work which predominantly concerns about the protection upon the environmental state of marine biological species and its ecosystem. So, the following research study proposes a solution which appears to be a full-fledged Bluetooth controlled Submarine prototype with a sensory chipboard attached inside its endo-skeleton which contains multiple sensors like DHT11 temperature-humidity, dust, CO2 and YL69 pH sensors. The sensory data provides the information of underwater whether the naval environment is habitable for the marine biological species or not, under the terrible effect of global climate change. The submarine prototype is fully functional in the surface and underwater scenario which contains a very unique mechanical design and circuitry with an exceptional sensor data streaming capability which can be used by marine biological researchers and oceanographers professionally as a full-fledged marine ecosystem monitoring device.

Source: https://tis.wu.ac.th/index.php/tis/article/view/4205

Enablers in the production system design process impacting operational performance

Author: MD. HASIBUL ISLAM et al.

Brief Description:

This paper explores how the design process of the production system could be utilized to improve the operational performance during the production ramp-up and operation phases. A qualitative case study was carried out in a large process-type manufacturing company, focusing on three new production line launching projects. Different actions taken in the design process of the production lines were linked to their impact during the running operation phase and operational performance, which is measured by the metric of Overall Equipment Effectiveness (OEE) within lean manufacturing. The empirical findings provides a concrete example that activities in the design process impact on the OEE. A set of enablers in the production system design process at different systems-level, especially concerning the acquisition of new production equipment have been demonstrated that has potential to achieve the target operational performance. Finally, the concept of operational performance driven production system design process is proposed.

Source: https://doi.org/10.1080/21693277.2022.2076753

Topology control algorithms in multi-unmanned aerial vehicle networks: An extensive survey

Author: DR. MUHAMMAD MORSHED ALAM et al.

Brief Description:

In recent years, unmanned aerial vehicles (UAVs) have attracted increased attention from academic and industrial research communities, owing to their wide range of potential applications in military and civilian domains. A collaborative group of UAVs operating in an ad hoc manner known as a flying ad hoc network (FANET) can accomplish complex tasks more efficiently. However, owing to the high mobility of UAVs, such applications remain limited by a few key challenges, including dynamic time-varying topologies, energy constraints, frequent link breakages, inter-UAV collisions, and external obstacle avoidance. A proper topology control algorithm (TCA) for UAV swarms with reasonable overhead helps to optimize both mission and communication performance in FANET. Thus, TCA provides wider coverage ensuring the quality of service in aerial connectivity. Additionally, it supports the efficient energy management, better target exploration, improved formation stability while ensuring inter-UAV collision avoidance, external obstacle avoidance, lower interference, and the enhanced autonomy of UAV swarms. In this article, we present a comprehensive survey of available TCAs for FANET, and provide a novel taxonomy of TCAs based on the FANET topology architectures and underlying mathematical models. Through an in-depth assessment of recent innovative research articles and their comparative studies, we aim to provide novel insights into the latest technologies for autonomous cooperative coordination. The key open research issues and their respective solutions are addressed as future research directions.

Source: https://www.sciencedirect.com/science/article/abs/pii/S1084804522001370

COVID-19 and Sustainable Development Goals: Bangladesh Perspective

Author: MD. MORTUZA AHMMED et al.

Brief Description:

The objective of this study is to evaluate the state of the Sustainable Development Goals (SDGs) in Bangladesh before the arrival of COVID-19 along with its apparent impact on the accomplishment of SDGs in the future. Data from several national and international sources have been utilised to serve the analytical purpose of the study. Obliteration of the commendable accomplishments regarding some of the SDGs so far and resetting of the goals in terms of precedence are going to be the main consequences of COVID-19 concerning SDGs in Bangladesh which would impede attaining SDGs. However, constrictions in the production of industries along with a massive drop in fossil fuel usage through vehicles would give some respite to nature leading to notable progress regarding SDG 13, SDG 14 and SDG 15. But it would never recompense significantly for the overall effect resulting from COVID-19.

Source: https://www.inderscience.com/info/inarticle.php?artid=125098

A Machine Learning Approach for Bengali Handwritten Vowel Character Recognition

Author: ABHIJIT BHOWMIK et al.

Brief Description:

Recognition of handwritten characters is complex because of the different shapes and numbers of characters. Many handwritten character recognition strategies have been proposed for both English and other major dialects. Bengali is generally considered the fifth most spoken local language in the world. It is the official and most widely spoken language of Bangladesh and the second most widely spoken among the 22 posted dialects of India. To improve the recognition of handwritten Bengali characters, we developed a different approach in this study using face mapping. It is quite effective in distinguishing different characters. The real highlight is that the recognition results are more efficient than expected with a simple machine learning technique. The proposed method uses the Python library Scikit-Learn, including NumPy, Pandas, Matplotlib, and support vector machine (SVM) classifier. The proposed model uses a dataset derived from the BanglaLekha isolated dataset for the training and testing part. The new approach shows positive results and looks promising. It showed accuracy up to 94% for a particular character and 91% on average for all characters.

Source:
https://ijai.iaescore.com/index.php/IJAI/article/view/21020?fbclid=IwAR3sxWTdh5vhfzQOqkGnXI_I4mfvE3QtJe6flRJZf6t8sb3Z1AZCXTmfrEQ

Phase Transfer of AMIET-functionalized Gold Nanoparticles from Aqueous to Organic Solvents

Author: DR. ABDULLAH AL NAHID et al.

Brief Description:

This paper presents a feasible and reliable phase transfer protocol for polyoxyethylene alkyl amine surfactant (AMIET)-coated gold nanoparticles (AuNPs) in aqueous media to chloroform using a pH triggered method, through the liquid-liquid interface. In the initial stage, the colloidal aqueous dispersion is destabilised by pH adjustment towards the isoelectric pH of the nanoparticle, which promotes the separation of the particles from water. We further explored a mechanistic view of this phase transfer phenomenon, considering the orientation of hydrophilic and hydrophobic moieties depending on the nature of the surrounding solvent. It was proposed that the AMIET molecules bound to the AuNPs undergo conformational changes through phase transfer. Ultraviolet visible absorption spectra before and after the phase transfer reveal that the original morphology and dispersion states of the particles were preserved.

Source: https://www.jstage.jst.go.jp/article/jos/71/5/71_ess21345/_article/-char/ja/

Digital Transformation in Islamic Finance; Chapter: Fintech in Islamic Banking in Bangladesh: Opportunities and Threats

Author: MD. JOYNAL ABEDIN et al.

Brief Description:

Research focusing on Fintech in traditional interest-based banking application is numerous, while limited on Shariah-based Islamic banking. Islamic banking system in Bangladesh has been substantially contributing to total deposits, investments, and remittances. This research aims at exploring opportunities and threats for launching and innovating Fintech in Islamic banks in Bangladesh. Drawn on qualitative information collected using in-depth interviews, this research finds that awareness about Fintech among the bankers is confined to mobile banking services. Lack of technological expertise has been observed hindering the promotion of Fintech in Islamic banks. While the central bank has not put any pressure on the innovation of Fintech, it is the customer who puts the banks under pressure to come up with new user-friendly technologies. It is perceived by the banker that Fintech has the potential to minimize operating costs. Low number of workforces has been identified as a challenge for Fintech in Islamic banks in Bangladesh. Blockchain and cloud computing are some specific areas of research that can further be investigated in the Bangladesh context of Islamic banks.

Source: https://www.taylorfrancis.com/chapters/edit/10.4324/9781003262169-10/fintech-islamic-banking-bangladesh-md-joynal-abedin-syed-mahbubur-rahman-riyashad-ahmed

Study the Impact of Green Synthesized Silver Nanoparticles on Bio-voltaic Cell

Author: BITHI PAUL et al.

Brief Description:

Bio-voltaic cell is a cell where plant extract is used as electrolyte. In this report, a bio-voltaic cell is proposed where silver nanoparticles (Ag NPs) have been used to accelerate the performances of voltaic cell. The role of Ag NPs on cell was investigated by monitoring the voltage, current, capacity, and voltage regulation of bio-voltaic cell. Ag NPs were synthesized through a rapid green approach by using the Bryophyllum.pinnatum (B. pinnatum) leaves extract and the formation of NPs is confirmed by the UV–visible spectrometer, XRD, FTIR, and FESEM analyses. The Ag NPs were applied on the bio-voltaic cell to examine the electrical performances of the cell. The Ag NPs showed significant role to reduce the voltage regulation, and increase the capacity of voltaic cell. The electrical performances of bio-voltaic cell were significantly improved after using NPs on cell. This study will serve as a promising platform to integrate the efficiency of the bio-voltaic cell.

Source: https://link.springer.com/chapter/10.1007/978-981-19-2308-1_45

Comparative Study of Electrical Performances of Bio-Electrochemical Cell

Author: BITHI PAUL et al.

Brief Description:

Plant extract can be the alternated cost-effective and ecofriendly source of electrolyte for the electrochemical cell. In this study, six types of plant extract electrolyte have been used on the electrochemical cell, and the electrical performances of six bio-electrochemical cells were investigated. The highest average voltage (1.14 V), current (21.25 mA) were obtained for PKL extract cell, and the lowest performances were found for aloe vera cell. The power and capacity were also calculated for this all cell. All electrical performances of PKL extract cell were more significant than other plants extract electrolyte cells. The electrical performances of all of these bio-electrochemical cells have been graphically represented in this paper. This comparative study regarding the performances of different electrochemical cells may open a promising platform for ecofriendly, cost-effective power production.

Source: https://link.springer.com/chapter/10.1007/978-981-19-2308-1_21

E-Infrustructure and E-Services for Developing Countries; Chapter: The Significance of AR Based Magazine Book for Historical Places of Bangladesh: Case Study

Author: DR. MD. ABDULLAH - AL - JUBAIR et al.

Brief Description:

Augmented Reality (AR) is the integration of real-world objects with the use of information in the form of text, graphics, audio, and other virtual enhancements. In mobile augmented reality, a client can see virtual particles superimposed on live video of this display reality utilizing visual following or plan rendering. Any country's economy is heavily reliant on its tourism sector. In our country, there are several tourism sectors, but they are not well-organized and attractive. Augmented reality is still a relatively new technology in Bangladesh. We've seen this technology applied successfully in a number of articles. To implement the tourism sector, we have proposed the development of augmented reality-based magazine books in our research. We used Vuforia, SDK for this and developed the graphics part ourselves. Then we have selected our magazine book places and designed the app accordingly using Unity3D. Finally, we have evaluated how effective this system could be, where we send the application and a google form to more than 50 people to use the app fill up the form and most of them were satisfied with the effectiveness of our magazine book in the tourism sector.

Source: https://link.springer.com/chapter/10.1007/978-3-031-06374-9_30

A Comprehensive Study on Attention-Based NER

Author: DR. MUHAMMAD FIROZ MRIDHA et al.

Brief Description:

Named Entity Recognition (NER) is a part of extraction and is used for Natural Language Processing (NLP). NER system helps us to find various names from unstructured text or a text file and classifies them into various categories. The attention-based keyword extracting concept has been established to solve the problem of detecting redundant data and inessential data and does not consider them. Researchers are highly concerned about attention mechanisms. In this study, we focus on the most recent algorithms which are trained with the attention-based mechanism for NER. We briefly describe attention-based models, objectives of these models, datasets used in each method, and efficiency. Our focus is to give some decisions on which model is exceptionally efficient depending on the dataset and NER category.

Source: https://link.springer.com/chapter/10.1007/978-981-16-2597-8_57

Design and implementation of automatic line follower robot for assistance of COVID-19 patients; Chapter: Sustainable Communication Networks and Application: Proceedings of ICSCN 2021

Author: MD. ALOMGIR KABIR et al.

Brief Description:

Coronavirus disease (COVID-19) has caused unprecedented global health problems, and the disease's spread rate is extremely high. It spreads from infected people (COVID-19 positive) to others via droplets from the mouth or nose when they cough, sneeze, speak, sing, or take deep breaths. Frontline fighters of healthcare organizations such as doctors, nurses, and other medical staff cannot have direct contact with COVID-19 patients in isolation room without personal protective equipment (PPE). Hence, hospital workers have to face different types of problems in distributing foods, medicines, and disposal of waste. An Automatic Line Follower Robot (ALFR) is designed and implemented for COVID-19 patients which is capable of serving infected patients in an isolation room. The main contribution of this paper is to serve essential medicines and foods from the hospital staff and serve it to the patients following the black line. The ALFR also proposes a system which maintains an emergency wireless communication protocol between doctors and patients. It also collects waste from a specified basket and damps it to a proper place. Finally, it can sanitize the isolated room with the help of a disinfectant machine which is assembled in ALFR. ALFR's performance has significantly improved, and it can successfully complete all tasks.

Source: https://link.springer.com/chapter/10.1007/978-981-16-6605-6_17

Performance Analysis of MC-CDMA-Based Cognitive Radio Network Under Rayleigh Fading Channel; Chapter: Proceedings of Trends in Electronics and Health Informatics: TEHI 2021

Author: MD. ALOMGIR KABIR et al.

Brief Description:

Higher rate of mobile data traffic demand is increased with the advent of the Internet of things (IoT) and advanced network services (ANS) operators that have begun to develop fifth generation (5G) cellular networks in order to overcome the limitations of the current fourth generation (4G) cellular network. In order to solve the bandwidth scarcity and effective allocation of spectrum resources and also provide higher demand of bandwidth, a multi-carrier code division multiple access (MC-CDMA)-based cognitive radio network (CRN) is proposed and the performance of this system is investigated in this research. MC-CDMA-based CRN improves the channel capacity of the cognitive cooperative network (CCN). Moreover, CCN enhances the spectrum utilization efficiency. Signal to noise plus interference ratio (SNIR) and the bit error rate (BER) are explored, as well as analytical derivations are investigated for performance analysis of our proposed model under Rayleigh fading channels. The comparison between our proposed model and conventional decode and forward (DAF) relaying is also included in the research and MC-CDMA-based cooperative relaying system with multiple receiving antenna schemes to show that the recommended approach is effective. The simulation as well as the numerical results are presented to demonstrate that the suggested cooperative relaying spectrum sharing technique is efficient.

Source: https://link.springer.com/book/10.1007/978-981-16-8826-3

Nano Rover: A Multi-sensory Full-Functional Surveillance Robot with Modified Inception-Net

Author: AMINUN NAHAR et al.

Brief Description:

In this rigorous world of civilized progression, terrorism and other subsidiary security threats are undoubtedly intimidating to us. In order to fight back these mischievous activities, we focus to the technical development of our surveillance and reconnaissance systems. Military reconnaissance might be the ancient most solution for preventing the violent outcomes of terrorism but still the unfortunate chance of human life loss exists there. For this why, the solution appears to be using the unmanned surveillance vehicle or machine which would be able to transmit visual data of a certain dangerous area to the controlling headquarters of the particular law enforcement agency. Nano Rover is a significant approach of cost-efficient surveillance and reconnaissance robot which is fully functional and cost-efficient at the same time. It features the service of active reconnaissance mode with LIDAR sensor, location tracking with GPS Neo 6 M module, visual information collection, person detection, weapons detection

and identification, gender and age prediction of the hostile and other artificial threat detection, etc. Remote navigation plays as the core controlling system of the robot which is also modifiable through replacement with Internet and satellite navigation system. We modified the conventional Inception-Net architecture with a better hyper-parameter tuning for the successful execution of image processing tasks with a better level of accuracy so far.

Source: https://link.springer.com/book/10.1007/978-981-19-2347-0#about-this-book

SURFACE DAMAGE DETECTION AND ANALYSIS OF LINE INSULATORS WITH THE AID OF DEEP LEARNING

Author: KAZI FIROZ AHMED et al.

Brief Description:

The high voltage line insulators play a crucial role in the power system reliability. To deliver quality service, it is essential to keep track on the condition of these insulators. As traditional fault-detection systems have become more time- and labor-intensive, this project offers YOLOv4 damage detection and classification algorithm model using darknet based on deep learning. YOLOv4 has Many different features propose to increase Convolutional Neural Network (CNN) accuracy. Picture content of the insulator data set for training is divided into three classes: Insulator, damaged part and discolored part of insulator. The experimental results demonstrate that the highest AP (Average Precision) value based on YOLOv4 insulator detection is 96.47%, the highest AP value of insulator damage is 99.17%, and the overall m-AP (mean Average Precision) value is 97.82% after applying the network to the aerial insulator data set for training. The real-time detection speed for YOLOv4s is 43.2FPS, and it has a higher detection rate (Frames Per Second). The automated inspection of overhead transmission power line insulators may benefit from the work presented here.

Source: https://ieeexplore.ieee.org/abstract/document/10070065

Observing Tumor Ablation of Numerous Soft Tissues Using High Intensity Focused Ultrasound Setup

Author: DR. MOHAMMAD NASIR UDDIN et al.

Brief Description:

Medical science is presented with the aim of finding cures and techniques that reduce patient intervention and hospital visit. Thermal ablation methods are invasive cancer treatment option

that is rapidly gaining clinical acceptance. High-intensity Focused Ultrasound (HIFU) is much more efficient, painless, cost-effective and time-consuming than conventional cancer treatments such as chemotherapy, radiation therapy, bone marrow transplantation, invasive surgery, and so on.

Mutation in DNA cause cancer. A DNA alteration can lead genes involved in normal cell growth to become tumorigenic. HIFU requires that the detectable and curable tumor/cancer would have been at least 1 cm in diameter; otherwise, it will not be diagnosed. Three basic types of tumors (Benign, Premalignant and Malignant) can be ablated with the HIFU therapy technique, however if the tumor becomes too enormous, surgical therapies can be done in combination with this therapy to ensure a complete cure. The primary processes of HIFU ablation discussed in this research include mechanical and thermal consequences. In this study, investigations and simulations on tumor ablation with HIFU were performed to determine how multiple soft tissue ablation operated and how to optimize tumor ablation while minimizing disruption to surrounding healthy tissue by setting the optimal temperature, power, intensity, frequency spectrum, field depth and transducer lens radius of curvature. All computations were performed by selecting several focal lengths ranging from 55 mm to 65 mm. A piezoelectric transducer was employed as a pressure probein the instance of tumor ablation. In conclusion, we tried to find the beneficial aspects of HIFU that are expected to play a major part in future everyday clinical practice in this research.

Source: https://bdphso.org/wp-content/uploads/2023/08/Full-Abstracts-Book-International-Conference-on-Physics-2022.pdf

Design of 32X20 Gbps Hybrid Technique of PDM-WDM and its performance analysis for channel capacity enhancement

Author: DR. MOHAMMAD NASIR UDDIN et al.

Brief Description:

This paper proposes a hybrid technique of Polarization Division Multiplexing and Wavelength Division Multiplexing with NRZ modulation. This design consists of 16 wavelengths with 32 individual dual-polarized channels having 100 GHz channel spacing up to 100 km transmission distance in a single-mode fiber. Each carried a 20 Gbit/s bit rate per channel and achieved 0.64 Tbit/s (16 wavelenghts×2 polarization state×20 Gbit/s), a net data rate with 21% spectral efficiency. The stability analysis of this technique was conducted by undertaking an FEC limit (Min Log BER= -3) calculation to get the minimum allowable OSNR (25.3 dB) in the transmission link.

Source: https://dl.acm.org/doi/proceedings/10.1145/3542954

An Empirical Analysis of 5.76 Tbit/s SDM-PDM-Nyquist superchannel WDM hybrid multiplexing technique for channel capacity enhancement

Author: DR. MOHAMMAD NASIR UDDIN et al.

Brief Description:

This article presents the feasibility study of 5.76 Tbits/s SDM-PDM-Nyquist superchannel WDM hybrid multiplexing technique for enhancing the channel capacity over a transmission distance up to 10 km using C-band frequencies in the multimodal domain. This system uses 48 independent channels carrying 48 bits streams of data using 8 C-band frequencies, 2 polarization states, and 3 LP modes. At a transmission distance of 10 km, satisfactory BER (log BER -9.35, faithful Q-factor 6.09, and extinction ratios 7.78 were observed with the minimum OSNR (46.5 dB) of the system, not going below the minimum OSNR (27.8) considering FEC limit. Each channel receives a satisfactory amount of power after 2 stage amplification process leading to a spectral efficiency of 137%.

Source: https://dl.acm.org/doi/proceedings/10.1145/3542954

Determinants of Integrated Reporting Practice at Organizational level: Discourse Analysis.

Author: DR. MOHAMMAD FARIDUL ALAM et al.

Brief Description:

Now a days stakeholders' demand for forward looking corporate reporting that includes both financial and non-financial information in a single frame which creates a path for new form of reporting called integrated reporting (IR). Firms around the world are increasingly embracing IR to enhance the extent and quality of corporate reporting to create value in the business. The purpose of this study is to find the impact of integrated reporting practices in pharmaceutical sectors of Bangladesh listed in Dhaka Stock Exchange from 2018 to 2020 and to explore the determinants of IR disclosure. This study applies the discourse analysis as an approach in exploring the narratives of annual reports. Aristotle's rhetoric framework, as used by Higgins and Walker (2012), is applied to classify data into three categories: logos (appeal through reasoning), pathos (appeal through emotions) and ethos (appeal through credibility). Findings shows that integrated thinking, connectivity and stakeholder engagement into business strategies and business models are the major determinants of integrated reporting disclosure in pharmaceuticals. This study contributes to the existing literature by providing the significant parameters in disclosing multiple capitals and provides valuable insights to the International Integrated Reporting Council (IIRC) in establishing the IR framework as a global reporting norm in practice.

Source: https://conference.iou.edu.gm/2nd-ioucris-2022/

SWCNT Based On-Body Antenna For Detecting COVID-19 Affected Lung Using 5G-Band

Author: RAJA RASHIDUL HASAN et al.

Brief Description:

In this paper, a 5G on-body patch has been designed for detecting COVID-19 affected lung. A new material Single Wall Carbon Nanotube (SWCNT) is used to design the patch of the antenna. Copper is used to designing the ground and FR-4 (lossy) is used in the substrate. The antenna has a total thickness of 5.5 mm where the patch thickness is 0.5 mm, the substrate thickness is 4.5 mm, and the ground thickness is 0.5 mm. The total volume (length x width x thickness) of this antenna is 80 mm x 80 mm x 5.5 mm (35200 mm 3). For detecting COVID-19, designed two human lung phantom body models such as a COVID-19 affected lung model and a non-affected normal lung model. The patch antenna and all the models were designed in CST Microwave Studio. All the dielectric properties and other valuable parameters of the antenna materials and lung phantom models were collected and used for designing the antenna and phantom lung models. The antenna's return loss (S 1,1) is −27.498894 dB, gain is 3.007 dB, VSWR is 1.0880641, directivity is 6.007 dB, resonant frequency is 6.296 GHz, SAR 1.19 W/Kg, bandwidth is 1.8174 GHz and the efficiency is 61% in free space. In this pandemic situation, this antenna can be given a new step for detecting COVID-19 affected lung.

Source: https://ieeexplore.ieee.org/document/9836476

Stock Market Prediction Using Long Short-Term Memory (LSTM)

Author: TOHEDUL ISLAM et al.

Brief Description:

The stock market is one of the most unpredictable and highly concerned places in the world. There is no fundamental way to forecast stock market share prices. So people think stock market prediction is a gamble. Nevertheless, it is possible to generate a constructive pattern by using different types of algorithms and predict the share price. But when the characteristics are complex, and the largest portion of these classification methods are linear, resulting bad performance in class label prediction. In this paper we suggest a non-linear technique based on the Long Short-Term Memory (LSTM) architecture. According to studies LSTM-based models predict time and sequential models better than other models and RNN is the first algorithm with an internal memory that remembers its input, making it perfect for sequential data machine learning issues. For our experiment we collected the share market data from a particular company named Beximco for the last 11 years. To reassert the effectiveness of the system different test data are used. This work introduces a robust method that can predict stock price accurately based on LSTM.

Source: http://icaect.com/#:~:text=The%20proceedings%20of%20ICAECT%202024,in%20IEEE%20Xplore%20digital%20library.

The IoMT and Cloud in Healthcare: Use, Impact and Efficiency of Contemporary Sensor Devices Used by Patients and Clinicians

Author: MD. MEHZABUL HOQUE NAHID et al.

Brief Description:

The aim of this research is to undertake a systematic review of the literature on cloud-based Internet of Medical Things (IoMT) in healthcare, to summarise the examined contexts and research focuses, to identify gaps in the literature, and to recommend new directions for future research. The authors searched electronic databases such as Scopus, Elsevier, ACM library, IEEE Xplore, Emerald, and ScienceDirect for articles relating to (IoMT) and cloud technologies, as well as did manual journal searches in Google Scholar, PMC and ResearchGate. A total of 442 papers were examined using a combination of quantitative and qualitative approaches. A systematic mapping study was undertaken as part of the qualitative investigation. The study identified and classified contemporary IoMT devices and applications used in healthcare that have evolved over time, including remote monitoring apps, diagnostic tool apps, personal wellness and healthy living apps, consolidated healthcare apps, medication adherence apps, appointment scheduling and reminder apps, and various types of critical decision-making systems applications. Additionally, potential themes for future study were identified, including the impact of cloud-based IoMT devices and the obstacles associated with deploying IoMT in healthcare. The review focuses on how patients and clinicians apply IoMT. Further study may want to examine the adoption, effectiveness, and usability of cloud based IoMT in healthcare from the perspective of various stakeholders, such as families, caregivers, healthcare institutions, researchers, policy actors, payors, and buyers.

Source: https://icca.aiub.edu/

Compact Design of Microstrip Patch Antenna for 5G Applications Using Millimeter Wave

Author: NOWSHIN ALAM et al.

Brief Description:

In this paper, a low-profile slotted microstrip patch antenna with an operating bandwidth of 34.093GHz - 38.607GHz has been proposed. The antenna has been simulated using Computer Simulation Technology Microwave Studio (CST MWS), using annealed lossy copper for the ground and patch layers while employing lossy Rogers RT5880 as the dielectric substrate material. Antenna feeding was done through a microstrip line, and a comb-shaped slot was cut out from the conducting patch layer. The simulated results for the design report a return loss of approximately -22.13 dB at the resonant frequency of 37.18 GHz, a main lobe gain of 5.9468 dBi, and efficiency of 84.47%. Additionally, the VSWR value is 1.1698 at the resonant frequency and within the acceptable range of 0 to 2 everywhere else over the working bandwidth. Comparison of the simulation with existing literature suggests that the performance of the proposed antenna achieves the requirements for fifth-generation 5G mobile network applications.

Source: https://ieeexplore.ieee.org/xpl/conhome/9823959/proceeding

A Simple Design of Microstrip Patch Antenna for WLAN Application Using 5.4 GHz Band

Author: NOWSHIN ALAM et al.

Brief Description:

In this paper, a microstrip patch antenna for 5.4 GHz band has been designed using Computer Simulation Technology (CST) Microwave studio, choosing copper for constructing patch and ground plane, Flame Retardant 4 (FR-4) material for substrate and microstrip line for feeding. The small sized simple design offers high directivity as evident from a main lobe magnitude of 6.16 dBi and an impressive −53.189 dB S11 value at center resonant frequency of 5.38 GHz. Additionally, the efficiency is calculated to be 41.938% and the bandwidth an adequate value of 200.6 MHz. The Voltage Standing Wave Ratio (VSWR) value of 1.0044 indicates almost no mismatch between antenna and feedline. These simulated results confirm that the proposed antenna performs admirably despite the simple design and can be used for wireless local area network (WLAN) applications.

Source: https://link.springer.com/conference/csps

Analyzing Different Software Project Management Tools and Proposing A New Project Management Tool Using Process Re-engineering On Open-source and SAAS Platforms for A Developing Country Like Bangladesh

Author: FARZANA BENTE ALAM et al.

Brief Description:

This paper analyzes and evaluates different software project management tools that help the team to plan, manage, optimize resources, and monitor the project progress. The ICT industry in Bangladesh has immense prospects in driving the country's economy, and it has grown by 28%-40% annually since 2010 each year. But though we have huge benefits over low development costs, clients of the developed countries are not very satisfied with the quality of the software. So in this paper, we are proposing an open source-based project management tool that will serve small to medium-sized software firms at no cost. The software firms will maintain the software engineering best practices by using the software. As "openness" becomes one of society's hallmarks in the 21st century and extends into innovation, research, and standards-setting, an open-source system has become an integral part of the business. Because of the speed and the scale at which it has happened, open-source is central to strategy today.

Source: http://sarc.net.in/Conference/12699/ICSEIT/

Design of an IoT-based Smart Farming System

Author: MD. SHAHARIAR PARVEZ et al.

Brief Description:

Farming is a very vital sector for any developing country like Bangladesh. Therefore, smartly operating the farm is essential nowadays to get maximum productivity from the farm. In this paper, an automatic system is designed for the farm which is operated via the internet of things (IoT) technology. This proposed system is developed to implement advanced technology into the traditional farming system. The proposed approach incorporates feed and water level indicator control systems, health monitoring systems, fire and gas detection systems, temperature-based fan control systems, intelligent tracking systems, and cow dung cleaning mechanisms. Finally, different sensors will collect all the data and eventually be controlled by Arduino Nano micro-controller, which incorporates IoT features. Therefore, the users can handle their farm from any place and get real-time data from the farm through mobile. Furthermore, this proposed system is eco-friendly as well as cost-effective.

Source: https://icca.aiub.edu/

Hoyt Wireless Fading Channel Capacity Analysis Using Large Limit Argument Approximation

Author: MD. MAZID-UL-HAQUE et al.

Brief Description:

In wireless communications, a good data transfer rate is always in demand. To represent a wireless communication channel, several distributions or fading models are utilized. Prior to this, some fading system models were used to demonstrate a wireless communication channel and do analysis on the channel. This study incorporates the SIMO (single-input multiple-output) wireless communication framework over the Hoyt fading channel, commonly known as the Nakagami-q fading channel in order to analyze the performance of the system. Large limit argument approximations are used to estimate the channel capacity. The large limit argument approximation is used to introduce analytical solutions for channel capacity. SNR is the ratio of signal power to noise power, and large limit argument approximations are related to HSR (high SNR regime). The impacts of instantaneous SNR and fading parameter also known as fading boundary on channel capacity individually have been examined thoroughly. The proposed SIMO channel capacity performance for HSR is compared with the performance of LSR (low SNR regime) and the channel capacity performance is also compared with that of SISO (single-input single-output) HSR system and in-depth analysis is done on all cases. In this study, it is observed that when the instantaneous SNR in the HSR increased, the channel's capacity increased substantially. Furthermore, SIMO HSR channel capacity outperforms both SIMO LSR and SISO HSR in terms of performance.

Source: https://dl.acm.org/doi/proceedings/10.1145/3542954

BE-Voting: A Secure Blockchain Enabled Voting System

Author: SHARIFA RANIA MAHMUD et al.

Brief Description:

Blockchain is a distributed ledger shared among the participants ensuring transparent and secured transactions over the network. Existing voting systems for selecting eligible candidates may be unable to maintain transparency, privacy, and security. A blockchain-based voting system can resolve these issues through decentralized nodes and end-to-end verification advantages. Thus, integrating blockchain into the traditional voting system may provide a more reliable and secure electronic voting procedure. This research aims to propose an alternative solution to the conventional voting system named 'BE-Voting' using blockchain technology in the context of Bangladesh that will preserve the integrity of the votes with distributed, non-repudiation, and security protection characteristics. A prototype of the proposed system was developed and evaluated regarding data analysis and comparison with existing systems.

Source: https://icecte.ruet.ac.bd/

A Data-Driven Study to Investigate the Causes of Severity of Road Accidents

Author: PRITAM KHAN BONI et al.

Brief Description:

Traffic safety is one of the most concerning issues worldwide now a day.Thousands of life are being lost every day only for road accidents in each and every country and geographical region. Road accidents have increased with rapid development of the transportation sector. Therefore every government has considered it as one of the vital problems of this time and started taking steps for reducing the road accident and damage caused by the road accidents. A huge amount of data related to road accidents and traffic safety are presently available from Government sources. Analysing that massive amount of statistical data for investigating the contributory factors behind road accidents is impractical and time-consuming too. In this study we have used some mathematical and statistical tools together for discovering the most responsible causes of road accident severity.

Source: https://13icccnt.com/

Wireless Sensor Network based Sustainable Cattle Farm Feed Management and Monitoring System using Internet of Things

Author: MD. ALOMGIR KABIR et al.

Brief Description:

The use of technology has increased dramatically in the last few years. Advances in technology have significant impacts on every industry in today's time. In the world of technology, one of the most recent technologies is the ""Internet of Things"" (IoT). The use of the Internet of Things (IoT) is growing at an accelerated pace in the agricultural sector, like in other industries. As a result, agriculture is blooming and farmers' labor has become significantly simpler. Cattle farming is a part of agriculture, and the use of IoT aids is making cattle farming smarter by allowing for continuous livestock monitoring. In this paper, a sustainable cattle farm monitoring system with reliable communications using IoT sensors is designed. The proposed system uses Wireless Sensor Networks (WSN) for exchanging data between the owner (monitoring person) and the farm. This Nobel work develops a more stable and flexible smart idea for the agriculture sector, especially designed for sustainable smart cattle farms. With the help of the proposed work, farmers will also be able to keep up the level of nutrition of their livestock.

Source: https://hk.aconf.org/conf_182032.html

Effect of particle size and pH on phase transfer of AMIET-coated gold nanoparticles

Author: DR. ABDULLAH AL NAHID et al.

Brief Description:

Gold nanoparticles (AuNPs) are expected to be applied in a wide range of fields due to their unique characteristics such as surface plasmon resonance, electric field enhancement, and so on. We have reported that polyoxyethylene alkylamine surfactant (AMIET)-coated AuNPs synthesized in an aqueous phase can phase-transfer to organic solvents without ligand exchange. In the present study, we investigated the effects of particle size and pH of aqueous dispersion on the phase transfer to chloroform, for AuNPs synthesized with three kinds of AMIET

Source: https://confit.atlas.jp/guide/event/csj102nd/top

Nano Rover: A Multi- Sensory Full-Functional Surveillance Robot with Modified Inception-Net

Author: AMINUN NAHAR et al.

Brief Description:

In this rigorous world of civilized progression, terrorism and other subsidiary security threats are undoubtedly intimidating to us. In order to fight back these mischievous activities, we focus to the technical development of our surveillance and reconnaissance systems. Military reconnaissance might be the ancient most solution for preventing the violent outcomes of terrorism but still the unfortunate chance of human life loss exists there. For this why, the solution appears to be using the unmanned surveillance vehicle or machine which would be able to transmit visual data of a certain dangerous area to the controlling headquarters of the particular law enforcement agency. Nano Rover is a significant approach of cost-efficient surveillance and reconnaissance robot which is fully functional and cost-efficient at the same time. It features the service of active reconnaissance mode with LIDAR sensor, location tracking with GPS Neo 6 M module, visual information collection, person detection, weapons detection and identification, gender and age prediction of the hostile and other artificial threat detection, etc. Remote navigation plays as the core controlling system of the robot which is also modifiable through replacement with Internet and satellite navigation system. We modified the conventional Inception-Net architecture with a better hyper-parameter tuning for the successful execution of image processing tasks with a better level of accuracy so far.

Source: https://easychair.org/cfp/MIDAS2021

A Traffic Flow Steering Algorithm for Hybrid Terrestrial-Satellite Backhaul Network

Author: DR. MD MEHEDI HASAN et al.

Brief Description:

In this paper, we proposed a traffic flow steering algorithm for a hybrid terrestrial-satellite backhaul network to minimize network congestion and improve overall network throughput. To that end, we categorize data flows as delay tolerant or delay-sensitive based on the delay-tolerant level. Considering a predetermined threshold, if a potential overloaded backhaul link is found the delay-tolerant flows are steered through a secondary satellite link and the delay-sensitive flows are routed through the primary link. The simulation result shows that the proposed algorithm can increase the network throughput by distributing the load among the backhaul links.

Source: https://dl.acm.org/doi/proceedings/10.1145/3542954

Simulation of High intensity Focused Ultrasound Device in Healthcare Application for Non-Invasive Heat Induced Tissue Ablation

Author: DR. MOHAMMAD NASIR UDDIN et al.

Brief Description:

Since the last decade, High Intensity Focused Ultrasound (HIFU) has been actively used in medical care for the treatment of various cancers. HIFU is a technique that employs a fixed ultrasonic transducer with a focusing lens, allowing the transmitted signal to reach higher intensity levels within a specific focal zone of relevance. Mechanical and thermal impacts are the main steps of HIFU ablation. In this study, experiments and simulations on tissue ablation with HIFU were carried out to see how multiple tissue ablation worked and how to improve tumor ablation while avoiding damage to surrounding healthy tissue by adjusting the ideal intensity and lens radius of curvature of the transducer. The analysis employs clinical applications to evaluate the optimum properties of the proposed model. For this experiment, several soft and hard tissues were selected from the human body. Each tissue's temperature was determined to be 310.15-degree Kelvin. At a specified acoustic power and exposure time, the tissues' optimal frequency (1.6 MHz, 2.25 MHz, 3.4 MHz, and 3.5 MHz) and power (10 W, 17 W and 20 W) were identified. By using a focal length of 60 mm, we have completed all of the computations. Numerous cancers, including the brain, heart, skull, liver, kidney and bone, have all shown positive results. This finding looks promising for HIFU tumor ablation surgery.

Source: https://dl.acm.org/doi/proceedings/10.1145/3542954

Modeling and indoor performance analysis of a transparent multilayer solar cell

Author: MEHEDI HASAN et al.

Brief Description:

The work that has been presented here aims to simulate a multijunction transparent solar cell and analyze its performance in terms of simulated short-circuit current density, open circuit voltage, efficiency, and fill factor. The model structure is created by COMSOL Multiphysics and consists of five layers of InAs/InSb/AlGaAs/GaN/Si, taking into account the source materials' properties. Its electromagnetic wave is used to report on the optical and electrical properties. It is assumed that the cell is working at room temperature (300K). A maximum conversion of 15.2655% would be achieved for this model's simulation exposures at fill factor (FF)=0.6531 from the I-V curve and for such a combination and ransparency.

Temperature and Power Analysis of the Thermoelectric Generator in Hybrid Electric Vehicles

Author: CHOWDHURY AKRAM HOSSAIN et al.

Brief Description:

In the modern days, the technological advancement of the Hybrid Electric Vehicles (HEVs) is the most dynamic as the global warming issues has been taken as a prime concern all over the world. For updating this field vehemently, the use of Regenerative Braking System (RBS) is one of the most prominent and effective approaches till now. In this manuscript, the comparative study is shown taking the proposed model of the Thermoelectric Generator (TEG) along with the other existing technology of RBS. Also, the analysis of temperature and the electrical power output obtained from the TEG is portrayed with the description of the used model. Following the principles of RBS, this design will be one of the key sources of expanding the driving range of the HEVs lowering the net cost of recharging for the users.

Implementation of Blockchain for Secured Criminal Records

Author: PROF. DR. DIP NANDI et al.

Brief Description:

Criminal activities are occurring every day in society. People all over the world are either victims, witnessing or criminals. As a citizen of a nation, anyone has the right to fill a case against anyone based on their instant evidence (either an audio, video, or image). Although it should be done perfectly but, in many countries, especially in developing countries local criminals are powerful in the society and thus the victims cannot fill a case due to fear of losing their lives. In the digital era, it is easier to raise the voice against any antisocial activity using digital platforms. Not only this problem is an issue but a way of organized and secured data management system is required to help the police. As it is a huge amount of national data, the main concern in this study is to ensure that no one can hack, steal or manipulate the data in any way.

A Behavioral Trust Model for Internet of Healthcare Things Using an Improved FP-Growth Algorithm and Naïve Bayes Classifier

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

Healthcare 4.0 has revolutionized the delivery of healthcare services during the last years. Facilitated by it, many hospitals have migrated to the paradigm of being smart. Smartization of hospitals has reduced healthcare costs while providing improved and reliable healthcare services. Thanks to the Internet of Healthcare Things (IoHT) based healthcare delivery frameworks, integration of many heterogeneous devices with varying computational capabilities has been possible. However, this introduced a number of security concerns as many secure communication protocols for traditional networks can not be verbatim employed on these frameworks. To ensure security, the threats can largely be tackled by employing a Trust Management Model (TMM) which will critically evaluate the behavior or activity pattern of the nodes and block the untrusted ones. Towards securing these frameworks through an intelligent TMM, this work proposes a machine learning based Behavioral Trust Model (BTM), where an improved Frequent Pattern Growth (iFP−Growth) algorithm is proposed and applied to extract behavioral signatures of various trust classes. Later, these behavioral signatures are utilized in classifying incoming communication requests to either trustworthy and untrustworthy (trust) class using the Naïve Bayes classifier. The proposed model is tested on a benchmark dataset along with other similar existing models, where the proposed BMT outperforms the existing TMMs.

An adaptive Medical Cyber-Physical System for post diagnosis patient care using cloud computing and machine learning approach

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

Medical care is one of the most basic human needs. Due to the global shortage of doctors, nurses, and other healthcare personnel, medical cyber-physical systems are quickly becoming a viable option. Post-diagnosis surveillance is an essential application of these systems, which can be performed more successfully using various monitoring devices rather than active observation by nurses in their physical presence. However, most existing solutions for this application are rigid and do not consider current difficulties. Intelligent and adaptive systems can overcome the challenges because of the advances in relevant technology, especially healthcare 4.0. Therefore, this work presents an adaptive system based on cloud and edge computing architecture and machine learning approaches to perform post-diagnosis medical tasks on patients, thus reducing the need for nurses, especially in the post-diagnosis phase.

A Trend Analysis of crimes in Bangladesh

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

This paper presents a trend analysis of crimes in Bangladesh based on the data provided by Bangladesh Police for the last ten years, from 2010 to 2019. The data contains the number of different crimes organized by the police units in different areas of Bangladesh. The aim of this work is to analyze the crimes committed in the last ten years, establish relationships between the different types of crimes, and identify patterns between them. In order to analyze the data, the dataset provided by Bangladesh Police is transformed into different forms, and then the correlation between different features is determined. The four most important features or crime types, namely murder, narcotics, smuggling, and dacoity, are analyzed in depth by analyzing the significance of the features. This study presents the overall scenario of the crime types and rates observed in the last decade and could be of great help to the law enforcement agencies to make future decisions based on the analysis presented in this paper.

An automated monitoring and environmental control system for laboratory-scale cultivation of oyster mushrooms using the Internet of Agricultural Thing (IoAT)

Author: MD. SAEF ULLAH MIAH et al.

Brief Description:

This research paper presents an automated system for controlling and monitoring the cultivation of oyster mushrooms in a laboratory facility. The system uses an Internet of Things (IoT) based approach to automate the entire process. The main objective of this system is to make indoor mushroom cultivation easier and cost effective. The proposed system has proved to be very effective in saving labor cost by automatically monitoring and controlling the environment. Moreover, the proposed system has a real time update and monitoring feature which helps the grower to take immediate action. This paper provides a detailed insight into the project, including the development process, automation system, hardware setup, technical specifications, and results achieved after successful implementation.

A proposed design of a lecture material to reduce learning complexity

Author: ANEEM AL AHSAN RUPAI et al.

Brief Description:

Cognitive Load Theory (CLT) and Human-Computer Interaction (HCI) concepts need to be combined to understand better how students learn in more complex environments. For this reason, this paper combines Cognitive Load Theory (CLT) and Human-Computer Interaction (HCI). The primary purpose of this paper was to reduce the student's cognitive load through a lecture note. With the help of HCI design-centered principles on a lecture note, we have implemented the lecture note to lessen students' cognitive load. The lecture note could be an example of how HCI can be designed in a lecture note. This paper has discussed the research questions with several learning theories that measured students' cognitive load. Based on learning theories and HCI design principles, we have developed two lecture notes; the first is HCI design-based, and the second is in the absence of HCI design principles. The reason for …

Moth Flame Optimization Algorithm including Renewable Energy for Minimization of Generation & Emission costs in Optimal Power Flow

Author: MOHAMMAD KHURSHED ALAM et al.

Brief Description:

Optimal power flow is an approach for enhancing power system performance, scheduling, and energy management. Because of its adaptability in a variety of settings, optimum power flow is becoming increasingly vital. The demand for optimization is driven by the need for cost-effective, efficient, and optimum solutions. Optimization is useful in a variety of fields, including science, economics, and engineering. This problem must be overcome to achieve the goals while keeping the system stable. Moth Flame Optimization (MFO), a recently developed metaheuristic algorithm, will be used to solve objective functions of the OPF issue for combined cost and emission reduction in IEEE 57-bus systems with thermal and stochastic wind-solar–small hydropower producing systems. According to the data, the MFO generated the best results across all simulated research conditions. MFO, for example, offers a total cost and emission of power generation of 248.4547 $/h for IEEE 57-bus systems, providing a 1.5 percent cost savings per hour above the worst values obtained when comparing approaches. According to the statistics, MFO beats the other algorithms and is a viable solution to the OPF problem.

OPTIMAL POWER FLOW SOLUTIONS INCORPORATING STOCHASTIC WIND POWER GENERATORS BY MOTH FLOW OPTIMIZER

Author: MOHAMMAD KHURSHED ALAM et al.

Brief Description:

The variables that maximize an objective function, specific equality requirements, such as the power balancing and power flow equations, and inequality constraints, restrictions on the variables, are the most crucial elements of the optimal power flow (OPF). The set of parameters and constraints, as well as the shape of the objective, will vary depending on the type of OPF. Additionally, with the gradual integration of renewable energy sources into the contemporary smart grid, it is now possible to develop new optimization problems with a substantially greater number of variables. In this paper, a method for choosing the optimal power flow in a system including both conventional thermal power plants and stochastic wind turbines is presented. To anticipate wind energy output, Weibull and lognormal probability distribution functions are used, respectively. The loss from overestimating intermittent renewable sources and the penalty factor from underestimating them are both considered by the objective function. To handle the optimization problem in the IEEE 30 bus system, Moth Flow Optimizer (MFO) and Graw Wolf Optimization are used (GWO). The approach's combination and design produce the best outcomes, which meet all network limitations.

Study on criticality Minimizing Cost in power system with optimal design of Stochastic Wind Power Generators using Moth Flow Optimization

Author: MOHAMMAD KHURSHED ALAM et al.

Brief Description:

The power grid, one of the most crucial components of smart cities, faces significant challenges in operating efficiently, dependably, and economically. One of these challenges is forecasting the demand for electricity. Grid managers can balance supply and demand properly while also minimizing operating expenses for generating and transmitting power thanks to accurate forecasts. while maintaining respectable system performance in terms of the limitations on the actual and reactive power output of the generator, bus voltages, shunt capacitors and reactors, trans-former tap setting, and transmission line power flow. For a sustainable future and to meet the higher carbon emission standards that are being put in place, it is expected that the renewable energy sector will experience enormous development. The placement of wind turbines in a wind farm requires the use of evolutionary algorithms and power system optimization issues because the wake effect caused by upstream turbines impacts the output of downstream turbines, consequently diminishing the total power output from the wind farm. The current study using MFO determines a cost of $ 3160.0824 $/h for minimizing cost for multiple fuels, which turns out to be the best price when compared to the legitimate results obtained by other algorithms. It results in a cost savings of 1.45% per hour when compared to the worst alternatives given by the comparison algorithm. According to simulation results on the IEEE 30-bus network with six generators, this approach might offer the best solution right away. A further study found that this method works best for medium-scale power installations.

Moth Flame optimization for Transmission loss Minimization in Optimal Power Flow Using Renewable Energy

Author: MOHAMMAD KHURSHED ALAM et al.

Brief Description:

The reduction of line losses due to current heating is known as loss minimization in optimal power flow (OPF). This is accomplished by selecting and enhancing an existing power solution from the system's past cost reduction. This paper offers a collection of methods for assessing congested power networks to achieve the lowest operating cost with the fewest line losses. The approaches are computer-simulated in MATLAB, and convergence is reached at ranges. As a result, the focus of this research is on designing appropriate OPF algorithms to address the 'congestion management quandary.' To evaluate the efficacy of the suggested method, simulations are run on the IEEE 57-bus system. For network security, transmission line capacity and bus voltage restrictions, as well as generator capacities and limited working zones for thermal devices, are all considered. Moth Flame Optimization (MFO) outperforms other stochastic algorithms in terms of solution quality and practicality, indicating its use and expertise. The results are promising, indicating that the MFO is a highly successful optimization tool for dealing with a wide range of OPF problems.

Optimal path planning for multiple UAVs in energy efficient charging of sensors in a Wireless Sensor Networks

Author: SHAKILA RAHMAN et al.

Brief Description:

In this paper, we consider a wireless sensor network scenario to charge sensor nodes for multiple UAVs. We have formulated an integer linear programming (ILP) optimization problem to find the optimal paths for UAVs where the total energy consumption of UAVs is minimized. Simulation results shows that our proposed algorithm UGreedy, outperforms the other comparing algorithms with lowest energy consumption.

An exploratory study on integrating sustainability aspects during the acquisition of production equipment

Author: MD. HASIBUL ISLAM et al.

Brief Description:

Production equipment such as machines have crucial impact on the overall performance of production operations in manufacturing industries, since there is a strong correlation between the machines and working conditions and performance on the shop floor. Well designed production equipment has the potential to achieve economic gain by reducing the disturbances during the operational phase, to fulfill environmental commitment by reducing emissions and resources consumption and utility, and to increase employee satisfaction ensuring safety and good ergonomics. Therefore, when acquiring production equipment it is important to consider different sustainability aspects relevant to its usage during the operational phase. This study aims at exploring the critical features of production equipment to facilitate different practices in the context of sustainable production operational system, and how manufacturing companies are considering sustainability aspects when acquiring production equipment. The data has been collected based on a literature study, interviews conducted in different manufacturing companies located in Sweden, attending group discussion sessions, and reviewing machines´ technical regulation guidelines. Some of the critical features identified are error proofing, setup time, one-piece flow, automatic generation of required data, reduction of energy and resource consumption, together with worker's health and safety, etc. The data indicates that companies specify different features of machines based on the requirements of operational performance and these features are aligned with different lean techniques, green practice, and safety issues. However, during acquisition process of production equipment the environmental issues are still not prioritized yet compared to lean and safety aspects. Budget constraint, insufficient information of the whole life cycle costing and lack of innovation from the equipment suppliers´ side are exampled of major barriers for acquiring more environment-friendly production equipment.

An adaptive Medical Cyber-Physical System for post diagnosis patient care using cloud computing and machine learning approach

Author: ABHIJIT BHOWMIK et al.

Source: https://www.aconf.org/conf_181072.html

An automated monitoring and environmental control system for laboratory-scale cultivation of oyster mushrooms using the Internet of Agricultural Thing (IoAT)

Author: ABHIJIT BHOWMIK et al.

Source: http://icca.aiub.edu

Finding Efficiency in Approach Selection in Software Development and Project Management in Bangladesh IT Industry

Author: ABHIJIT BHOWMIK et al.

Source: https://icca.aiub.edu/

Stock Market Comparison and Analysis in Preceding and Following Pandemic in Bangladesh using Machine Learning Approaches

Author: ABHIJIT BHOWMIK et al.

Source: https://icca.aiub.edu/

A Trend Analysis of crimes in Bangladesh

Author: ABHIJIT BHOWMIK et al.

Source: https://icca.aiub.edu/

Bridge Crack Detection Using Dense Convolutional Network (DenseNet)

Author: ABHIJIT BHOWMIK et al.

Source: https://icca.aiub.edu/

Social Sites Bangla Comments Analysis using Explainable AI

Author: DR. MD. ABDULLAH - AL - JUBAIR et al.

Source: https://iccit.org.bd/2022/

Design and Implementation of an IoT-based Home Automation System

Author: ABIR AHMED et al.

Source: https://icca.aiub.edu/

IoT-based Smart Farming System

Author: ABIR AHMED et al.

Source: https://icca.aiub.edu/

A Densely Interconnected Convolutional Neural Network-Based Approach to Identify COVID-19 from Chest X-Ray Images

Author: NAZIA ALFAZ et al.

Source: https://rovisp.eng.usm.my/

A Deep Convolutional Neural Network Based Approach to Classify and Detect Crack in Concrete Surface Using Xception.

Author: NAZIA ALFAZ et al.

Source: https://www.ic4irb.org/

Thin film deposition of Au on the TiO2 substrate by physical vapor deposition (PVD) technique

Author: DR. MD. EHASANUL HAQUE et al.

Source: https://www.aiub.edu/international-symposium-on-nanotechnology-2022-isn2022

Understanding the deficit level of BME professionals and its impact in the context of Dhaka City, Bangladesh

Author: DR. HUMAYRA FERDOUS et al.

Source: https://wc2022.org/

Implementation of Blockchain for Secured Criminal Records

Author: MD SAJID BIN-FAISAL et al.

Source: https://icca.aiub.edu/

HESIP: A Hybrid System for Explaining Sub-symbolic Predictions

Author: DR. ABDUS SALAM et al.

Fast Oxygen Gas Detection using Ultrasound

Author: DR. MAHJABIN TASKIN et al.

Assessment of Building Damage on Post-Hurricane Satellite Imagery using improved CNN

Author: DR. MUHAMMAD FIROZ MRIDHA et al.

RS-PKE: Ranked Searchable Public-Key Encryption for Cloud-Assisted Lightweight Platforms

Author: ISRAT JAHAN MOURI et al.

Non Performing loans and Banking Sector: Evidence from Bangladesh

Author: BOHI SHAJAHAN et al.

Post COVID-19 Vaccination Sentiment Analysis from Survey Responses in Bangladesh (Under Review)

Author: MEHEDI HASAN et al.