"Are those who know equal to those who do not know?"

- (Surah Az-Zumar, 39:9)

ICISET 2018

International Conference on Innovations in Science, Engineering and Technology 2018 (ICISET-2018)

27-28 October, 2018

Venue:
International Islamic University Chittagong
Kumira, Sitakunda, Chittagong, Bangladesh

Organized by
Faculty of Science & Engineering
International Islamic University Chittagong, Bangladesh

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ICISET 2018

International Conference on Innovations in Science, Engineering and Technology 2018 (ICISET-2018)

BRIEF CONTENTS

ISBN : 978-984-34-4802-6

ICISET 2018

27 - 28 October 2018

2018 International Conference on Innovations in Science, Engineering and Technology

Technical Co-Sponsor

IEEE Bangladesh Section

Organized by: **Faculty of Science & Engineering**
International Islamic University Chittagong, Bangladesh

Conference Book

International Conference on Innovations in Science, Engineering and Technology (ICISET-2018)

27-28 October, 2018

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Conference Program Schedule in Brief

Day 1, Saturday, 27 October 2018		
Time	**Program**	**Venue**
08:00 – 09:00	Conference Kit Collection	Central Library
09:00 – 10:30	Inaugural Ceremony	IIUC Auditorium
10:30 – 11:00	Refreshment	IIUC Auditorium
11:00 – 13:15	Plenary Session 1	IIUC Auditorium
13:15 – 14:15	Prayer and Lunch Break	Central Mosque, Central Cafeteria
14:15 – 15:30	TS–1A: Electronics and Materials Science – 1	Seminar Hall, Auditorium Building
14:15 – 15:30	TS–1B: Data Science and Machine Learning – 1	Room 305, Central Library
14:15 – 15:30	TS–1C: Renewable and Green Energy	Room 306, Central Library
14:15 – 15:30	TS–1D: Computer Vision and Image Processing	Room 308, Academic Building 4
14:15 – 15:30	TS–1E: Embedded Systems and IoT – 1	Room 208, Academic Building 4
14:15 – 15:30	TS–1F: Antenna and Propagation – 1	Room 313, FSE Building
15:30 – 16:00	Prayer and Refreshment	Central Mosque, TS Venues
16:00 – 17:30	Plenary Session 2	IIUC Auditorium
17:30 – 18:00	Prayer and Refreshment	Central Mosque, IIUC Auditorium
18:00 – 19:15	TS–2A: Data Science and Machine Learning – 2	Seminar Hall, Auditorium Building
18:00 – 19:15	TS–2B: Electronics and Materials Science – 2	Room 305, Central Library
18:00 – 19:15	TS–2C: Pharmacy – 1	Room 306, Central Library
18:00 – 19:15	TS–2D: Mobile and Wireless Communication	Room 308, Academic Building 4
18:00 – 19:15	TS–2E: Power Electronics and Power System	Room 208, Academic Building 4
18:00 – 19:15	TS–2F: Embedded Systems and IoT – 2	Room 313, FSE Building

Day 2, Sunday, 28 October 2018		
Time	**Program**	**Venue**
08:30 – 09:00	Conference Kit Collection	Central Library
09:00 – 11:15	Plenary Session 3	IIUC Auditorium
11:15 – 11:45	Refreshment	IIUC Auditorium
11:45 – 13:00	TS–3A: Software Engineering	IIUC Auditorium
11:45 – 13:00	TS–3B: Electrical Drives and Controls	Room 305, Central Library
11:45 – 13:00	TS–3C: Electronics and Materials Science – 3	Room 306, Central Library
11:45 – 13:00	TS–3D: Pharmacy – 2	Room 308, Academic Building 4
11:45 – 13:00	TS–3E: Computer Networks and Security	Room 208, Academic Building 4
11:45 – 13:00	TS–3F: Embedded Systems and IoT – 3	Room 313, FSE Building
13:00 – 14:15	Prayer and Lunch	Central Mosque, Central Cafeteria
14:15 – 15:45	Plenary Session 4	IIUC Auditorium
15:45 – 16:15	Prayer and Refreshment	IIUC Auditorium
16:15 – 17:30	TS–4A: VLSI Design and Embedded System	Seminar Hall, Auditorium Building
16:15 – 17:30	TS–4B: Antenna and Propagation – 2	Room 305, Central Library
16:15 – 17:30	TS–4C: Natural Language Processing	Room 306, Central Library
16:15 – 17:30	TS–4D: Signal and Image Processing	Room 308, Academic Building 4
16:15 – 17:30	TS–4E: Power Systems	Room 208, Academic Building 4
16:15 – 17:30	TS–4F: Electronics and Materials Science – 4	Room 313, FSE Building
17:30 – 18:00	Prayer	Central Mosque
18:00 – 19:00	Closing Ceremony	IIUC Auditorium
19:00 – 20:00	Conference Dinner	Central Cafeteria

MESSAGE

ICISET '18

Minister
Ministry of Education
Government of the people's
Republic of Bangladesh

I am pleased to learn that International Islamic University Chittagong (IIUC) is going to organize 2018 International Conference on Innovation in Science, Engineering and Technology (ICISET 2018) to be held on October 27-28, 2018.

Conference is an important part of academic lives of teachers and students, particularly at tertiary level. It is a platform where people can come, reflect and be inspired by an open intellectual discourse. At the same time, a good conference is always more than just an exchange of papers and ideas. It is the common belief nicely expressed in a quote of great leader Mahatma Gandhi: " In a gentle way, you can shake the world". The quote may sound over-optimistic but in fact, looking at history, it is observed that many changes have been initiated by committed researchers at conferences. I hope this will happen here also.

Throughout your conference please let me inform you that I am standing with you in unwavering solidarity and loving support. Every committee member, participant, presenter and discussant must be thanked for dedicating his/her valuable time to this worthy conference.

I wish ICISET 2018 a grand success.

Nurul Islam Nahid, MP

MESSAGE

ICISET '18

মন্ত্রী
ডাক, টেলিযোগাযোগ ও তথ্যপ্রযুক্তি মন্ত্রণালয়
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

আন্তর্জাতিক ইসলামী বিশ্ববিদ্যালয় চট্টগ্রাম, বিজ্ঞান অনুষদ কর্তৃক "বিজ্ঞান, প্রকৌশল ও প্রযুক্তিতে উদ্ভাবন বিষয়ক আন্তর্জাতিক সম্মেলন ২০১৮" আয়োজনের উদ্যোগকে আমি স্বাগত জানাই।

আধুনিক বিশ্বের সাথে তাল মিলিয়ে প্রযুক্তিগত দক্ষতা ও সৃজনশীলতাকে কাজে লাগিয়ে আইটি জ্ঞানসমৃদ্ধ জাতি গঠন আগামী শতাব্দীর বড় চ্যালেঞ্জ। গবেষকগণের যথাযথ গবেষণা ও বিজ্ঞানের নতুন নতুন আবিষ্কারের মাধ্যমে নতুন প্রজন্মের জন্য আধুনিক সভ্য ও জ্ঞানভিত্তিক সমাজ তৈরি করা সম্ভব।

আমাদের নতুন প্রজন্ম অত্যন্ত মেধাবী। ডিজিটাল বাংলাদেশ বিনির্মাণ তরান্বিত করতে তাদের বিপুল সম্ভাবনাময় প্রতিভাকে সঠিকভাবে কাজে লাগাতে হবে। চলমান ডিজিটাল শিল্প বিপ্লবকে গতিশীল করতে না পারলে বিশাল জনসম্পদ আগামী দিনের বিস্ময়কর ডিজিটাল প্রযুক্তি আইওটি, রোবটিক্স, বিগডাটা, কৃত্রিম বুদ্ধিমত্তা কিংবা ৫ জি'র কারণে কর্মহীন হয়ে পড়বে। তাই আগামী প্রজন্মকে এমনভাবে গড়ে তুলতে হবে যেন তারা ডিজিটাল বাংলাদেশ তথা জাতির পিতা বঙ্গবন্ধুর সুখি সমৃদ্ধ সোনার বাংলা প্রতিষ্ঠার মাধ্যমে দেশকে সামনে এগিয়ে নিয়ে যেতে পারে।

আধুনিক বিশ্বের সাথে তাল মিলিয়ে বর্তমান সরকার তথ্য ও যোগাযোগ প্রযুক্তির গুরুত্ব অনুধাবন করে ডাক, টেলিযোগাযোগ ও তথ্যপ্রযুক্তি মন্ত্রণালয় প্রতিষ্ঠা করেছে। প্রধানমন্ত্রী শেখ হাসিনা ঘোষিত রূপকল্প ২০২১ এর অন্যতম লক্ষ্য হচ্ছে ডিজিটাল বাংলাদেশ প্রতিষ্ঠা করা। তথ্যপ্রযুক্তির বিকাশ ও উন্নয়নে সরকার সময়োপযোগী বিভিন্ন নীতি প্রণয়ন, নানা কর্মসূচি গ্রহণ ও বাস্তবায়ন করছে। ইতোমধ্যে শিক্ষায় তথ্যপ্রযুক্তি ব্যবহার, কম্পিউটারে বাংলা ভাষা প্রয়োগ,প্রচলন ও বিকাশের যুগান্তকারী বিপ্লব সাধন করেছে তথ্য ও যোগাযোগ প্রযুক্তি বিভাগ। এছাড়া আত্মকর্মসংস্থান সৃষ্টির লক্ষ্যে দেশের প্রতিটি ইউনিয়নে ইন্টারনেট সেবা পৌঁছে দিতে আইসিটি বিভাগের অধীন ইনফো সরকার ৩য় প্রকল্পের মাধ্যমে ২৬০০ টি ইউনিয়ন ইন্টারনেট যন্ত্রপাতি সংযোজনের কাজ সম্পন্ন হয়েছে। ২০১৯ সালের মধ্যে দূর্গম অঞ্চলসহ দেশের প্রতিটি ইউনিয়ন ইন্টারনেট সংযোগের আওতায় আসবে। আইটি শিক্ষা বিস্তারে শেখ রাসেল ডিজিটাল ল্যাব প্রকল্পের আওতায় সারাদেশে নির্বাচিত ৪১৭৬ টি শিক্ষা প্রতিষ্ঠানে শেখ রাসেল ডিজিটাল কম্পিউটার ল্যাব স্থাপন করা হয়েছে। আগামীতে আরও প্রায় ২৫ হাজার ল্যাব স্থাপনের প্রকল্প হাতে নেয়া হয়েছে।

মানবসম্পদ উন্নয়ন ও দক্ষতা বৃদ্ধির লক্ষ্যে বিসিসি কর্তৃক দেশের ৩৫৪৪টি শিক্ষা প্রতিষ্ঠানে কম্পিউটার ল্যাব ও ২১ টি বিশ্ববিদ্যালয় ও কলেজে সাইবার সেন্টার স্থাপন করা হয়েছে। জাহাঙ্গীরনগর বিশ্ববিদ্যালয়ে 'সফ্টওয়্যার টেস্টিং এন্ড কোয়ালিটি অ্যাসুরেন্স ল্যাব', ঢাকা বিশ্ববিদ্যালয়ে 'অ্যানিমেশন ল্যাব ও অডিও ভিজুয়াল ল্যাব', বাংলাদেশ প্রকৌশল বিশ্ববিদ্যালয়ে 'রোবোটিক ল্যাব', শাহজালাল বিজ্ঞান ও প্রযুক্তি বিশ্ববিদ্যালয়ে 'বিগ ডাটা অ্যানালাইসিস ল্যাব' স্থাপনসহ বিভিন্ন বিশ্ববিদ্যালয়ে বিশেষায়িত ল্যাব স্থাপন করা হয়েছে। আইসিটি ভবনে বাংলাদেশে প্রথম সফ্টওয়্যার টেস্টিং ল্যাব এবং হ্যাকিং প্রতিরোধে কম্পিউটার ইন্সিডেন্ট রেসপন্সটিম ল্যাব স্থাপন করা হয়েছে। দক্ষ মানব সম্পদ তৈরির লক্ষ্যে মোবাইল গেইম এন্ড অ্যাপস প্রকল্পসহ বিভিন্ন প্রকল্পের আওতায় ৮০ হাজার তরুণ-তরুনীকে আইটি বিষয়ে প্রশিক্ষণ প্রদান করা হয়েছে। বর্তমানেও এই প্রশিক্ষণ চলমান রয়েছে। আইটি অবকাঠামো প্রতিষ্ঠা ও উন্নয়নের লক্ষ্যে দেশে ২৮ টি হাইটেক/আইটি পার্ক স্থাপনের কাজ চলমান রয়েছে।

মাননীয় প্রধানমন্ত্রী ঘোষিত রূপকল্প ২০২১ বাস্তাবায়ন তথা ডিজিটাল বাংলাদেশ প্রতিষ্ঠায় বিজ্ঞানী, প্রকৌশলীসহ সকলকে সম্মিলিতভাবে এগিয়ে আসতে হবে।

আমি এই সম্মেলন আয়োজনের জন্য সংশ্লিষ্ট সকলকে ধন্যবাদ জানাই। সম্মেলনে অংশগ্রহণকারী দেশি-বিদেশী সকল অতিথিবৃন্দ এবং অংশগ্রহনকারীদের প্রতি রইল আন্তরিক শুভেচ্ছা।

আমি সম্মেলনের সার্বিক সফলতা কামনা করছি।

মোস্তাফা জব্বার

MESSAGE

ICISET 18

Chairman
University Grants Commission of Bangladesh.

I am glad to know that an international conference on "Innovations in Science, Engineering and Technology 2018" (ICISET2018) is going to be organized by the Faculty of Science and Engineering (FSE) of International Islamic University Chittagong in association with the Center for Research and Publication (CRP) of the university from October 27 to 28, 2018. I am also pleased to learn that a souvenir is going to be published on the eve of the conference.

Science and technology as the key vehicle to development have historically had a great impact on resolving the challenges that come with increased modernity and consumption. We hope the inter-generational dialogue at the conference will inspire creative leadership that will enable the participants to lead humanity to scientific advancement and innovations so that they can also make the impossible possible and can make human life safe, secure and comfortable.

I also hope ICISET 2018 will be an outstanding platform to assemble a group of highly talented scientists, engineers, technologists and researchers who will work for the expansion of science and technology so that new windows can be opened for the betterment of humanity. The conference is also expected to be a tremendous opportunity to share views with some of scientists whose work you have admired over the years. The contact with them may result in a new collaboration which will lead the young scientists to the horizon of knowledge in the days to come.

I offer my heartfelt thanks to the IIUC authorities, particularly the Faculty of Science and Engineering for inviting a wide range of papers from the experts in their respective fields and wish all speakers and delegates a most informative and enjoyable conference.

A. Mannan 30/9/18

Professor Abdul Mannan

MESSAGE

ICISET '18

Vice-Chancellor
Bangladesh University of Engineering and Technology (BUET)

The term innovation is significantly important for the engineers and scientists working in educational institutions, industries and engineering application oriented jobs. In a university atmosphere it is of utmost importance that the teachers and the students remain engaged in innovtion activities and innovative thoughts. "International Conference on Innovations in Science, Engineering and Technology (ICISET 2018)" which will be held during 27-28 October 2018 at International Islamic University Chittagong (IIUC), Kumira, Chittagong is expected to produce an impact in the minds of the teachers and students of different disciplines of Engineering and Science of IIUC. This indeed will also encourage innovative thoughts.

I am much pleased to see the enthusiasm of the organizers of ICISET 2018 to organize such an International Conference at Kumira, Chittagong. As an educationist, I feel great to see this happening in our country.

I wish that the teachers, students and the authority of this university will keep on cultivating such thoughts for themselves and for producing bright and truly learned youths of tomorrow with modern scientific mindset.

I wish whole-hearted success of this international conference.

Professor Dr. Saiful Islam

MESSAGE

ICISET '18

Rector
Universiti Teknologi MARA Selangor, Malaysia

It gives me great pleasure to provide the forward to this program book of such august gathering of engineers, scientists, industry players, postgraduate students and participants of International Conference on Innovations in Science, Engineering and Technology 2018 (ICISET 2018). Congratulations to Faculty of Science and Engineering (FSE) and Center for Research and Publication (CRP) of International Islamic University Chittagong (IIUC) for hosting this event again after a highly successful inaugural ICISET in 2016.

The main thrust of ICISET is interdisciplinary research. In an article published in 2007 entitled "Defining Interdisciplinary Research: Conclusions from a Critical Review of the Literature" published in the journal Health Services Research (42: 329–346), Aboelela et al. defined interdisciplinary research as 'any study or group of studies undertaken by scholars from two or more distinct scientific disciplines. The research is based upon a conceptual model that links or integrates theoretical frameworks from those disciplines, uses study design and methodology that is not limited to any one field, and requires the use of perspectives and skills of the involved disciplines throughout multiple phases of the research process.

In this era of connectivity, 'collaboration and cooperation' is the catchphrase. It is untenable for researchers to isolate themselves and hope to achieve groundbreaking innovation. For example, a partnership between engineers at Villanova University and doctors at the Children's Hospital of Philadelphia help doctors better diagnose and predict medical conditions like brain injury inflicting premature newborns and babies with congenital heart issues. The same interdisciplinary partnership in the UK is allowing online determination of the 'age of the heart', which would indicate if they are at increased risk of suffering from a heart attack or a stroke.

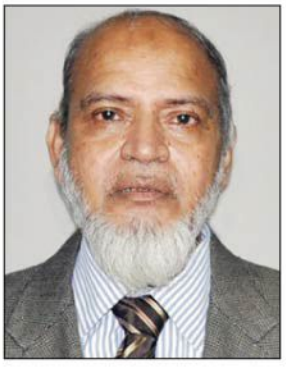
Events like ICISET 2018, without doubt, provides a golden opportunity for researchers to showcase research output and get connected not only locally but globally. It is also a platform for early career researchers to link up with potential supervisors and mentors. Lastly, I hope all participants will have a memorable stay in Chittagong and invite you to establish trans-border collaboration, a mainstay of research in the future.

Have a fruitful deliberation.

Professor Dato' Dr Abu Bakar bin Abdul Majeed

MESSAGE

ICISET '18



Vice-Chancellor
International Islamic University Chittagong

I am really glad that International Islamic University Chittagong (IIUC) is going to hold its 12th International Conference on Innovations in Science, Engineering and Technology (ICISET2018) organized by the Faculty of Science and Engineering (FSE) of IIUC in association with the Center for Research and Publication (CRP) at its Campus in Kumira during 27-28 October 2018.

In the present world of science and technology, we need hi-tech knowledge to bring ideas into reality. Science education is an essential component of core knowledge that every member of our society requires. Given the growing importance of science in our society, we need to explore the opportunities for further advancement in human capital development so that we can become a well-groomed nation.

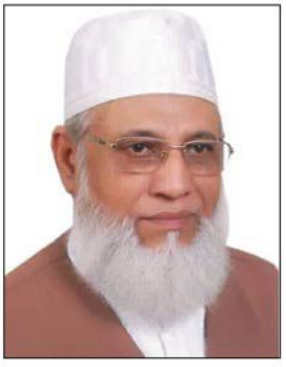
We must nurture innovative thinking as a core strategy to embrace science and technology in our way ahead. If we want to promote our nation to an outstanding position, we have to facilitate innovative thinking through the efforts of educational policy makers, teachers and the science community; and entertain creative thinking for accelerating science education and research. Therefore, I whole-heartedly thank the organizers, participants from home and abroad who have so kindly undertaken the trouble to make the Conference meaningful.

I wish the Conference a grand success.

Prof. K. M. Golam Muhiuddin

MESSAGE

ICISET '18



Chairman
Board of Trustees
International Islamic University Chittagong, Bangladesh

It is a great pleasure and an honor to welcome the participants and extend warm felicitations for attending the International Conference on Innovations in Science, Engineering and Technology 2018 (ICISET 2018), to be held from October 27 – 28, 2018 at the green premise of IIUC, Kumira, Chittagong, Bangladesh.

The ICISET 2018 Conference is organized by the Faculty of Science and Engineering (FSE) of International Islamic University Chittagong (IIUC) in association with the Center for Research and Publication (CRP) of the university aiming to bring together the researchers, scientists, engineers, scholars and students from all areas of Computer Engineering, Electrical Engineering, Electronics, Telecommunication Engineering, Pharmaceutical science and other relevant areas of science, engineering and technology.

It is my firm belief that the Conference will provide a wonderful forum for the participants to refresh their knowledge base and explore the innovations in Science, Engineering and Technology. The Conference will, hopefully, provide them with the opportunity to meet and interact with the leading scientists and researchers, friends and colleagues as well as sponsors and exhibitors.

We hope, the researchers from home and abroad ,will join us for a symphony of outstanding science, and take a little extra time to enjoy the spectacular and unique beauty of this region.

With best wishes.

A.N.M. Shamsul Islam

MESSAGE

ICISET '18

Pro Vice-Chancellor
& Chairman, Center for Research & Publication (CRP)
International Islamic University Chittagong

My warm greetings to the Faculty of Science and Engineering (FSE) and Center for Research and Publication (CRP) of International Islamic University Chittagong (IIUC) for organizing an International Conference on "Innovations in Science, Engineering and Technology 2018" (ICISET 2018), the 2nd of its kind, during October 27-28, 2018 at the green premise of IIUC, Kumira, Chittagong, Bangladesh. The vastness of the subject is obvious from the title of the conference and we hope that this important step taken by the faculty will open up a new horizon in the field of science and technology in the country.

The research and applications of Science and Engineering in Bangladesh has recently been on a boom; ardent researchers ranging from undergraduate students to brilliant Professors, Bangladesh show considerable promise in the development of science, engineering and technologies in the near future. I am happy that there is hectic pan-academic activity going on in IIUC, since every department is preoccupied with remarkable researches and impact-making academic programs. ICISET 2018 has generated research papers on amazingly insightful problems and applications from researchers all over Bangladesh as well as worldwide. I am deeply thankful to the Faculty of Science and Engineering for taking the initiative to organize this acclaimed conference focused solely on "innovations in Engineering and Technology".

It is hoped that the ICISET 2018 will provide you a wonderful forum to refresh your knowledge base and explore the innovations in all aspects of science and technology aiming to bring together the researchers, scientists, engineers, scholars and students from all areas of Computer Engineering, Electrical Engineering, Electronics, Telecommunication Engineering, Pharmaceutical science and other relevant areas of Science, Engineering and Technology.

I appreciate the consistent effort of the Faculty of Science and Engineering (FSE) to explore new areas of research and dissemination of new ideas, knowledge and technologies covering varied sectors including computer, telecommunication, and electrical engineering sectors and pharmaceutical science. This conference can play an important role to create awareness and identify gap that is being faced by science and engineering sector in Bangladesh.

Finally, I would like to convey my special thanks to all IIUC personnel, participants, scientists from home and abroad and those who are the part of the organizers, sponsors and co-sponsors for their support to make the conference a success.

Prof. Dr. Mohammad Ali Azadi

MESSAGE

ICISET '18

Professor Emeritus
& Former Vice-Chancellor
International Islamic University Chittagong

It gives me much pleasure that International Islamic University Chittagong (IIUC) has arranged in its beautiful National Award Winning Campus to hold the '2018 International Conference on Innovations in Science, Engineering and Technology' during 27-28 October which is the 12th in the series of international events with the technical co-sponrship of IEEE Bangladesh Chapter.

I must congratulate the Faculty of Science and Engineering of IIUC for organizing such a conference in association with the Center for Research & Publication (IIUC), Faith Sultan Mehmet Vakif University (Istanbul, Turkey), Universiti Malaysia Perlis (UniMAP), University Sains Islam Malaysia, Al-Madinah International University (Malaysia).

The stated objective of ICISET-2018 is 'to create a unique opportunity for the scientists, engineers, professionals, researchers and students to present their latest research findings and experiences' in the different areas of science and engineering. The Conference would thus encourage the professional fraternity to explore the new areas of recent developments in science and technology and enhance the quality of professional expertise necessary in the present world.

I convey my best wishes to the organizers of ICISET-2018 for successful conduct of the coming conference on scheduled dates and pre-publication of this Souvenir on the International occasion. I am sure the conference will be an incentive for the participants from IIUC and from various other universities and institutions alike.

I also hope that the Souvenir brought out on this occasion will be useful and informative for all during and after the conference.

Prof. Dr. A.K.M. Azharul Islam, *FInstP, CPhys, FBAS*

MESSAGE

ICISET 2018 ICISET '18

Professor
Department of Computer Science & Engineering
Bangladesh University of Engineering &Technology (BUET)
Fellow, Bangladesh Academy of Sciences
Chair, Technical Program Committee, ICISET 2018

It is my great pleasure to write a few words on the occasion of holding International Conference on Innovations in Science and Technology- the second conference of the series, organized by International Islamic University Chittagong in its beautiful scenic campus at Kumira. IIUC has been very passionately trying to create an environment conducive to creation and satisfaction of thirst for knowledge. It is also contributing to development of academic and research activities beyond the walls by organizing international conference for strengthening research activities among faculty members and students alike and programming contests with the participation of students from all over the country.

I hope that participants from home and abroad will be exchanging their ideas and thoughts, and will be mutually benefitted. In addition, they will enjoy the beautiful campus of IIUC and hospitality of the organizers. I take this opportunity to thank members of the Advisory Committee for ensuring smooth holding of the conference, members of Technical Committee, and IEEE, BDS for their hard work in selecting the manuscripts for presentation, and Organizing Committee led by Professor Md Delawer Hossain for doing all the preparatory works for making the conference a grand success.

Prof. Dr. Mohammad Kaykobad

MESSAGE

ICISET '18

Professor
Department of Electrical & Electronic Engineering
Bangladesh University of Engineering &Technology (BUET)
Chair, IEEE Bangladesh Section

It is a great pleasure of IEEE Bangladesh Section (IEEE BDS) for being the Technical Co-sponsor of the International Conference on Innovations in Science, Engineering and Technology 2018 (ICISET 2018) to be held on 27-28 October at International Islamic University Chittagong (IIUC).

IEEE, being the world's largest technical professional association, is dedicated to advancing technological innovation and excellence for the benefits of humanity. It is a great milestone that IEEE BDS is celebrating 25th year in 2018. It is a great honour that IEEE Bangladesh Section has received 2018 IEEE Member and Geographic Activities (MGA) Outstanding Large Section Award under my leadership and accepted the award in R10 Student/Young Professionals/Women In Engineering on 31st August, 2018, Indonesia, this the highest possible recognition for a section. Most significantly, IEEE BDS has received " 2018 Outstanding Section Membership Retention Performance Recognition" in June and " 2018 Outstanding Section Membership Recruitment and Retention Performance Recognition" from IEEE MGA. I want to mention our recent achievement on humanitarian activity in R10 level: 2016 IEEE R10 HTA Outstanding Activities Award with citation "IEEE Bangladesh Section in recognition of innovative humanitarian technology activities" under leadership of S. A. Fattah. In 2016, IEEE BDS has been awarded the Fifth IEEE Region 10 Humanitarian Technology Conference (R10HTC) to be organized during 21-23 Dec. 2017, for the first time any R10 flagship conference held in Bangladesh Section. We got huge response (400+ papers) from around 12 countries. Many distinguished scholars supported R10-HTC 2017 by contributing papers, keynote/invited talks (6 fellows of IEEE and 22 invited talks), projects, and valuable reviews. Apart from the regular technical presentations we have arranged three stage project competition IHTPC 2017 supported by IEEE Humanitarian Activity Committee (HAC) where we received more than 120 projects. Thanks to IEEE R10 for helping us to organize 10 R10 supported tracks focusing HTA during the conference to serve different groups of volunteers. In 2017, Prof. S.A. Fattah, IEEE BDS Chair (2015-16), has received 2017 IEEE R10 HTA Outstanding Volunteer Award in recognition of leadership and contributions to innovative Humanitarian technology of Bangladesh Section.

IEEE BDS was established in 1993 with 56 members and its membership reached the landmark of 1000 after 21 years in 2014. During 2015-16, because of a number of quality events/activities, the membership is now more than 2,700. IEEE-BDS was awarded "Outstanding Section Membership Recruitment Performance" in 2015, 2016 and 2017 by IEEE R10. Prof. S.A. Fattah received 2016 MGA Achievement Award" for dynamic leadership in achieving rapid transformation of the IEEE Bangladesh Section into a vibrant large section by ensuring maximum member engagement through innovative activities."Currently BDS has 9 society chapters: communication (COMSOC), power and energy (PES), electron device/solid state circuit (EDS/SSCS), Engineering in Medicine and Biology (EMBS), Computer(CS), Signal Processing society (SPS), Robotics and Automation Society (RAS), Industrial Applications Society (IAS) and society on social implications on technology (SSIT); two affinity groups: women in engineering (WIE) and young professional (YP); 15 WIE Student branch Affinity Groups; student chapters of different societies, such as industrial applications society (IAS), RAS and PES; two SIGHT groups (FLASH(IEEE BDS) and CARG(Brac University SB)), and 36 student branches in 36 universities which was 9 before 2015.

IEEE NSU SB has received 2018 IEEE regional Exemplary Student branch Award for R10, IEEE AIUB SB has received 2017 IEEE regional Exemplary Student branch Award for R10, Anindo Saha from IEEE AIUB SB became the winner of 2017 Larry K. Wilson Regional Student Activities Award for R10, M. Tanseer Ali, Counselor, IEEE AIUB has won 2017 Outstanding Branch Counselor award from R10, all these awards are administered by MGA. A N M Nasimunnabi has received 2017 IEEE R10 SAC Student Volunteer Award and Abhijeet Biswas has received 2018 IEEE R10 SAC Student Volunteer Award in recognition of leadership and contributions to R10 SAC programs. In 2016, IEEE AIUB SB secured the 3rd place in the global student Website and social media competition.

Dr. Celia Shahnaz, founding Chair (2011-15) of WIE AG BD, has won 2013 IEEE R10 WIE professional volunteer award, 2015 IEEE WIE Inspiring Member Award from Global IEEE WIE and very prestigious 2016 IEEE MGA Leadership Award "For leadership in engineering and technology driven innovative IEEE Women in Engineering activities for enhanced membership development and engagement in Region 10 and across the globe". She was selected as 2016 IEEE R10 WIE Coordinator, for the first time BDS got a coordinator position in IEEE R10 Executive Committee. She mentored in forming 15 Student Branch WIE AGs, majority during 2015-16. Under her leadership, WIE Bangladesh Section has organized IEEE WIE international leadership Summit Bangladesh, 12-13 October at Dhaka with a resounding success; this was the largest and the first event won from a Global MGA committee to be conducted in IEEE Bangladesh Section. WIE Affinity group (AG BDS) has won 2016 WIE AG of the year award for the activities held in 2016 from Global IEEE WIE. It has also won 2015 WIE Affinity Group of the Year Award -Honorable Mention for the activities held in 2015 from Global IEEE WIE and 2016 IEEE R10 WIE Affinity Group of the Year Award for the activities held in 2015. BUET WIE Student branch AG has won 2017 WIE student branch Affinity Group of the Year Award -Honorable Mention for the activities held in 2016 from Global IEEE WIE and has received 2018 IEEE R10 WIE student branch Affinity Group of the Year Award for the activities held in 2017. IEEE BDS young Professionals (YP) has received 2018 IEEE R10 YP Affinity Group of the Year Award for the activities held in 2017.

IEEE WIECON-ECE 2018 will be jointly organized by IEEE Bangladesh Section and IEEE Thailand Section. Recently IEEE BDS has provided sponsorship to IEEE WIECON-ECE 2017(jointly with IEEE Uttar Pradesh Section), IEEE WIECON-ECE 2016 (jointly with IEEE Pune Section) and ICIVPR 2017and technical co-sponsorship to ICCIT, ICECE, ICECTE, ICEEICT, ICISET, IWCI, MediTech, and NSYSS held in 2016 and ECCE, NSYSS, ICEEE and EICT to be held in 2017. In 2015, for the first time in history, IEEE-BDS has successfully organized the IEEE R10 meeting where110 foreign dedicates from 17 countries participated. Later, IEEE-BDS along with its WIE AG organized IEEE WIECON-ECE 2015, first ever section sponsored conference with a resounding success having around 50% papers from international authors and enthusiastic participation from about 90 foreign delegates. Apart from arranging regular activities (technical seminars, workshops, BDS SYW Congress 2015 and '16, IEEE Day celebration), BDS also launched new events like IEEE ProTalks 2015 (for professional development), IEEE R10 MiniPOCO 2017, IEEE R10 MiniPOCO 2016 and BDS MiniPOCO (panel of conference organizer to discuss best practices), IEEE R10 Counselors'/Chairs'/Mentors' Summit 2016, IEEE R10 University-Industry Collaboration 2016, BDS SB Execom Summit 2015, 2016 and 2017, IEEE BDS Humanitarian Idea and App Contest and SS12: Code-A-Thon Challenge; YP AG arranged YP Summit and meet up 2015, 16 and 17, WIE arranged R10 WIE STAR program and AGE program, Society Chapters launched area specific conferences IEEE ICTP2015 , ICTP 2017 and MediTec 2016. For the 50 years celebration of R10, in IEEE R10 SYWL Congress 2016 at Bangalore, BDS was chosen as one of the five support sections. Our delegates received 8 awards/prizes in that congress and our delegates received 4 prizes in 2018 IEEE R10 SYWL Congress at Bali, Indonesia. I want to mention that IEEE Explore Digital Library (ASPP and POP ALL) has been activated through UGC Digital Library Consortium.

I express my sincere gratitude to all the authors, speakers, committee members, reviewers, sponsors, advisers and other members whose sincere efforts are the key factors for the success of this conference. I appreciate feedback from all the participants. I wish all the success of ICISET 2018.

Prof. Dr. Celia Shahnaz, SMIEEE, FIEB,

Note from the Chair

ICISET '18

Chair
Organizing Committee, ICISET 2018 &
Dean, Faculty of Science and Engineering
International Islamic University Chittagong

In the name of Allah, The Most Beneficent, The Most Merciful.

On behalf of the Organizing Committee, I am delighted to welcome you all to International Conference on "Innovations in Science, Engineering and Technology (ICISET2018), which has brought together researchers and academics from home and abroad. It is going to be held during October 27-28, 2018 at the green premises of IIUC. It is the 12th International Conference at IIUC, organized by the Faculty of Science and Engineering (FSE) in association with the Centre for Research and Publication(CRP) of the university. IEEE Bangladesh Section is the Technical Co-Sponsor of the Conference.

I feel honored and privileged to serve as the Chair of this conference "ICISET20128". The conference has brought together scientists, engineers and researchers from universities to share their ideas and research results about the aspects of Computer Science, Electrical, Electronics and Communication Engineering, Pharmacy and discuss the practical challenges being encountered and the solutions adopted. This conference provides a forum to exchange experiences and promote new trends in the field of Science and Engineering. This year, the conference has adopted 9 tracks of scientific research.

For this ICISET2018 conference, we received 351 articles from the authors of home and abroad. Each article was passed through a rigorous review process involving at esleast two reviewers (experts in the field) by the technical program committee consisting of renowned professors. Only 33.3% of the received papers were finally accepted for presentation. The accepted and presented papers will be included in the "IEEE Xplore" and "IIUC Studies". We have sincerely tried to accommodate original and quality research work of various universities from Australia, Bangladesh, China, Egypt, Germany, India, Japan, KSA, Malaysia, Norway, Pakistan, Somalia, Thailand and USA.

We express our heartfelt gratitude to the authors and paper presenters, keynote and invited speakers from home and abroad for their thoughts and time in preparing well-written meaningful papers for the Conference. We express our gratitude to reviewers from various countries who reviewed these articles and have given their effective judgments in spite of their busy schedule.

The organizing committee has made every effort to deliver a productive ICISET 2018. We have managed the whole ICISET 2018 conference through a comprehensive on-line process for abstract, paper submission, reviewer report and notification of acceptance. We have successfully included 10 Keynote speeches, 11 Invited speeches and 4 plenary sessions and 24 technical sessions. The keynote and invited speakers are from the various universities of Bangladesh, India, Japan, Malaysia Nepal, Pakistan, Thailand, Turkey and USA. We thank all these learned speakers for taking time and effort to contribute to this conference for the greater benefit of society. Specially their research contribution in the

Note from the Chair

field of Detection of Brain Diseases, Sensor Technology for Better Health Care, Radiomics for Neonatal Cerebral Diseases with MR Images, Potential Biosensor, Partial Discharge (Cancer Symptom) in HV Power Cable etc. prove that their research aims at serving humanity utilizing advanced science and technology.

The ICISET2018 Organizing Committee has guided the IEEE Student Branch of the Faculty of Science and Engineering to organize 'Poster presentation of student papers and Project show competition' events for the students of universities of Bangladesh. The competition can create recruiting opportunity for the potential IT farms through the identification of talented students.

University-industry linkage is one of the most important agenda of higher education policy- making. In this regard, a 'Workshop on University-Industry Collaboration' will be organized jointly by IEEE Bangladesh Section and IIUC during the Conference. I belive this workshop will facilitate strong linkage with industries, which is essential for the curricula development, student internship and their orientation with the industries.

This conference is the 2nd of its kind initiated by the Faculty of Science and Engineering at IIUC. The first one was organized in the year 2016. My personal thanks should go to my colleagues belonging to this Faculty who have supported me continuously from the very beginning of the planning of this endeavour. The honorable Vice-Chancellor Professor K.M. Golam Muhiuddin deserves special thanks for his permission to organize this conference. I am grateful to honorable Pro-Vice-Chancellor and Chairman, Center for Research and Publication (CRP) Prof. Dr. Mohammad Ali Azadi as well as IIUC authorities for providing financial and logistic supports in all respects.

We are grateful to the universities having MoU with IIUC for their support and participation in ICISET2018 Conference. These universities are : Universiti Teknologi MARA, Malaysia; Fatih Sultan Mehmet Vakif University, Istanbul, Turkey; Universiti Sains Islam Malaysia; Tribhuvan University, Nepal; Universiti Malaysia Perlis and Al-Madinah International University, Malaysia . Without the generous support of the sponsors, this conference would not have been possible at this scale.

It is indeed undeniable that ICISET-2018 is the result of sincere efforts and dedication by the members of the organizing committee, sub-committees, the technical program committee, teachers, club members and students of FSE, Officers, Staff and all others who helped to make this program successful. I cannot forget the contribution of Prof. Dr. M. Kaykobad, the Technical Chair, and his team for their whole hearted support to complete the review work successfully. I express my sincere thanks to Prof. Dr. Celia Shahnaz, the Chair, IEEE Bangladesh Section, and her team for their sincere effort to select original and quality research work for this conference. I must acknowledge the contribution of Prof. Md. Atiqur Rahman Ahad, Osaka University, Japan, in arranging Keynote speakers for the conference. The editorial board of this Souvenir deserves special thanks for their outstanding efforts in preparing the manuscripts for publication.

We hope that you will find ICISET2018 informative and enjoyable. I wish you a successful conference and a safe return to your homes.

May Allah guide us all to the path of success.

Prof. Dr. Md. Delawer Hossain

Note from the Co-Chair

ICISET 2018 ICISET '18

Co-Chair
Organizing Committee, ICISET 2018
Professor, Dept. of Computer Science & Engineering
International Islamic University Chittagong, Bangladesh

I am very glad to say that an International Conference on "Innovations in Science, Engineering and Technology 2018" (ICISET-2018) is going to be organized from 27th to 28th October, 2018 by the Faculty of Science and Engineering (FSE) of International Islamic University Chittagong IIUC) and technically co-sponsored by the Institute of Electrical and Electronics Engineers (IEEE) Bangladesh Section. Though this conference is the 12th international conference organized by IIUC it is the 2nd under the above title which accommodates all four departments of the Faculty of Science and Engineering namely Dept. of Computer Science and Engineering (CSE), Dept. of Electrical and Electronic Engineering (EEE), Dept. of Electronic and Telecommunications Engineering (ETE) and Dept. of Pharmacy.

This conference welcomes all researchers belonging to computer science, electrical and electronics engineering, telecommunications, pharmacy and all other related fields from around the glove. The development of countries at present is largely dependent on the new knowledge that directly or indirectly contributes to uplift the quality of people's life. In order to direct research in such a momentous path, the academics need to conduct researches in partnership with practitioners. I believe that this conference would lay foundation for such a change making of the research in science, engineering and technology. We aim to nurture our young researchers, specially our students with pioneering spirits and highly specialized engineers who command advanced skills and knowledge in science and technology.

As a co-chair of the organizing committee, I wish every success of the conference and like to express my heartiest thanks to all the researchers, sponsors, partners, organizing committee members for their contributions in making the conference a grand success. Thank you.

Professor Dr. Md. Monirul Islam

Note from the Co-Chair

ICISET '18

Co-Chair
Organizing Committee, ICISET 2018
Professor, Dept. of Computer Science & Engineering
International Islamic University Chittagong, Bangladesh

On behalf of organizing committee I am honored to welcome all of you to International Islamic University Chittagong (IIUC), on the occasion of 2018 International Conference on Innovations in Science, Engineering and Technology (ICISET 2018), organized by the Faculty of Science and Engineering (FSE) in association with the Center for Research and Publication (CRP) of International Islamic University Chittagong (IIUC). This is the second time ICISET is going to take place where the first round of this immensely successful conference was held in 2016. IEEE Bangladesh Section is the Technical Co-sponsor of the conference.

The objective of the ICISET 2018 conference is to create a unique opportunity for the scientists, engineers, professionals, researchers and students to present their latest research findings and experiences in the areas of Computer Science & Engineering, Electrical Engineering, Electronics, Telecommunication Engineering, Pharmacy and other relevant areas of Science, Engineering and Technology. I am happy to note that we have experienced an overwhelming response from authors, reviewers and experts of different nations. A total of 351 papers were submitted from 14 different countries and all papers were blind reviewed individually by minimum two researchers who are experts in the respective fields. The paper acceptance rate of this conference is about 33%. All accepted and presented papers are expected to be included in IEEE Xplore and will be indexed by EI. Papers which will not be covered in IEEE scope will be considered for publication in IIUC Studies.

The conference features ten outstanding researchers as keynote speakers. They are Prof. A.K.M. Azharul Islam (Professor Emeritus & Former Vice-Chancellor, IIUC), Prof. Dato' Dr Abu Bakar Abdul Majeed (Rector, Universiti Teknologi MARA, Malaysia), Prof. Ved Ram Singh (National Physical Laboratory, India), Prof. Debatosh Guha (University of Calcutta, India), Prof. Phalguni Gupta (IIT Kanpur, India), Prof. Weerakorn Ongsakul (AIT, Thailand), Prof. Atsushi Inoue (Eastern Washington University, USA), Prof. Dr Shoji Kobashi (University of Hyogo, Japan), Prof. Nowshad Amin (The National Energy University, Malaysia) and Prof. Md. Atiqur Rahman Ahad (Osaka University, Japan). In addition to that we will have eleven invited talks by renowned speakers from different universities from home and abroad. My heartfelt thanks to all our respected speakers for their time and effort.

My sincere appreciation and attitude goes to the organizing committee, different sub-committees, advisory committee, technical program committee, reviewers for their endeavor and support all the way down to this very day. I acknowledge the financial support and sponsorship from all the sponsoring organizations towards successful completion of this conference.

I wish your active participation in ICISET 2018 in making this conference a grand success. Have an enjoyable stay in the green campus of IIUC and the Port City of Chittagong, Bangladesh.

Mohammed Shamsul Alam

Note from the Member Secretary

ICISET '18

Member Secretary
Organizing Committee, ICISET-2018
Associate Professor, Department of Computer Science & Engineering
International Islamic University Chittagong

It is a great honor and privilege for me to write a few words on the occasion of 2018 International Conference on Innovations in Science, Engineering and Technology (ICISET 2018). This is the second time Faculty of Science and Engineering of International Islamic University Chittagong, in association with the Center for Research and Publication, is organizing ICISET. Like the previous instance, IEEE Bangladesh Section has generously agreed to become the Technical Co-sponsor of this grand event.

ICISET 2018 attracted researchers from all over Bangladesh as well as from distant corners of the globe. They all together submitted 351 papers in ICISET 2018. Each of the submitted papers has gone through a rigorous review process and only 118 of them got acceptance for presentation in the conference. Finally, we have now 105 registered papers which are going to be presented in 24 parallel technical sessions of ICISET 2018. In addition to that, we have 11 invited talks from distinguished faculty members of several renowned universities.

We have with us 10 Keynote Speakers who have authority in their respective fields. I would like to express my sincere gratitude to all of them for managing time for us out of their extremely busy schedule. Indeed, it is a great opportunity for our young researchers for getting benefitted from their insightful thought provoking speech. I am sure their speeches will show us the new horizons of current innovations and provide directions for further exploration.

I would like to seize this opportunity to express my heartfelt thanks to all the people who worked hard behind the scene, the organizing committee and sub-committee members, advisory and technical committee members, track chairs and the reviewers. We are thankful to IIUC authorities, our patrons, sponsors, partners and our technical co-sponsor IEEE Bangladesh Section. Last but not least, my appreciation should go to the authors and participants of ICISET 2018 for whom we have all gathered together.

I wish Allah makes ICISET 2018 a grand success and a source of goodness.

Tanveer Ahsan

ICISET '18

From Editor's Desk

At the outset, I express my gratitude to Almighty Allah for publishing such a publication for the second time on the occasion of International Conference organized by the Faculty of Science and Engineering, International Islamic University Chittagong (IIUC). The first conference book was published in 2016 on the occasion of International Conference organized by the Faculty of Science and Engineering, IIUC.

Publication of souvenir on the eve of an event is always a difficult task taking into consideration the time and other constraints. Gathering the raw materials for the souvenir viz. the articles, messages, photos, advertisements, technical session schedule, etc. in time is another challenging task. Sometimes the task is even daunting when one sees the time running out while a few things yet to be collected. Despite all the unpredictable impediments came on the way we succeeded in bringing the souvenir to light by virtue of our concerted effort and hard work.

The contents of the conference Book are initiated with the messages from dignitaries followed by keynote speeches, invited speeches, technical session schedule, abstract of registered papers, list of members of different committees and sub-committees, etc. The full papers can be availed in the Pendrive provided.

It would have been better to make an indexing of registered papers according to the session-wise, but it was not possible because of finalization of the technical sessions schedule coming to our hand just before the printing of the book. The papers were submitted to 9 tracks in total. If a paper is indexed according to the field (track), it may be difficult for an author to find his paper's page number. Therefore, indexing has been made considering the paper ID as the primary key. As a result, any author can easily find his paper according to paper ID. Moreover, an author index is available in the last portion of the conference book.

I would like to extend my heartiest appreciation and thanks to all who generously contributed their messages, articles and other works that enriched the souvenir. My heartfelt thanks also go to the members of the Souvenir Sub-committee and to those who kind heartedly extended all kinds of support and assistance in publishing the souvenir.

Finally, I hope that any mistake, omission or deficiency on our part would be graciously excused by the respected readers

May Allah accept our efforts and give us the best rewards here and hereafter.

A.N.M. Rezaul Karim
Associate Professor
Dept of Computer Science & Engineering
International Islamic University Chittagong

ICISET '18
International Conference on Innovations in Science, Engineering and Technology (ICISET-2018)
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Keynote Speech

New Nanomaterial MXenes: Opening Exciting Technological Horizon

Prof. Dr. A.K.M. Azharul Islam, FInstP, CPhys
Professor Emeritus & Former Vice Chancellor
International Islamic University Chittagong

Abstract: Discovery of MXenes, derived from parent 3D MAX phases, constitutes a major breakthrough in materials science. These nanomaterials are a family of atomically thin, two-dimensional (2D) transition metal carbides and nitrides with many attractive properties. Not only are the materials just a few atoms thick, their structures show the potential to surpass current materials in terms of their properties and the way these could be used.

2D MXenes are at the forefront of materials research in the last few years due to their exotic electrical and optical properties and interesting mechanical properties deriving from their atomically thin dimensions. The isolation and synthesis of several of these nanomaterials have opened a 'new exciting platform to layer-by-layer materials and hybrid device engineering that enables the exploration and tailoring of superior or hitherto unknown properties and that promises a range of new technologies'.

MXenes are electronically conductive multilayer similar to multilayer graphene and found useful for a wide range of applications including electronic devices, sensors (chemical, environmental, and biological), reinforcement for composites, and energy storage materials and so on. Recently the application developments of the nanomaterials on energy storage, electromagnetic interference shielding, transparent conductive electrodes and field-effect transistors, optoelectronic and other applications have been widely reported. Very recent study on Ti3C2 MXene reveals potential of nanomaterial as a novel ceramic photothermal agent used for cancer therapy. The same 2D nanomaterial is resistant to biofouling and offer bactericidal properties with application in water desalination/purification membranes. The MXene-based piezoresistive sensor also can detect human being's subtle bending-release activities and other weak pressure. It can be used to harvest wasted frictional energy, for example, from muscle contractions during typing or walking.

The present author's contribution in the parent 3D MAX materials is continuing for the last six years which has now been extended to these 2D nanomaterials. This review will mostly highlight the achievements and prospects of this new exciting horizon, rather than the details of theoretical and experimental methodology.

Biography: Prof. Dr. A.K.M. Azharul Islam, Professor Emeritus and former Vice-Chancellor of International Islamic University Chittagong, was born in Bogra, Bangladesh on 2nd November 1946.

Academic Qualifications: Prof. Islam was graduated in Physics from the University of Rajshahi. He secured First Class and First position in both B.Sc. Hons. & M.Sc. He has successfully pursued DIC from Imperial College of Sci. & Tech., London in the year 1969. He was awarded Ph. D. in 1972 from London University.

Prof. Islam's field of research areas are: (i) Elementary particle physics during 1967 - 1978, (ii) Condensed Matter Physics with current interest in Superconductivity, defects of solids, electronic structure of materials, MAX phases and 2D MXenes.

National and International Awards:

1961: Haji Mohd. Mohsin Prize and Bogra Textile Mill Prize for result at Matriculation in the East Pakistan Secondary Education Board, Dhaka
1964: Governor's First Prize, Air Travel and Certificate for National level Essay Competition in the then East Pakistan
1966: University Habib Bank Gold Medal and Book prize for B.Sc. Hons result
1967: University Habib Bank Gold Medal and Book prize for B.Sc. Hons result
1968: Presentation of Insignia of the then Pakistan Civil and Military Award as well as President's Medal for Pride of Performance at PG stage (Gold Medal, US$ 1000 Prize Money and National Tour)
1968: Government Merit Scholarship for PhD at Imperial College of Sci. & Tech, London University
1969: Gold Medals at Rajshahi University Convocation (in absentia) for achieving Faculty First Positions at both B.Sc. Hons and M.Sc Examinations
1991: Prime Minister honors in a Ceremony at Dhaka – as Supervisor of UGC PhD Research Fellows
1997: UGC Research Award in Physics– Awarded by the Education Minister of Bangladesh
2001: ISESCO Laureate – ISESCO International Science Award for Meritorious Research Achievements in the field of Physics (US$ 5000, Certificates + Tour & others)
2006: Bangladesh Academy of Sciences Gold Medal Award 2006 (Awarded by Hon'ble President of Bangladesh)
2010: International CSE Award (2010) as an Editor of Science Journal of the Third World on the occasion of 52nd Annual Conference of the Council of Science Editors (Atlanta, 14-18 May 2010)
2016: United Group Outstanding Research Award 2016 – (Awarded by the Education Minister at Dhaka, 22 April 2016)
2016: UGC Reception for author of University Text book (Crest & Certificate by the Education Minister, Government of Bangladesh)
2017: United Group Outstanding Research Award 2017 – (to be awarded in a ceremony at Dhaka).

Professional Experience: Prof. Islam served Rajshahi University as a Lecturer in Physics from January 1968. He became Professor in early 1984. During his long 45-year teaching career he served as:

- Chairman, Department of Physics, Dean, Faculty of Science, Rajshahi University.
- Member of Senate, Syndicate, Academic Councils of Rajshahi and other Universities.
- Member, Board of Governors, RCMP, Chittagong University.
- Editor-in-Chief, Journal of Scientific Research; Member, Editorial Board, 'Journal of Bangladesh Academy of Sciences', 'Rajshahi University Studies'.
- Reviewer of more than twenty International Journals, and eight national journals.

Publications and Research Guidance: Professor Islam already guided 93 research students for their M.Sc, M.Phil and Ph.D works – currently guiding 4 research students including 2 MPhil/Ph.D students.
Total number of Publications is 280 – Among these are 195 research publications mostly in International Journals (Visit: https://www.researchgate.net/profile/A_K_M_Islam3/publications); 72 general articles published on Science, Education and National & International issues; 13 books (published nationally and in India & New York); He has edited Proceedings of International Workshop (catalogued by US Library of Congress, ICTP & other libraries of the world, https://lccn.loc.gov/99938837). His book "Bedevilled world" on contemporary socio-political events was published by Global Media Publications (New Delhi, India, 2008, 324 pages), see OCLC WorldCat Bedevilled world.

Co-discoverer of a Perovskite-type oxide Superconductor with Japanese physicists (for more information visit: http://www.spring8.or.jp/en/news_publications/press_release/2014/140303/

Prof. Islam carried out research as a Post-doctoral Fellow at Imperial College (London); J. J. Thomson Laboratory (Reading University, UK) on Royal Society Fellowship. He has also worked as visiting scientist at: (i) University of Cambridge (U.K), (ii) Jawaharlal Nehru Centre for Advanced Research, Bangalore (India), and (iii) ICTP (Italy) as a Regular Associate and then as a Senior Associate; (iv) Yamanashi University, Japan, under joint UGC-Japan research project.

Conferences and Seminars: Prof. Islam so far visited 28 countries and attended 54 international conferences; Organized two international workshops (participants from 15 countries) in 1996 and 1998.

Prof Islam is an elected Fellow of (i) The Institute of Physics (London), and (ii) Bangladesh Academy of Sciences. He is also Member of different professional bodies such as: (i) The New York Academy of Sciences, (ii) The American Physical Society, (iii) AAAS (USA), (iv) The Asian Physical Society, (v) The Bangladesh Physical Society (Vice-President for two years), (vi) Bangladesh Association for the Advancement of Science. He is also a Life Member of Bangla Academy (Dhaka) and a few other Societies.

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Keynote Speech

EARLY DETECTION OF BRAIN DISEASES THROUGH BLOOD TESTING

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Global population statistics show the number of geriatrics (those over 60 years old) is growing in all parts of the world, except for Africa. The percentage of the elderly in Malaysia rose from 4.6% of the population in 1957 to 5.7% in 1990. The expected expansion is from the current 7% to 15% by the year 2030, when Malaysia will attain 'ageing nation' status. In Bangladesh the median age grew from 19.4 in 1965 to 26.0 this year. Approximately 9.7 million (6.23%) of the population are 65 years and above. The growing number of the aged is a manifestation of the much better health care facilities and services provided by many national governments and the private sector. However, diseases normally linked to old age like Alzheimer's disease (AD) is on the rise. One of the major and perhaps most debilitating condition of the brain relating to AD is dementia. Dementia, literally translated 'loss of the mind', is a general term for a group of disorders in which mental ability and cognitive function become impaired for at least six months. A demented individual is unable to recall past events, recognize faces, speak coherently and care for himself, and is oblivious of the surrounding. Symptoms deteriorate quickly over time and are irreversible. Despite research is being extensively conducted around the world, brain-related diseases remain recalcitrant, hence not easily treated. Thus, the time and cost of care of patients remain overwhelming. Since the first post-mortem investigation conducted by Dr. Alois Alzheimer of Tubingen, Germany at the turn of the last century, the pathology of the brain of AD victim has been quite consistent. One, there appears to be a build-up of abnormal protein, called beta-amyloid, in the surrounding of the neurons in the memory storage and processing areas in the brain. Two, inside the neurons there is collapse of proteins known as tau, that are supposed to support the scaffold that keeps the neurons stable and intact, into heaps of cellular muddle and rubbish. These two events appear to be the reasons why affected cells, like the memory neurons fail to do what they normally do. Hence, memory slowly fades away. And so does much of other information, knowledge and even wisdom previously entrenched in the person's brain and mind. Presently available medications are unable to prevent the disease progression but they can provisionally slow down the worsening of symptoms and somewhat improve quality of life of AD patients and, indirectly their caregivers, too. Nowadays worldwide, scientists are putting a lot of effort into AD research to not only discover better ways of treating the disease and delaying its onset, but also to understand how to prevent it from developing in the first place. Although the greatest identified risk factor of AD is increasing age, the development of the disease is not a normal part of the aging process. Early detection would be a tremendous boost to deal with the possibility. These indicators are referred to as biomarkers. Some of these are in the form of genes which have not been previously reported. It is now being accepted that genes which are indicators of a disease may not be similar across world's population. Currently, biomarkers for AD are either identified in the fluid of the brain and spinal cord, or by using imaging techniques. The former technique gives much discomfort to the person being tested, while the latter is normally too expensive or unavailable at most health screening facilities. Early detection is vital as proper preventive measures against the disease can be put in place. The long standing believe that a disease is a manifestation of nature (genes), and nothing can be done about it seems debatable now.The new paradigm of thinking is that a person may be able to determine his or her own health status by working hard on the nurturing side. This involves living a healthy lifestyle, and striving for a positive physical, mental and spiritual health.

Biography: Abu Bakar Abdul Majeed, a Registered Pharmacist with Malaysia's Board of Pharmacy,
has a Bachelor of Pharmacy degree from el-Zagazig University, Egypt (1983), PhD in Neurophysiology from Sheffield University, United Kingdom (1988), and a Master's in Business Administration (MBA) from Universiti Sains Malaysia, Penang (1996). He was awarded the International Brain Research Organisation (IBRO) Post-doctoral Fellowship at the Laboratory for Neural Information Processing, RIKEN in 1992 and Visiting Scientist a year later.

Between 1997 and 2002 ABU BAKAR was Senior Fellow at the Institute of Islamic Understanding Malaysia (IKIM), and also a newspaper columnist of the Saturday edition of the New Straits Times, Malaysia, writing over 100 articles on issues pertaining to Science, Civilisation and Ethics. He was awarded two fellowships in year 2000, the Straniak Fellowship at the Centre for European Integration Studies, Bonn, Germany, and the International Visitors' Program of the U.S. State of Department on 'Religion and Society'.

In 2002 Abu Bakar was appointed Dean of the Faculty of Pharmacy, Universiti Teknologi MARA (UiTM). Between 2009 and 2014 he was Assistant Vice-Chancellor (AVC) for Research, UiTM. Currently , he is a Rector for Universiti Teknologi MARA(UiTM).

Abu Bakar is a council member of the Pharmacy Board, Ministry of Health (2016-2019), and Chairman of the National Bioethics Council, Ministry of Science, Technology and Innovation (2016-2018).

Abu Bakar has written and edited over 20 academic books, and has more than 100 research articles published in respectable journals. His research areas are Alzheimer's disease, nanopharmacy and bioethics.

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Keynote Speech

Innovations in Sensors Technology for better Health Care

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Abstract: Newer and newer sensor technologies are being developed, day by day, for various scientific, engineering and health care applications. Design and development aspects of macro- to nano- sensors are presented here for better healthcare with description of innovations in sensor technology, particularly for old age patients living in isolated areas.

Different types of sensors, viz., piezo-resistive and piezo-electric types and biochip-based sensors are discussed here for novel diagnostic and therapeutic applications. Cancer nanotechnology and therapeutic treatment of deep seated brain tumours, with focussed ultrasound, are given, as case studies here.

Wireless sensor networking (WSN) technology is applied for ubiquitous health care in different environments; anywhere, any time for any one. This would contribute to new direction in biomedical engineering field for better health care.

Biography: Prof. (Dr) V.R. Singh, Ph.D. (Electrical Engg), IIT-Delhi and Life Fellow- IEEE and LF-IETE, LF-IE-I, LF-ASI/USI and LF-IFUMB/WFUMB, has over 37years of research-cum-teaching experience in India and abroad (University of Toronto-Canada, KU Leuven- Belgium, Korea University, South Korea, TU-Delft, Netherlands, University of Surrey, UK, and others). He has been at National Physical Laboratory (NPL), New Delhi, as a Director-grade-Scientist/Distinguished Professor and Head, Instrumentation, Sensors and Biomedical Measurements and Standards.

He has over 350 papers, 250 talks, 260 conference papers, 4 books, 14 patents and 30 consultancies to his credit. Under his guidance, 30 PhD scholars have earned PhD degree while others are working with him.

Dr. Singh has been the Associate Editor of IEEE Int Sensor Journal (2010-2016), Associate Editor of IEEE Transactions on Instrumentation and Measurements and Regional Editor of Int Journal of Biomedical Engineering and Technology (IJBET). Apart from this, heis on Editorial/Reviewer Boards of other journals. Like Sensors & Actuators (Switzerland), IEEE Trans on Engineering in Med and Biology , J Computers in Electrical Engineering (USA), J.InstnElectr Telecom Engrs, J.InstnEngrs -India, Ind J Pure &Applied Physics, J.of Instrm Soc Ind, J. Pure &Appl Ultrasonics, J. Life Science Engg, etc.

He is the recipient of awards by INSA (IndNatnlSciAcademy)1974, NPL 1973, Thapar Trust 1983, ICMR (Ind Council of Med Res) 1984; Japan Soc. Ultr in Medicine 1985, Asian Federation of Societies of Ultrasound in Medicine &Biology 1987, IE-I(Institution of Engineers- India) 1988/ 1991, IEEE-EMBS 1999 and IEEE-2010/2011/2014, for his outstanding contributions. Presently, he has been selected as IEEE-EMBS-DL (Distinguished Lecturer) and INSA-DL.

He has served as Guest Editor of Special Issues of JASI on Physical Acoustics and Utrasonics (2016-17) and Medical Acoustics (2017-18) as well as on IETE Technical Review journal on Transducers (2002).

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He is the Chair of IEEE-EMBS/IMS-Delhi Chapter, President of Acoustical Society of India and Vice President of Ultrasonic Society of India and has been the Vice President of Instrumentation Soc of India, Vice-President of IFSUMB, Secretary of IEEE India Council and the Chairman of IEEE-Delhi Section. Dr. Singh is a Member of IEEE Standards Association. He was also Council Member of WFUMB (Australia) Ultrasound Safety and Standards. He has served as the Chair or a Member of BIS Committee on Elctro-Medical Committee in the past and presently, he is the Chairman of BIS-MHD-15 Committee. He has been the session chair, plenary/keynote/ invited speaker and on advisory boards of world congresses and national/international conferences, world over. He is the Conf Organiser of WESPAC-2018, Nov 10 to 15, New Delhi.

Dr Singh has been Distinguished Professor at NPL-India and Thapar University, and is working as a Director/Advisor of PDM University, Delhi-NCR.

His main areas of interest are biomedical instrumentation, biomedical standards, computer modeling and simulation, sensors and transducers, biomedical ultrasonics/ medical acoustics, POCT devices, neuro-sensors/implants nano-cancer-technology, cancer hyperthermia, tissue characterisation, lithotripsy, WSN and u-health care engineering.

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Keynote Speech

Scientific Innovations for the Antennas, by the Antennas

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Centre for Research in Nanoscience and Nanotechnology, University of Calcutta
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Abstract: The wireless technology is now stepping in the domain of the world of 5G promising a fantastic feature of 100% coverage and as usual, it demands more sophisticated devices including the RF front ends, commonly known as 'antennas'. An antenna is actually a specially designed component of the electrical circuit in any wireless transmitter and receiver which is able to serve as a mediator between the electrical phenomenon inside and the electromagnetic phenomenon outside. Such a requirement was beyond the dream of the scientists involved in justifying 'The dynamical theory of electromagnetic field' proposed by J C Maxwell in 1860s. Finally, a physicist Heinrich Hertz came with his innovative eyes and looked into something beyond the theory which laid the foundation of antenna engineering. This talk is aimed to address that longstanding quest through a personal drive of understanding Hertz's own experiments by visiting his own Institute at Karlsruhe and also through investigating his original equipment located at Deutsches Museum, Munich. This talk will present some evidences of remarkable innovations in technology which were made possible by the success of antenna engineering in the beginning of the last century. With time, material science has grown like anything and the antenna engineers have taken the advantages in different formats, geometries, and applications covering up to the optical frequencies. This talk intends to cover all this aspect including some recent state-of-the-art innovations based on the personal experiences.

Biography: Debatosh Guha is a Professor in Radio Physics and Electronics, University of Calcutta. He is the former HAL Chair Professor of IIT Khargapur, present Head of the Radio Physics and Electronics Department, and Director of the Centre for Research in Nanoscience and Nanotechnology (CRNN), Calcutta University. He received the B. Tech. and M.Tech. degrees from the University of Calcutta in 1987 and 1989, respectively and started his career in a Wireless Industry. After graduating with a Ph. D. in microwave engineering from Calcutta University, he joined the same institute as an Assistant Professor in 1994. He spent about two years with the Royal Military College of Canada, Kingston, Ontario as Visiting Research Professor.

He has researched in developing microstrip and dielectric resonator antenna technologies. Defected Ground Structure (DGS) -inspired antenna is one of his major areas of contribution. He has published over 200 technical papers and articles in top Journals and Conferences along with a Book on microstrip and printed antenna from Wiley,UK.

Professor Guha is a Fellow of IEEE, the Indian National Academy of Engineering (INAE), National Academy of Sciences, Indian (NASI), West Bengal Academy of Science and Technology (WAST), and the Institution of Electronics and Telecommunication Engineers (IETE). He is the recipient of some notable awards which include IETE Ram Lal Wadhwa Award 2016 (New Delhi), Raj Mittra Travel Grant Award 2012 (Chicago); URSI Young Scientist Award 1996 (Lille, France); and Jawaharlal Nehru Memorial Fund Prize 1984 (New Delhi). He is an Associate Editor of IEEE Transactions on Antennas and Propagation & IEEE Antennas and Wireless Propagation Letters and serves the Field Awards Committee of IEEE AP-Society

He is the present Chair for Commission B of the Indian National Committee for URSI (INCURSI). He served the IEEE Kolkata Section as a Chair (2013-2014) and also the AP-MTT local Chapter as its Founding Chair (2004) and Chair (2010-2011 He has mentored more than a dozen doctoral students and his current research interests include defected ground structure (DGS) for antenna application, unresolved issues of microstrip antenna design, UWB hybrid antennas, unconventional radiating modes and new feed concepts fordielectric resonant

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Keynote Speech

Challenges in Fingerprint based Biometric System

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Indian Institute of Technology Kanpur
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Director, National Institute of Technical Teachers' Training & Research, Kolkata
Kolkata 700 106, INDIA
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Abstract: Fingerprint is one of the best known and well accepted biometric traits. It is an impression that gets developed on a surface touched by the lower skin of a human finger. Print pattern of a fingerprint contains a lot of black lines called ridges. A ridge can either terminate or join with other ridges at the end. Both of these points are of special interest and are called minutiae points. Location along with the direction of the minutiae point contributes towards the individuality of a fingerprint. Despite being one of the most popular and widely accepted biometric trait, performance of a automatic fingerprint based recognition system is not 100\% accurate. Especially for large-scale deployments. There exist several challenges which one faces while designing an efficient fingerprint based biometric system. Some of the well known challenges are (i) designing an efficient technique to extract true feature points, (ii) Efficient technique to get stable core point (iii) Effective technique for indexing a big fingerprint database (iv) A good and distinguishable fingerprint matching technique (v) Developing an appropriate measure to determine the quality of fingerprint (vi) In presence of multiple instances of the fingerprint an efficient score fusion strategy to unify the scores for better performance (vii) Designing recognition systems for the rural population where quality of fingerprint is very poor (viii) Efficient and accurate technique to segment fingerprints automatically from a digital slap image that contains fingerprints of four fingers in a single image. In this talk, an attempt will be made to address some of these challenges.

Biography: Professor Phalguni Gupta who is the Director of NITTTR Kolkata, did his Ph D from IIT Kharagpur and started his carrier In 1983 by joining in Space Applications Centre (ISRO) Ahmedabad, India as a Scientist. He was involved in the development of software for correcting satellite images of the first Indian Remote Sensing Satellite (IRS-1A). In 1987, he joined the Department of Computer Science and Engineering, Indian Institute of Technology Kanpur, India. Currently he is a Professor in the department. He works in the field of Data Structures, Sequential Algorithms, Parallel algorithms, On-line Algorithms, Image Analysis, Biometrics. He has published about 350 papers in International Journals and Conferences. He has supervised 17 Ph D and more than 100 graduate students. He has dealt with several sponsored and consultancy projects which are funded by the Government of India. Some of these projects are in the area of Biometrics, System Solver, Grid Computing, Image Processing, Mobile Computing, and Network Flow

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Keynote Speech

Short-Term Solar Forecasting by Deep Long-Short Term Memory Recurrent Network Program Considering Time Sequence Data

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Abstract: Solar photovoltaic power generation is an intermittent renewable energy source. It is highly dependent on solar irradiance, cloud cover variability, temperature, atmospheric aerosol levels, and other atmosphere parameters. Accurate forecasting of solar power is crucial to short-term generation scheduling and on-line secure economic operation. This paper proposes a short-term hourly solar forecasting technique using deep long-short term memory recurrent network (DLSTM-RNN) program considering time sequence data.

Deep learning techniques are considered as one type of machine learning that can be used for load forecasting, solar forecasting and wind forecasting. The DLSTM-RNN has more advantages than shallow neural network in terms of model architecture and the training process. The network is constructed from combining long-short term memory cell wither current network. The long-short term memory, a kind of feed forward neural network with memory cell unit, is interconnected with an input layer and a hidden layer. With forget gate of the Long-short term memory, it can reduce time consuming and better process bad data during the training process. The recurrent network is a class of feed forward neural network, dividing the input feature into the time sequence. The architecture of recurrent network is designed with the interconnection of two hidden layers to better incorporate time sequence data than the shallow feed forward neural network. The training process of recurrent network is considered to be reinforcement training categories, combining supervised learning and unsupervised learning. The unsupervised learning here is LSTM, used to pre-train the input data feeding to a hidden layer for reducing training time and avoiding vanishing gradient. By eliminating some redundant input, the model is considered to be supervised learning because we assign the target labeled data for testing comparison. The back propagation process to the time of RNN is updating weights between interconnected two hidden layers to minimize the loss function (error between network output and desire output)suitable to process the time sequence than the shallow feed forward neural network. Therefore, combining LSTM with RNN is a deep learning model with complex interconnection of multi hidden layers. The input data used include solar radiation from previous 7 intervals (time sequence data), day of the year, time of the day, temperature, and humidity.

The simulation of hourly solar irradiation forecasting uses the solar irradiation, relevant meteorological and time series data as input which collected from previous 1 year (8760 hourly interval data) to forecast the sample data which is 7 days (91 hourly interval with removing night timehour) of the target current year. From back test simulation, the simulation results from DLSTM-RNN render a better performance than shallow neuron network in terms of root mean square error(RMSE), mean bias error(MBE), mean absolute percentage error (MAPE), mean absolute error (MAE) and correlation coefficient (COR). Comparing with Deep Belief network (DBN) and Auto Encoder Long-short term memory (AUTO-LSTM), our simulation results have lower RMSE, MAE and COR with slightly higher MBE than DBN and AUTO-LSTM. The proposed DLSTM-RNN program is potentially viable for solar forecasting of utilities due to the higher accuracy.

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Biography: Professor Weerakorn Ongsakul, PhD, CFA obtained B.Eng. (Electrical Eng.) in 1988 from Chulalongkorn University, Thailand; M.S. and Ph.D. (Electrical Eng.) from Texas A&M University, USA in 1991 and 1994, respectively. He is currently a Full Professor of Energy. He served as a Dean of School of Environment, Resources and Development, Asian Institute of Technology from September 2009 to June 2013. His research encompasses the areas of Intelligent System Applications to Energy, Power System Operation & Control, Power System Restructuring and Deregulation, Smart Grid, and Energy Risk & Financial Risk Management. He has conducted projects sponsored by Sida, EC-ASEAN Energy Facility/ACE and EU-Thailand Economic Co-operation Small Project Facility, and projects sponsored by Energy Conservation and Promotion Fund and Electricity Generating Authority of Thailand (EGAT), Provincial Electricity Authority (PEA) with a combined funding of US$3.0 million. Based on his research work, he has published more than 81 international refereed journal articles and 135 conference proceedings papers. He has supervised 27 PhD and more than 100 MSc thesis. He served as an Energy Specialist, Energy Standing Committee, Senate of Thailand during 2008-2011 a consultant of Asian Development Bank Institute (ADBI) in 2011-2012. He is currently serving as Executive Director of Bangchak Initiative and Innovation Center@AIT (BIIC@AIT), Secretary General of the Greater Mekong Sub region Academic and Research Network (GMSARN), Editor-in-Chief of GMSARN International Journal (Indexed by SCOPUS). He co-authored one book entitled Artificial Intelligence in Power System Optimization, published by CRC Press/Taylor & Francis in March 2013, and subsequently translated to Chinese by China Machine Press, CRC Press/Taylor & Francis in February 2016. He also received a number of national awards and recognitions which include amongst others, the Most Noble Order of the Crown of Thailand (Fifth Class) in 2008, the Most Exalted Order of the White Elephant (Fifth Class) in 2010, and the Royal Decoration on Companion (Seventh Class) of the Most Admirable Order of the Direkgunakorn bestowed by H.M. the King of Thailand in 2011. In addition, he has been a CFA Charter holder since Sept 2017.

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Blockchain and Artificial Intelligence ~Information Management Platform for the Next Generation~

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Abstract: This talk introduces Blockchain and Artificial Intelligence as an information management platform for the next generation, where various intelligent services are to be placed. First, we consider the Blockchain as a genuinely distributed and scalable database technology, rather than for the Cryptocurrency. Then, we consider the Artificial Intelligence as a standardized set of computational tasks necessary to perform those intelligent services, e.g. inference, reasoning, learning, and tuning. Last but not the least, we introduce some applications impactful in our social lives, e.g. Robotics, Authentication, Cashless Finance, and Health Records. If time permits, some open source blockchain platform for prototype is introduced.

Biography: Atsushi Inoue is specialized in Artificial Intelligence at large and Fuzzy Logic in specific. He earned his Ph.D. in Computer Science and Engineering at the University of Cincinnati (USA). He has been affiliated with top-notch industries and institutes in several countries, including Hitachi Ltd. (Japan) and Carnegie Mellon University (USA), for his specialties. He is currently home at Eastern Washington University to enjoy his life with his family in the beautiful evergreen, while serving as a Full Professor of Information Systems and Business Analytics and the Director of the Intelligent Informatics Initiative (I3). He is the Chief Technology Officer, and the Global R&D Leader of the BaaSid Lab., the multinational project across seven countries -- Japan, S. Korea, Taiwan, Singapore, China, Australia, and USA since 2018.

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Keynote Speech

Radiomics for Neonatal Cerebral Diseases with MR Images

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Abstract: Neonatal brain shape might be deformed by cerebral diseases. That means brain shape analysis will assist physicians to diagnose the cerebral diseases. This talk will introduce radiomics (=radiology + informatics), which provides physicians not only information extracted from medical images of the evaluating patient but also additional information based on big data analysis. Radiomics should be based on image analysis of individual patient data, and data analysis of a large amount of patients. The first topic will be brain region segmentation from MR images to quantify the brain shape, and the second talk is spatiotemporal statistical shape model (stSSM) which statistically analyzes the temporal change of the developing brain shape.

Biography: Prof. Syoji Kobashi received BE in 1995, ME in 1997, and Doctor of Engineering in 2000, all from Himeji institute of Technology. He was an assistant professor at Himeji Institute of Technology (2000-2004), an associate professor at University of Hyogo (2005-2016), currently an professor at University of Hyogo (2016-), a manager of Advanced Medical Engineering Research Center, University of Hyogo (2016-), and an assistant dean of Gradyate School of Engineering, University of Hyogo (2018-). And, he was a guest associate professor at Osaka University, WPI immunology frontier research center (2010-2016), and was a visiting scholar at Department of Radiology, University of Pennsylvania (2011-2012 His research interests include medical image understanding and artificial intelligence. He received 16 international awards, including Lifetime Achievement Award (WAC, 2016), Franklin V. Taylor Memorial Award (IEEE-SMCS, 2009), and IEEE-EMBS Japan Young Investigators Competition (EMBS Japan Chapter, 2003). He has been serving on the publication chair of IEEE SMC2018, the chair of IFMIP since 2012, General Co-chair of ICIEV since 2016, and others. Moreover, he is an editor-at-large of Intelligent Automation & Soft Computing journal, an associate editor of 4 journals, and a guest editor of some special issues. And, he is organizing many special sessions in international conferences including IEEE SMC and IEEE EMBC. He is the senior member of IEEE.

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Keynote Speech

Large Scale Solar Farms in Energy Sufficiency Roadmap

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Abstract: Needless to say that many developed nations are aligning themselves to alternatives to fossil fuels in their energy roadmap owing to the tremendous growth of renewable energy resources in recent times. Even though, the so-called first generation solar cells that are mainly crystalline or multi-crystalline silicon based ones are still dominating, the quest for other options presented many other potential candidates such as amorphous silicon, cadmium telluride, copper-indium-sulphide, dye-sensitized, organic, perovskite etc. since early 70s. Ever since the second generation solar cells came into the scenario, the cutting edge technologies in layer deposition or device fabrication have led to successful commercialization of the 2nd generation solar cells like CIS or CdTe, both show a total of nearly 2 GWp of yearly production in recent years with the implementation of multi-mega-Wp level solar farms. This presentation will include recent trends in solar photovoltaic energy options for large scale power production, which are capable of being incorporated to a sovereign nation's energy-sufficiency roadmap.

Keywords: Alternative Energy, Solar Photovoltaics ; Large scale solar (LSS), Energy Roadmap

Biography: Dr. Nowshad Amin is currently serving as a Professor at the Institute of Sustainable Energy of The National Energy University (@Universiti Tenaga Nasional) of Malaysia. Previously, he worked at the Dept. of Electrical, Electronic & Systems Engineering of The National University of Malaysia (@ Universiti Kebangsaan Malaysia) from Nov. 2006 till Jan. 2018, where he led the Solar Photovoltaic Research Group under the Solar Energy Research Institute (SERI).After the higher secondary education with distinctions from his native country, Bangladesh, he received the Japanese Ministry of Education (MONBUSHO) scholarship in 1990. Accomplishing Japanese Language diploma in 1991, he achieved a diploma in Electrical Engineering (1994) from Gunma National College of Technology, Bachelor (1996) in Electrical & Electronic Engineering from Toyohashi University of Technology, Masters (1998) and PhD (2001) on solar photovoltaic technology (Thin Film Solar Cell) from Tokyo Institute of Technology (Tokyo, Japan). Later, he pursued Postdoctoral fellowship in the USA and briefly worked at Motorola Japan Ltd. His areas of expertise include Microelectronics, Renewable Energy, Solar Photovoltaic Applications and Thin Film Solar PV Development. Additionally, his research focuses on the commercialization of Solar Photovoltaic Products from his patented entities, as such he also served as the CTO cum director of a University Spin-off company financed by the Malaysian Technology Development Center (MTDC). He served as a visiting professor to the King Saud University (KSU) in Saudi Arabia from 2010 till 2016. He has been involved as the project-leader as well as co-researcher of many government (Malaysia) and international (Saudi National Grant, Qatar Foundation etc.) funded projects. He has authored numerous peer-reviewed publications, a few books and book chapters. He is actively involved in promoting Renewable Energy to the developing countries in South and South East Asia, working as an enthusiastic promoter for the affordable solar photovoltaic technologies. Professor Dr. Nowshad Amin (nowshadamin.webs.com)

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Human Activity Recognition & Future Challenges

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Abstract: Vision-based human activity recognition and analysis are very important research areas in computer vision and Human Robot/Machine/Computer Interaction. Over a decade, a good number of methodologies have been proposed in the literature to decipher various challenges regarding action and activity. However, due to various complex dimensions, a number of challenges still remain unexplored. In this keynote speech, various important aspects of human activity recognition and analysis will be covered. The keynote speech will emphasis on interesting and challenging research aspects to explore in future.

Core Reference:

1. Md. Atiqur Rahman Ahad, "Motion History Images for Action Recognition and Understanding", available in Springer, ISBN: 978-1-4471-4730-5, 2012.
2. Md. Atiqur Rahman Ahad, "Computer Vision and Action Recognition: A Guide for Image Processing and Computer Vision Community for Action Understanding", available in Springer, ISBN: 978-94-91216-20-6, 2011.

Biography: Md Atiqur Rahman Ahad, Senior Member, IEEE, is a Professor of Electrical & Electronic Engineering, University of Dhaka (DU). He is currently working as specially appointed Associate Professor at Osaka University, Japan. He works on computer vision, imaging, IoT, healthcare, etc. He did B.Sc.(honors) [1st class 1st position] & Masters [1st class 2nd position] from the Dept. of Applied Physics & Electronics, DU; Masters from the School of Computer Science & Engineering, University of New South Wales; and PhD from the Faculty of Engineering, Kyushu Institute of Technology [KIT]. He was awarded prestigious UGC Gold Medal 2016 (handed by Honorable President of Bangladesh), JSPS Postdoctoral Fellowship, and a no. of awards/scholarships. He was a Visiting Researcher at KIT. He published two books as single author (available in Springer) & a few book chapters. He has published 110+ journals and conference papers. He has received 10+ international awards in various conference/journal/society. Ahad was invited as keynote/invited speakers 50+ times in different conferences/universities. He has established several international MOU/collaborations (e.g., Clemson University, University of Hyogo, RCCIIT, Fukuoka Women University, Kyushu University, etc.).

He has been involved with some academic & editorial activities: e.g., Editorial Board Member, Scientific Reports, Nature; Associate Editor, Frontiers in ICT; Editorial Board Member, Encyclopedia of Computer Graphics and Games, Springer; Assoc. Technical Editor (former), IEEE ComSoc Magazine; Editor-in-Chief: Int. J. of Computer Vision & Signal Processing http://cennser.org/IJCVSP, Int. J. of Electronics & Informatics http://cennser.org/IJEI, Int. J. of Environment http://benjapan.org/IJE; General Chair, 2019 8th Int. Conf. on Informatics, Electronics & Vision, Japan; 3rd Int. Conf. on Imaging, Vision & Pattern Recognition http://cennser.org/ICIEV; Publication Chair, 2018 IEEE International Conference on Systems, Man, and Cybernetics (SMC2018) http://www.smc2018.org/; Vice Publication Co-chair and Vice Award Chair, Joint 17th World Congress of International Fuzzy Systems Association (IFSA) and 9th Int. Conf. on Soft Computing and Intelligent Systems; General Chair, 7th Intl. Symposium in Computational Medical and Health Technology; and several other international conferences. He served as Guest Editor in Pattern Recognition Letters, Elsevier; Journal of Multimedia User Interface, Springer; Journal of Healthcare Engineering, Hindawi; International Journal of Innovative Computing, Information and Control. Ahad is a Member of OSA, ACM, IEEE Computer Society, IAPR, IEEE RAS, IEEE SMC, etc. He is the founder Secretary of IEEE Computer Society Bangladesh Chapter, and Bangladesh Association of Pattern Recognition, EC member of Bangladesh Electronics Society (BES). He volunteers some societies in Bangladesh (e.g., Executive Committee member of BAPA, the largest environmental group) and Japan. More: http://aa.binbd.com

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Smart Technology/Algorithm of speech communication for smart Community

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Chair, IEEE Bangladesh Section

Abstract: Examples of Smart Voice Communication for smart communities will be discussed. Devices in Use for smart voice communication will be introduced to the authors. Challenges in Smart Voice Communication will be highlighted. As a solution smart technologies/algorithms for Speech Enhancement will be proposed. Existing methods and their limitations will be pointed out. In order to overcome the limitations, the Proposed method, results & performance comparison with state of the art will be presented with concluding remarks

Biography: Celia Shahnaz received Ph.D. degree in electrical and computer engineering from Concordia University, Montreal, QC, Canada, in 2009. Currently she is serving as a Professor, Department of Electrical and Electronic Engineering, BUET, from where she received her B.Sc. and M.Sc. degrees in 2000 and 2002, respectively.

Dr. Celia, a senior member, IEEE, a fellow, IEB and has published more than 100 international journal and conference papers. She has been appointed as 2017-18 Chair, IEEE WIE Workshops Subcommittee and 2017-18 IEEE PES Women in Power (WiP) R10 Representative, 2017 Communications Chair, IEEE SIGHT steering committee, and 2017 member, IEEE SSIT WIE and SIT subcommittees. She has served as the IEEE R10 WIE Coordinator 2016. She is now serving as Chair, IEEE Bangladesh Section (BDS), where she was 2017 Vice-Chair (activity), 2012-13 membership Development Chair. She is, Founding Chair, WIE Affinity Group, IEEE BDS for which she is currently acting as an advisor. She was, founder and Technical Program Chair, IEEE WIECON-ECE 2015, the General Chair, IEEE WIECON-ECE 2016, General Co-chair, IEEE WIECON-ECE 2017 and IEEE R10 HTC 2017. She is, founder/co-founder, IEEE Signal Processing, IEEE Industrial Applications, IEEE Robotics and Automation societies and IEEE society on social implications on technology of Bangladesh Chapters.

She is the recipient of 2016 IEEE MGA Leadership award with citation " For leadership in engineering and technology driven innovative IEEE Women in Engineering activities for enhanced membership development and engagement in R10 and across the globe". She is the recipient of 2015 WIE Inspiring Member Award from IEEE WIE. Under her leadership, WIE BD AG has received 2015 WIE Affinity group of the year award-honorable mention from IEEE global WIE. She is the winner of 2013 IEEE R10 WIE Professional Volunteer award. While she was an advisor, WIE BD AG also has won 2016 R10 section WIE AG of the year award and 2017 WIE AG of the year award from IEEE WIE. BUET WIE SB has won WIE SB AG of the year award-honorable mention from global IEEE WIE and 2018 R10 WIE SB AG of the year award, she is serving as an advisor of the group.

Dr. Shahnaz was a recipient of the Canadian Commonwealth Scholarship and Fellowship for pursuing Ph.D. study in Canada in 2004. She is the mentor, of 2nd prize winning project in the IAS CMD Robotics Contest 2018 and that of 1st prize winning project in the Category HEALTH FACILITY in IAS CMD Humanitarian Project Contest 2017. She is the supervisor, 5th rank winning team, SPCUP competition in ICASSP 2015, Australia. Recently, her papers have received best paper awards in biomedical Engineering tracks at TENCON 2017 and at IEEE WIECON-ECE 2016, in Humanitarian Challenge track at R10 HTC 2017, and the best interactive poster award at iclVPR 2017. Her papers have been selected for top ten best paper awards, student Paper Contests, 2014 MWSCAS, Texas, USA and the 2008 MWSCAS, TN, USA. She was the winner, Best Student Paper Award, 2008 IEEE ICNNSP, China. She was selected as one of the finalists, Student Research Presentation Competition, 2009 SYTACOM Workshop, Montreal, Canada. Her research interests include the areas of speech analysis, speech enhancement, digital watermarking, biomedical signal processing, audio-visual recognition for biometric security, pattern recognition and machine learning, multimedia communication, control system, robotics and signal processing & pattern recognition for power signals.

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Invited Speech

Application of Organic Synthesis for Construction of complex bioactive compounds and biomolecules

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University of Dhaka, Dhaka 1000, Bangladesh

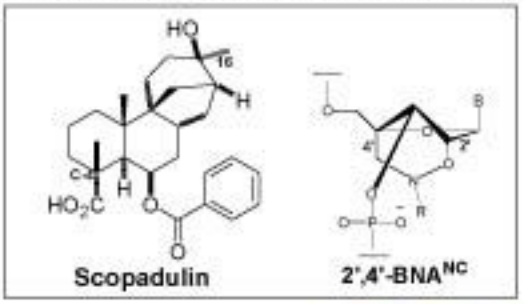
Abstract: Organic synthesis can be used for the construction of complex molecules having important biological activities. In this presentation, I will discuss about the synthesis of complex and synthetically challenging tetracyclic diterpene Scopaduin, an antiviral principle. This presentation also includes the synthesis of some artificial nucleosides, nucleotides and nucleic acids having superior biophysical properties. In addition to these some recent results in our laboratory will be disclosed.

The first total synthesis of (±)-scopadulin was accomplished by a stereoselective construction of a quaternary carbon at C-4, conversion of the hindered cyano group to a methyl group via the novel reaction for conversion of primary aliphatic amines into alcohols developed by us, and a highly chemo- and stereoselective methylation at C-16.

The novel bridged nucleic-acid analogue 2',4'-BNANC (2'O ,4'C -aminomethylene bridged nucleic acid), containing a six-membered bridged structure with an N-O linkage, was designed and synthesized efficiently, demonstrating a one-pot intramolecular NC bond-forming key reaction to construct a perhydro1,2-oxazine ring. Three monomers of 2',4'-BNANC (2',4'-BNANC[NH], [NMe], and [NBn]) were synthesized and incorporated into oligonucleotides, and their properties were investigated and compared with those of 2',4'-BNA (LNA)-modified oligonucleotides. Compared to 2',4'-BNA (LNA)-modified oligonucleotides, 2',4'-BNANC congeners were found to possess: (i) equal or higher binding affinity against an RNA complement with excellent single-mismatch discriminating power, (ii) much better RNA selective binding, (iii) stronger and more sequence selective triplex-forming characters, and (iv) immensely higher nuclease resistance, even higher than the Sp -phosphorthioate analogue. 2',4'-BNANC-modified oligonucleotides with these excellent profiles show great promise for applications in antisense and antigene technologies.

2',4'-BNANC modified siRNA (Short interfering RNA) was also designed, synthesized and evaluated for their gene-silencing properties. Positional effect of 2',4'-BNA residues in siRNA was examined and some very interesting results were obtained. Caatioic phosphorthiate oligonucleotides were also synthesized and their biophysical properties investigated. The derivatives showed improved property.

As a whole, the construction of these important biomolecules will be discussed in this presentation.



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Biography: S. M. Abdur RAhman, is a Professor of Clinical Pharmacy and Pharmacology, University of Dhaka (DU). He is the Dean, Faculty of Pharmacy, University of Dhaka. He did B.Sc.(honors) [1st class 1st position] & Masters [1st class 1nd position] from the Dept. of Pharmacy, University of Dhaka and PhD from Osaka University, Japan. He was awarded prestigious JSPS Postdoctoral Fellowship. He has published 65+ journals and conference papers. He has received 9 national and international awards. He has one PATENT. He is currently President, Dhaka University Pharmacy Alumni Association (DUPAA) (January 2017 to Date).

He is currently doing research in the areas of Bioactivity Directed Phytochemical Investigations of Indigenous Plants, Synthesis of Biological Investigations of Benzimidazole derivatives and Development of Novel Bridged Nucleic Acids for Gene Therapy and Diagnosis.

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Cloud Computing: Security Issues and Challenges

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Abstract: Cloud computing uses the internet technology to maintain data and applications. The consumers and businesses to use applications without installation and access their personal files anywhere with access of internet. In the IT industry that every emerging technology brings some issues and challenges, this is also true for Cloud Computing Environment. The objective of this talk is to introduce a detailed analysis of the cloud computing security issues and challenges focusing especially on SaaS.

Keywords - Cloud Computing, emerging technology, SaaS security, issues and challenges

Biography: Prof. Dr. Subarna Shakya holds Ph.D. in Computer Engineering from Lviv Polytechnic National University, Ukraine. He served as Executive Director at National Information technology Center, Government of Nepal and also head of Department of Electronics and Computer Engineering, Director of Center for Information Technology and Chairman of Electronics and Computer Engineering Subject Committee, Institute of Engineering, Tribhuvan University. He has also served as coordinator of EURECA (European Research and educational collaboration with Asia) and IDEAS (Innovation and Design for Euro-Asian Scholars). project is financed by the European Commission through the Erasmus Mundus Program .He is Professor of Computer Engineering at Department of Electronics and Computer Engineering , Pulchowk Campus, Institute of Engineering, Tribhuvan University and also Visiting research Professor in the University of Rhode Island, USA. He is the advisor member of National Information Technology Committee, Government of Nepal. He has published more than 80 technical and policy related papers in national as well as international reputed journals. He is steering committee member in School on Internet (SOI), Kieo University, Japan. He is presently serving as project coordinator of LEADER (Links in Europe and Asia for engineering, education, Enterprise and Research exchanges) financed by the European Commission through the Erasmus Mundus. He has delivered his key note speech in Seoul National University, South Korea and in the 16 International Multi Topic Conference (INMIC) 2013, 18 Dec 2013, Lahore, Pakistan organized by University of Engineering and Technology and IEEE and Invited Speaker in "e-Government Implementation in Nepal, 8 Oct 2012 at San Diego University, San Diego, USA as well as on "e-Government initiative and adopting Cloud computing as an e?Government Platform in Nepal" 8 Oct 2014 at University of Nevada, Las Vegas, USA. He has given key note speech on "Implementing Cloud Service Models in e-Government at IEEE ICCCA, 29 April, 2016 at Galgotias University, India. He has also Invited Speaker in "the Cloud computing for e-Government Implementation" 3 Oct 2016 at Santa Clara University, Santa Clara, San Francisco , USA. He has given key note speech on "Cloud Computing for Sustainable development" at IEEE ICCCA, 6 May 2017, 2016 at Galgotias University, India and also key note speech on "Cloud Computing security and challenges ", 11 January 2018, " IEEE 8th International Conference on Cloud Computing, Data Science & Engineering" Organized by Amity University, Noida, India .He is the expert member of Board of studies in South Asian University, India.

He is the Life Member of Indian society for mathematical modeling and Computer Simulation, IIT, Kanpur, India, Member of IEEE, Member of the Society of Digital Information and Wireless Communications, Senior Member of International Association of Computer Science and Information Technology (www.iacsit.org), Hon. Fellow Member of Scientific Society of Advanced research and social change, www.ssarsc.org and Senior member of science and engineering institute, (SCIEI), www.sciei.org. He is keen interest in research and development of ICT, e-government system, Information security for e-Government system, multimedia system, Computer Systems simulation and modeling, Cloud computing & Security, Energy Efficiency in cloud computing, Information system, computer architecture and software engineering.

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Big Data Issues and Challenges

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Abstract: Nowadays, the immense use of computers in daily life leads to the creation of big data. Big data is a collection of vast data stored together and its term is used to describe the exponential growth of structured and unstructured data. Big data has three characteristics: volume, velocity, and variety. Such data can be found in many places, such as personal computers, universities archives, news archives, and textual documents. The most tremendous growth of these data can be found in social media. Social media technologies provide many different forms of presenting information, such as in magazines, Internet forums, weblogs, social blogs, micro-blogging, wikis, social networks, podcasts, photographs or pictures, videos, rating, and social bookmarking. Several attempts have been conducted to deal with massive data in social media, such as news extraction, aggregation, clustering, news topic detection and tracking, and social network analysis. Additional technologies, such as massive parallel-processing databases, distributed file systems, and cloud computing technologies, have been introduced to manage big data. However, these methods face the challenges of extracting, transformation, integrating, sorting, and manipulating data. The visualization of social media data is not feasible. However, realizing and understanding the events that occur in society is important to users. Therefore, in this talk will summarize the issues and challenges of big data.

Biography: Dr. Wael Yafooz is associate professor in information technology department at al-madinah international university (Malaysia). He is a dean of faculty of computer and information technology. He received his bachelor degree and Master of Science in Computer Science from Egypt and university of MARA Technology (UiTM) - Malaysia. During his studies in the Malaysia, he was awarded Gold and silver Medals for his contribution in innovation and invention in area of computer science from internationals expo. He chair and member of committees of many international conferences. He received his PhD in Computer Science in 2014 from the University of MARA Technology (UiTM). Her research interest includes big data, data mining, databases and data management Personal Web Sites: https://fcit.mediu.edu.my/dean-message-2/

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Invited Speech

Partial Discharge Detection & Location Techniques for Covered-Conductor Overhead or Underground Distribution Lines

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Abstract: Covered-conductor (CC) overhead lines are commonly used in medium voltage (MV) networks because the loads are widely distributed in the forested terrain. Such parts of the network are exposed to leaning trees which produce partial discharges (PDs) in CC lines. PD measurement provide a valuable information for assessing the insulation health in high voltage (HV) equipment. Nowadays, many PD detection devices had been invented to detect PD on CC overhead line or underground cable. A novel wireless Rogowski coil (RC) sensor based on PD detection in the MV line will be presented. The research is divided into three sections which are RC sensor development, pre-filtering technique and wireless integration. A series of investigations on sensitivity and bandwidth for four types of RC sensors will be demonstrated.

New technology has enable PD estimation evolve from offline PD estimation to online PD estimation. However PD location algorithm still has many ways to improve its effectiveness and accuracy in PD location. Advanced signal processing technique shall be implemented into those devices in order to estimate PD location accurately. This work presents a technique to locate the PD source on CC overhead distribution line networks. The algorithm is developed and tested using a simulated study and experimental measurements. The Electromagnetic Transient Program-Alternative Transient Program (EMTP-ATP) is used to simulate and analyze a three-phase PD monitoring system, while MATLAB is used for post-processing of the high frequency signals which were measured. A RC is used as the measuring sensor. A multi-end correlation-based technique for PD location is implemented using the theory of maximum correlation factor in order to find the time difference of arrival (TDOA) between signal arrivals at three synchronized measuring points. The three stages of signal analysis used are: 1) denoising by applying discrete wavelet transform (DWT), 2) extracting the PD features using the absolute or windowed standard deviation (STD) and; 3) locating the PD point. The advantage of this technique is the ability to locate the PD source without the need to know the first arrival time and the propagation velocity of the signals. In addition, the faulty section of the CC line between three measuring points can also be identified based on the degrees of correlation.

An experimental analysis is performed to evaluate the PD measurement system performance for PD location on CC overhead lines. The measuring set-up is arranged in a HV laboratory. A multi-end measuring method is chosen as a technique to locate the PD source point on the line. A power transformer 110/20 kV was used to energize the AC voltage up to 11.5 kV/phase (20 kV system). The tests were designed to cover different conditions such as offline and online measurements.

Keywords Correlation, wavelet transforms, partial discharge, Rogowski coil, EMTP-ATP, overhead covered-conductor, distribution systems

Biography: Dr Muzamir Isa was born in Perlis, Malaysia in1979. He received the B. Eng. (Hons) in electrical engineering from the Universiti Teknologi Malaysia (UTM), Skudai, Johor, Malaysia in 2001, the M. Eng. in electrical engineering from the Universiti Tun Hussein Onn Malaysia (UTHM), Johor, Malaysia in 2004 and Doctorate (Ph.D) degree from Aalto University, Finland in 2012. His research interests are partial discharge measurement, detection and location technique, and power system transient studies including EMTP-ATP simulation. Currently, he is Associate Professor and actively supervises postgraduate students at Universiti Malaysia Perlis (UniMAP), Malaysia. He has published more than 120 research articles and conference papers. The link of these articles is as follows:
https://scholar.google.com/citations?hl=en&user=KfiAQwkAAAAJ&view_op=list_works&sortby=title

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Invited Speech

Production, optimization and purification of xylanase by Brevibacillus-borstelensis – MTCC 9874 isolated from soil sample of eastern Nepal

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Abstract: Brevibacillusborstelensis-MTCC 9874, screened from 202 microorganisms,was isolated by primary and secondary screening methods for xylanolytic activity (XA) from seven different places of Kavre and Morang districts of Nepal. In sub-merged fermentation (SmF), the microorganism was grown for 48 hours in five different mediums and minimal salt-yeast extract nutrient medium with xylan (1%w/v) was selected as a medium for further study where as it was grown for 96 hours in five different mineral salt solutions (MMS) with rice husk and MSS-1 was selected as a medium for further study in solid state fermentation (SSF) based on XA measured using DNS method. Optimum temperature and pH on XA were 60°C(XA = 6.58±1.1 IU/ml) and 7.6 (XA = 6.81±2.32 IU/ml) respectively. Thermal stability study showed that the enzyme has a good stability at 40°C (91.12%). In SmF, Plackett Burman design (PBD) (Minitab 15.1) was used with seven variables viz. xylan, yeast extract (YE), (NH4)2SO4, NaCl, MgSO4, CaC03and trace element solution (pH 8). The result showed that YE and xylan were significant factors for xylanase production (> 95% confidence levels) where as PBD with six variables viz. K2HPO4, rice husk, NaCl, MgSO4, NaCO3 and CaCl2 was carried out in SSF and the result showed that K2HPO4and rice husk were significant factors for xylanase production (> 95% confidence levels). Centre composite design was used to optimize the two significant factors and response surface and contour plot were used to locate the optimal value of the two factors in both fermentations. There was 797.54 times increase in xylanolytic activity after enzyme purification through Ammonium sulphate precipitation followed by Sephadex G-100 column (50×2.6 cm) saturated with phosphate buffer pH 6.8.Lineweaver – Burk plot showed that the enzyme has Vmax and Km values 0.1075 µg/mL.min and 1427.63 µg/mL respectively.

Biography : Dr. Budhathoki did PhD in pharmacy in Kathmandu University in 2010. Dr Budhathok is in the Department of Pharmacy, Kathmandu University, as a faculty since 07 September 2000 till date. Currently Dr Budhathoki is working as an Assistant Professor in the Department. Dr Budhathoki worked as a coordinator of the Department and run the Department from 2006 to 2012. Moreover, he worked as casual academic only level 2 (CAO 2) in University of Tasmania (UTAS), Hobart,, Tasmania, Australia from November 2013 to September 2014. Dr Budhathoki has a lot of professional contribution. He had worked as an elected President of Nepal Pharmaceutical Association (NPA), a National Professional organization of Pharmacistsfrom 2010 to 2014, Dr Budhathoki worked as a member of Nepal Pharmacy Council, agovernmental regulatory body of Pharmacy in Nepal from 2010 to 2014.

Dr Budhathoki did Post Doctoral Fellowship in Institute of Pharmacy and Molecular Biotechnology, University of Heidelberg, Germany in 2014. He was chairperson in international symposium that was held in Kathmandu University in 2007. He received several awards, such as, Nepal Bidhya Bhusan "Ka" from President of Nepal in 2069 B. S., National Education Award from "Ministry of Education of Nepal (2065 B.S.), Travelship Award from FIP to present at AAPS Annual Meeting and Exposition at Lousiana, New Orleans, USA. He has organized several Training and seminars in the university and several parts of Nepal. Dr. Budhathoki is the First recipient of Mike How Award from FIP in 2007. Dr Budhathoki co-authored a book "Introductory Pharmaceutics" and published more than 15 original research paper cum conference papers. Dr, Budhathoki received first research grant from international Foundation for Science (IFS), Sweden in 2009 (Ref No. F/4807-1). Dr Budhathoki is IFS research Grantee second time this year 2018 (Ref No. F/4807-2).

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Invited Speech

Early Design Space Exploration of Networks-On-Chip (NoC)

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Abstract: Networks-On-Chip (NoC) is seen as a new network paradigm for addressing the limitation of the current bus-based communication in multi-core embedded systems. Some of these systems are designed for executing hard real-time services such as in flight and automotive controls. In such systems, the services have to deliver output within strict timing constraints since the lateness in output delivery could cause severe consequences to human life. Task mapping is a crucial step for integrating an application and a hardware platform during system design. Existing schedulability analyses are available to evaluate the hard real-time performance of task mapping, but exploring the vast number of task mappings at the early design stage can be challenging due to several issues. These issues are caused by the influence of other design parameters on the hard real-time performance produced by task mapping, the existence of conflicting design objectives with the hard real-time system constraints, the restriction of the current hard real-time evaluation functions for searching alternative task mappings and the enormous evaluation of population-based search heuristics in the current task mapping techniques. We explain how an evolutionary algorithm addresses these design space exploration issues.

Biography: Norazizi Sham Mohd Sayuti was born in Johor, Malaysia in 1977. He graduated in Electronic Engineering from the Shibaura Institute of Technology (SIT), Japan in 2001. In 2004 he obtained an MSc in Computer Science from the Universiti of Teknologi Malaysia (UTM), Malaysia. He completed his PhD research at the University of York in 2015. He joined Universiti Sains Islam Malaysia (USIM) in 2009 as a Lecturer. In 2016 he was promoted to Senior Lecturer. Since 2017 he holds a position as the Head of Electronic Engineering Department at the Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia. He is a professional technologist of Malaysia's Board of Technologist (MBOT), registered with Malaysia's Board of Engineers (BEM), and a member of Institute of Electrical and Electronics Engineers (IEEE).

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Invited Speech

Random Laser: A new potential biosensor

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Abstract: Biosensors are normally applied in biomedical diagnosis, environment monitoring and food safety to detect specific molecules in a certain medium. The sensitivity of the detection is very crucial in any biosensor. We investigate the application of random lasers as potential biomolecule sensing and measurement techniques. Random lasers work based on similar principle with conventional lasers which need feedback and light amplification. If gain exceeds loss, lasing threshold is achieved. The feedback in conventional lasers is provided by the cavity (mirrors)whereas in conventional lasers,multiple light scattering plays important roles for the feedback [1]. In biosensing area, random lasers have been used to sense lipid emulsion [2] and pH [3] while we use random lasers to detect dopamine, a neurotransmitter distributed in the brain tissues and body fluids of mammals [4,5]. Dopamine sensing is important to detect, monitor and treat Parkinson and Huntington's diseases [4]. In thisrandom laser based sensor, gold nanoparticles are used to scatter the light while Rhodamine 640 is added as the random laser gain medium.Dopamine with copper ions triggers the aggregation of gold nanoparticles and thus influences properties of random lasers; emission intensity, linewidth and lasing threshold [5]. Dopamine causes the metal nanoparticles to aggregate due to interfering with the surface ionic layer that stabilizes the colloidal particles [6]. Gold nanoparticles are able to enhance the properties of random lasers due to localized surface plasmon. The effects of metal nanoparticles on properties of random lasers has been discussed in [7].Dopamine sensing is achieved using four parameters; emission peak shift, emission linewidth, signal to noise ratio (emission peak intensity/noise) and threshold. We demonstrate sensitivity to nanomolar concentrations by using random lasers to measure the dopamine concentration.

Biography: Wan Zakiah Wan Ismail was born in Kota Kinabalu, Sabah, Malaysia in 1982. She finished undergraduate study (Bachelor of Electronic Engineering) at Multimedia University, Malaysia in 2005 and further studies for Master degree (Master in Telecommunication Engineering) in Melbourne, Australia in 2007. Both undergraduate and postgraduate studies were sponsored by Telekom Malaysia. Then she served Multimedia University as a lecturer in Faculty of Engineering and Technology teaching electronics. Five years later, she pursued her study in PhD after being awarded Prime Minister's Australia Endeavour award and Universiti Sains Islam Malaysia (USIM) fellowship. Her PhD study focuses on optical device specialized in laser engineering. Currently, she works as a lecturer in Faculty of Engineering and Built Environment, USIM. She has published more than 20 peer-review journals and conference proceedings. She is a member oflnstitute of Electrical and Electronics Engineers(IEEE) and Optical Society of America (OSA), professional member of Malaysia's Board of Technologist (MBOT) and graduate member of Board of Engineers (BEM).

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Invited Speech

The R&D Strategies for Developing Countries

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Abstract: The last two decades have seen many developing countries in the world formulating national Information and Communications Technology policies (Kunyenje & Chigona, 2016). There are many emerging technologies attracting their interest such as machine learning, big data, the block chain, autonomous vehicles, drones, software-defined security and brain-computer interfaces. These technologies create new opportunities and competitive advantages to developing countries in economic and social growth. However, high technology investment can be inefficient, expensive or high-risk. Besides, high technology is associated with needless features, long learning curves, and unpredictable results that make it difficult to develop and maintain ("https://simplicable.com/new/low-tech-vs-high-tech," n.d.). Conversely, there are many examples that a basic, new and low-cost startup business idea can lead to great business success and high return on investment.

So, deciding to investigate a new technology, a cost-benefit analysis should be performed including the purpose and of the new technology, the cost of all process, the possible problems or risks involved, estimate all of the hardware, software and infrastructure costs involved, a timeline for implementing and gaining the new technology, sustainability of the new technology, and indicate its expected life-span.

In this conference presentation, we will evaluate how the most successful companies in the world balance their high-end and low-end technology investment. This provides useful insight into the decision of new technology research and investment for people, companies and countries.

Biography: Ali Nizam A was born in Fatih, İstanbul, Turkey in 1976. He received the B.S. degrees in electronic engineering from the Yıldiz Technical University, İstanbul, in 1997, and the and M.S. and Ph.D. degree in electronical-biomedical engineering from İstanbul Technical University, İstanbul, in 2000 and 2009 respectively. From 1997 to 2011, he had worked at ISKI including software engineer, project manager and Management Information Systems Department manager. Since 2011, he has been an Assistant Professor with the Computer Engineering Department, Fatih Sultan Mehmet Vakif University, İstanbul, Turkey. He is the author of four books, one book chapter, and four articles. His research interests include software engineering, relational database concept and data science. He holds two patent applications. Dr. Nizam's awards and honors include the TÜBA (Turkey Academy of Science), the University Text books Award Programme (TEÇEP) Best Original Book Award with Software Project Management Book.

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Invited Speech

Modelling and Reasoning Smart Spaces using Context-aware Systems

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Abstract: We, human beings, are blessed with the ability of context-awareness. With this, we often exploit contexts (ideas/messages) in our daily lives. These are effectively exchanged based on current situations without explicitly knowing the contextual information. Several situations reflect- the very fact that the core notion of the context directly affects the human intelligent behavior. With the rapid inventions in today's modern world, computing devices are increasingly becoming more intelligent and smart. Context sensing is one of the basic features of context awareness. Due to the intelligent behavior of today's smart computing devices, context-awareness has simulated on the smart devices to reinforce their capability to acquire, exchange, process information, and adapt their behavior. Context awareness highlights the significance of contexts to be utilized to ease user's tasks and fulfill their needs. Context-aware systems provide computing devices the ability to detect and sense, interpret and respond to aspects of system users and their environments. These systems exhibit complex adaptive behaviors, run in highly decentralized environment and can naturally be implemented as agent-based systems. Usually context-aware systems run on tiny resource-bounded devices including smart phones and sensor nodes and hence face various challenges. With the advent of mobile devices such as smart phones, PDAs, GPS system, and wireless sensor nodes, context-aware systems are getting to be progressively prevalent nowadays. These devices operate under strict resource constraints, e.g., battery energy level, memory, processor, and quality of wireless connection. In the literature, various techniques have been proposed to develop context-aware systems, including rule based technique. In rule-based technique a context-aware system composed of a set of rule based agents, and firing of rules that infer new facts may determine context changes and representing overall behavior of the system. Therefore, for a given set of context-aware reasoning agents with some inferential abilities and computational (time and space) and communication resource bounds, it may not be clear whether a desired context can be inferred and if it can what computational and communication resources must be devoted by each agent. Furthermore, these reasoning (non-monotonic) agents are designated to resolve conflicting context information with the intention of acquiring new context information by replacing old information. This kind of reasoning is very close to human. A person often changes his mind and rejects his own decisions based on new evidence, even though, these decisions were justified by their own at some previous time.

Biography: Dr. Hafiz Mahfooz Ul Haque is an assistant professor in the department of Software Engineering at the University of Lahore, Pakistan. He is a member of Autonomous Agents Research Group (AARG) and he is an Approved Supervisor from Higher Education Commission (HEC),Pakistan. He has published various papers and book chapters in reputed journals (ISI indexed) and conferences that were published by Springer (lecture notes) and ACM-IEEE. He was awarded best paper award three times in different international conferences. He is a Technical Program Committee (TPC) member of various international conference and journals and has chaired conference sessions. Dr. Mahfooz received his PhD in Computer Science from University of Nottingham. His research areas revolve around modelling and reasoning smart spaces using context-aware systems. The focused research keywords are: context-aware computing, multi-context systems, semantic knowledge modelling, rule-based reasoning agents, smart environments, modelling and verification of resource bounded context-aware systems.

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Invited Speech

Nanostructured Materials and Applications in Gas Detection Systems

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Abstract: Science and technology are accepted as a means of overcoming the difficulties that people face throughout their lives.It has made many progresses in order to facilitate life and reduce the workload as much as the day-to-day invention of wheels.Especially with the industrial revolution realized in 1800 years, science and technology have gained great importance in the development and development of the country.With the industrial revolution, the increase in the use of fossil fuels led to the release of harmful gases in intense quantities.This situation has affected human health in a negative way by bringing out fatal diseases.Gas sensors are used in the detection of flammable, explosive and suffocating gases that are life threatening due to a variety of reasons (warfare agents, production processes, etc.).The gas sensors are the first to store gasoline or to detect leaks in gas tanks. They were produced by Oliver Johnson in 1926 [1-Benim Tez].

When everyday life is examined in micro dimension rather than macro dimension, it is possible to come across a house with an astonishing degree of beauty on the nano scale at the corner of our home, our office or any of our goods.In this case it is necessary to accept that many people in daily life are working with nanotechnology, which is a very misleading discourse.Nanotechnology is not only the reduction of the dimensions of the materials to be produced, but the quantum mechanical interactions in the material are dominant, so that the materials are provided with new physical and chemical properties.

Nanotechnology and the nano-sized materials and devices which are the products of this technology are used to reduce the size, weight, production costs and productivity of various tools and equipments used in everyday life.The ability to manufacture electronic devices such as solar cells, nano-tubes, light emitting diodes, which can be stretched in accordance with our clothes using a variety of nanostructures, demonstrates how nanotechnology has benefited us so much.

Gas sensors are not only used to detect the gases in the atmosphere but also many other areas such as gases, explosives, and diseases that may occur during the production process.Progress in the field of industry, environmental analysis and human quality of life without sensors is not possible.Basically a gas sensor consists of a sensor layer that can detect the gas present in the environment, a transducer that can convert the interaction between the gas and the sensor layer into understandable physical quantities, and a user interface that can visualize or audibly warn the user by processing signals from the transducer [1].

Biography: Dr Sadullah ÖZTÜRK is an Assistant Professor in the Department of Biomedical Engineering, Fatih Sultan Mehmet Vakıf Üniversitesi, Istanbul, Turkey. He did B.Sc.in Solid State Physics in the year 2006 from Marmara University. He did M.Sc and Ph. D from Gebeze Institute of Technology in the 2009 and 2014 respectively. He has published 57+ journals and conference papers. He has received full scholarship for Ph.D. He was the founder and manager of the Limited Liability Company, company established under the supported project of Republic of Turkey Ministry of Science, Technology and Industry. The company produces gas detectors for household security. He is currently doing research in the areas of Gas production and testing of sensors.

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Abstract of Papers

Paper ID-2

Hand Geometry Based Person Verification System

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Abstract: Hand geometry which is the famous biometrics system is utilized in the various identification systems with different feature estimation methods. Hand geometry plays a vital rule in the biometric authentication and security application. For this regard, this paper presents a biometric system for the person verification based on the hand geometric features. The hand geometric features are extracted from the upper palm including four fingers of the right hand. The main aim of this proposed system is to reduce the feature and database size and improve the performance of the system. For that, initially, top four fingertip points and two corner valley points from the right hand four fingers are estimated. After that, eight distance edges from these fingertip and valley points are computed. From these eight distance edges, three triangles are estimated. These three triangle area are used as a three feature and stored in the database as the feature vector. Finally, the test candidate hand feature is compared with the predefine database feature vector through the Euclidian distance metric. The proposed verification system is tested with the own dataset size of 250 user's images i.e., 1250 hand images and results show the momentous improvement with compare to the existing state of the art.

Paper ID-14

Modeling, Simulation and Performance Analysis of SEPIC Converter Using Hysteresis Current Control and PI Control Method

Mirza Muntasir Nishat[1]; Fahim Faisal[2]; Mohammad Abdul Moin Oninda[3]; Ashraful Hoque[4]
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Abstract: This paper proposes an analytic study of SEPIC (Single-Ended Primary Inductor Converter) converter by employing Hysteresis Current Control and PI control technique to observe Output Voltage Stability, Total Harmonic Distortion (THD), Power Factor (PF) and Efficiency. SEPIC converter is extensively used in battery operated equipment for its significant feature of stepping up and stepping down voltage without changing polarity. The paper focuses on modeling SEPIC converter in CCM (continuous conduction mode) mode. State-Space Average technique is deployed to model the system mathematically and to implement the PI controller. Satisfactory performance is achieved by adopting both Hysteresis Current Control and PI control. Hysteresis current control method shows THD of 2.798% and efficiency of 90.07% whereas PI control method depicts THD of 17.17% and efficiency of 88%. Power Factor of 0.966 is achieved for PI controller while hysteresis current control method shows a power factor of 0.8208. PSIM software has been used for simulation purpose and the total investigation is analyzed for both methods.

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Paper ID-16

Design of a Compact 600 VA Sinusoidal Inverter with Battery Storage System

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Abstract: Due to the increasing of renewable energy sources, an efficient inverter system should be designed which can work both in grid-connected and stand-alone mode. This inverter should be synchronized with the conventional grid system and control the power flow according to the grid voltage and frequency. A 600VA inverter design with battery storage system considering the small weight comparing with the available inverter which can be used in both modes has been proposed in this paper. A full bridge DC-DC converter is used for converting the 24V DC input to 380V DC, and SPWM drove H-bridge inverter is used to get the AC output. An LCL filter is used to get the pure sinusoidal output from the SPWM signal. Successful demonstration and the hardware implementation of the overall system has been presented.

Paper ID-18

Consumer Perception about Prepaid Energy Meter System-A Study in Khulna City

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Abstract: This research attempts to find out the consumer's perception about prepaid energy meter in Khulna city. In this research 100 consumers of different category like domestic, commercial, small industries were selected in where prepaid meter is installed already for various period of time. This paper reveals that consumer prefer prepaid energy meter to postpaid meter & this is because of very much useful & attractive feature of it.

Paper ID- 26

Paper Currency Detection System Based on Combined SURF and LBP Features

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Abstract: Currency detection falls into the field of computer vision technology. Detection of currency is a helping hand for visually impaired people. Moreover, it is also useful in surveillance system. In this paper we presented a paper currency detection system which can detect paper currency from image. Detection is based on training different currencies. At first, we extracted SURF and LBP features of currencies respectively. Later we combined both features. Then trained them with SVM classifier. SVM as a classifier performs very well in training image datasets. After that applying sliding window technique on input image, we detected currency from a image. In this currency detection system, we focused on only paper currencies of Bangladesh. Along with currency detection, this system shows number of currencies and also the total amount of currencies exists in an image.

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Paper ID-29

Power Loss Minimization and Voltage Profile Assessment of Distribution System Using WT-DG

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Abstract: Due to adverse environmental change the integration of Distributed Generations (DGs) is gradually increasing in commercial and domestic power system. Hence, it is indispensable to investigate pros and cons of DGs before incorporating in existing network. Non-optimal size and placement of DGs will cause high active power losses in distribution systems and poor voltage profile. This paper presents a probabilistic approach to design of Wind Turbine (WT) distributed generation and its impact on distribution system. Monte Carlo simulation (MCS) has been used to incorporate the stochastic nature of wind variations. Matpower has been used in Matlab environment to design the radial network. All parameter of WT is carefully considered into the equivalent network. For any random wind velocity the WT power is represented as negative load. Current summation method has been used for power flow solution from Matpower. The proposed method has been tested on a 33-bus radial test system.

Paper ID-33

Short Channel Effects Characterization of 3-D FinFET for High-k Gate Dielectrics

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Abstract: In modern technology FinFET replaces MOSFET as aggressive technology scaling as per Moore's law has led to elevated power dissipation levels owing to short channel effects. In this research, we focused on different FinFET structures. We compared short channel effects, such as Ion/Ioff ratio, threshold voltage roll-off and subthreshold swing of Double gate FinFET (DGFinFET) and Tri-Gate FinFET (TGFinFET) for different high-k dielectric material. The structures were designed for 22nm technology. Also, effect of different dielectric material on different underlap length of TGFinFET is discussed in our work.

Paper ID- 34

Probabilistic Power Flow Model for the Uncertainty Analysis of Wind Energy and Loads

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Abstract: In a modern power system, stable operation of the electrical system is a major concern. For the stable operation of power system, it is desirable to access the effect of unforeseen events and identification of more sensitive nodes. The most outstanding job of distribution engineers is to simulate the power system

for corrective action. Probabilistic power flow (PPF) is a tool that can effectively access the performance of power system network over most of its working conditions taking into account the unforeseen events. In this paper, a new PPF model is developed to evaluate power system network taking into account the uncertainty with input random variables, such as wind energy, loads, generation outage, and branch outage. This model is based upon the two well-known methods, Monte Carlo simulation (MCS) and point estimation method (PEM). For the sake of, computational efficiency and results accuracy Box-Muller sampling equation was used with MCS and 2m+1 concentration scheme was used with PEM. The proposed model was investigated by using modified IEEE 14-bus standard test system.

Paper ID-37

Developing a Self-Learning Braille Kit for Visually Impaired People

Mohammed Abdul Kader[1]; Rubel Ahmed[2]; M. Iftikhar Rahman Noman[3]; Arif Billah[4]; Mouslah Uddin Apple[5]

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Abstract: Braille is a pattern of written language for visually impaired people. In this system, alphabets are represented by raised dots which are sensed by fingertips. In Bangladesh, there are only few special schools to teach visually impaired people. The number is very insufficient considering its large population and this creates a large impediment to eradicate the illiteracy of the visually impaired people who are living in Bangladesh. Realizing the social responsibility towards visually impaired people, a self-learning braille device is developed and presented in this paper, which can help visually impaired people to learn brail alphabet without the assistance of visual people. The device has two modes of operation. The first mode is given the name as learning mode, where the device itself generate braille pattern by switching six solenoid actuator and pronounce resembling alphabet to the speaker. User can touch braille generated by rising limb of solenoid actuator with hearing the alphabet which helps them to memorize the braille alphabet. The second mode is the practice mode. In this mode, user can select a printed braille card and assume the alphabet written on it sensing by his finger tip. After that he can place the card to the braille reader section of the device and the device pronounced the sound of that alphabet. By this way user can verify his leaning. We think this device can play an important role to increase the literacy rate of visually impaired people of Bangladesh.

Paper ID-45

Methanol Leaves Extract of Diploclisia Glaucescens Shows Hypoglycemic Activity in Mice Model

Rashaduz Zaman[1]; Minhajul Islam[2]; Mohammad Parvez[3]; Muhammad Imran Ahammad Chowdhury[4]; Mohammed Abu Sayeed[5]

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Abstract: Methanolic extract of Diploclisia glaucescens was found to exert hypoglycemic effect after glucose load (2g/kg BW) on normal swiss albino mice. Oral glucose tolerance test (OGTT) was done to

evaluate the hypoglycemic activity. Methanol extract of D. glaucescens did not show any type of toxicity in the studied animals throughout the study period of 14 days even at dose of 2000 mg/kg body weight. There was no sign of major toxicities. Both doses (200mg/kg and 400mg/kg) of methanol extract caused a significant raise in blood glucose level at 30 minute time point of the test and reached to peak level at 60 min in each group. After that, the blood glucose levels of all extract treated mice steadily revert back to initial glucose level. The capability of this extract to reduce the blood glucose level was significant in comparison to the standard drug glibenclamide. It can be a potential candidate in the field of diabetology.

Paper ID-50

Molecular Docking Studies and Virtual Screening of Rapamycin and its Derivatives against mTOR for Treatment of Cancer

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Abstract: The mammalian target of rapamycin (mTOR) pathway has a significant role in cellular growth, proliferation and cell survival and is aberrantly activated in various types of cancer. The mTOR protein kinase is one of the key molecules in this pathway and considered as a pivotal target for cancer treatment. The inhibition of the mTOR pathway is mediated by rapamycin (D) and its analogs that blocks allosterically the catalytic binding sites. The poor solubility and pharmacokinetics of rapamycin have triggered us to design several new chemical entities for the discovery and development of new compounds. In the present study, we employed ligand-based drug design strategies to select potential target molecules to be an effective inhibitor of mTOR complex. Rapamycin, its analogs and some rapamycin derivatives were screened against the mTOR homologous structure. Molecular docking was performed under AutoDock vina in PyRx platform to screen noble scaffolds having highest binding affinity for the receptor molecule. Molecular orbital theory and discovery studio visualizer v16.1.0.15350 were applied to get thermodynamically more stable and chemically reactivity compounds and find the nonbonding interactions and binding sites of the ligands. Admet@SAR online database has been utilized to predict the pharmacokinetic properties of rapamycin and its derivatives. According to our findings, we proposed two novel potential mTOR inhibitors D-C6H5 and D-F having better properties than the classic inhibitor complex, rapamycin. Keywords- mTOR Rapamycin, Molecular docking, binding affinity, Admet@SAR

Paper ID-71

Surface Modification of PDMS Film by Si Template Synthesized Through a Facile Process

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Abstract: In the current contribution, surface modification of polydimethylsiloxane (PDMS) has been presented using patterned silicon (Si) template. Different patterns on the Si substrate were fabricated using lift-off (photolithography) and metal-assisted chemical etching process. Experimental results revealed that the formation of highly oriented pattern on the Si wafer preferentially yielded high-density, uniform, and rough friction surface of PDMS films. Importantly, surface modified PDMS film can exhibit higher surface-to-volume ratio, higher friction area (friction contact points), and excellent hydrophobicity. It is

expected that the adopted approach will imitate the ability of patterning microstructure on any polymer surface in large-scale and will improve the performance of smoothed-surface polymer films those are currently used in various sectors.

Paper ID-73

Design of a Two Stage CMOS Operational Amplifier in 100 nm Technology with Low Offset Voltage

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Abstract: The motive of our study is to design a two-stage CMOS operational amplifier with low input offset voltage. Basically, an operational amplifier (op-amp) has two different inputs and one output. The output voltage signal of an op-amp is the distinction between the applied signals of its two separate inputs. This implies that if there is no difference between the two inputs, there will be no voltage on the output. But practically there is always a little input offset voltage because of the mismatch of the circuit components which restricts some of its applications. In this paper, the offset error has been reduced through improving the phase margin of a two-stage CMOS op-amp using compensation capacitor connected in parallel with the second stage of the op-amp. Miller theorem has been applied while connecting the capacitor to reduce the power consumption; therefore, we have designed the MOSFETs according to the improved phase margin. Matching property of the MOSFETs has been also used when designing the circuit. The achieved results show that offset error is reduced after the modification. This study may be useful in DC amplifiers where this small error can be significant because of the large gain of the circuit.

Paper ID-74

Vector Space Model Based Topic Retrieval from Bengali Documents

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Abstract: This work attempts to find the topic of a Bengali text document based on a traditional similarity-based retrieval model named Vector Space Model. This fascinating model has traditionally obtained much fame in the research community, but to the best of our knowledge, was never tried for Bengali topic retrieval. In this work, therefore, we have used four different settings of the vector space model which are TF-IDF weighting scheme with Euclidean distance, TF-IDF weighting scheme with Manhattan distance, TF-IDF weighting scheme with Cosine similarity and Improved document scoring scheme. The K-nearest neighbor algorithm is then used to retrieve the topic of a query document. For training and testing purpose, we have also created a large corpus of Bengali text documents. On this corpus, our result shows the best retrieval accuracy of 93.33%.

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Paper ID-76

A New Design Approach for Gesture Controlled Smart Wheelchair Utilizing Microcontroller

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Abstract: Every year, a large number of people become lame due to a road accident and unable to walk normally. Wheelchair is the best assistive device used by the older and differently abled people who cannot walk normally. The driving and controlling of traditional manual wheelchair are much harder task. The modern wheelchairs like joystick-controlled and voice-controlled wheelchair is a bit difficult to operate for certain people like the older and physically weak people. Moreover, this wheelchair is not cost effective. So the aim of this paper is to make such a cost-effective electronic gesture-based wheelchair which will be easy to operate rather than the joystick input to control a wheelchair using in-built gesture function of a smart-phone and touch sensor. ATMega328 used as the processor long with the L298N motor driver, DC Gear Motor, Ultrasonic Sensor, TTP224 Capacitive Touch Sensor, Bluetooth Module and IP Camera. Special features of this wheelchair are that obstacles on the way of the wheelchair can be detected which can avoid the collision between the wheelchair and that detected obstacle. Another feature of this chair is to use an IP camera that gives visual and acoustic information to the guardian of the riding person.

Paper ID-84

A Battue on Anionic Dye (Congo Red) Removal from Aqueous Solution of Dye by Acryl Amide Grafted Polyethylene

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Abstract: Polymer modification has drawn much attention in the recent time among which modification by grafting is one of the most promising method. Radiation induced graft polymerization was employed for synthesis of acryl amide grafted polyethylene (AAm-g-PE) adsorbent. Different irradiation doses, monomer concentration and distilled water as a solvent were used to optimize grafting yield. The percentage of Grafting was optimized found to be 383% which was obtained for 6% monomer concentration at 12 kGy radiation dose without initiator in distilled water. The prepared grafted polyethylene was characterized by Fourier Transform Infrared Spectrometer (FTIR). The prepared grafted materials were used to be removed anionic dye (congo red) from aqueous solution of dye. The effectiveness of the adsorbent for removing dye from aqueous solution was evaluated by batch technique. The influences of different experimental parameters on removal process such as contact time and dye concentration were evaluated. Results showed that initial dye concentration of 30 ppm at pH 6.10 yields 65.4% dye removal efficiency by AAm-g-PE film.

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Paper ID-91

Automatic Shrinking and Sorting of Industrial Finished Products

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Abstract: To reduce the cost of products, the world is always striving to unveil the latest inventions that transform human lives. Automatic shrinking and sorting of finished products has brought a radical change in the industrial process. It has added a new dimension in the section of sorting process along with shrinking rather than analog processing which is done by PLC i.e. Programmable Logic controller. The system we have invented which is the combination of two individual processes successfully integrated into one system. On the beginning of the process shrinking is done through the hot chamber and later different sized products get separated into the different conveyer to go to market finally. The PLC we have used Siemens Logo which is programmed with comport version 7.0 software. The system has been run successfully as we expected. The industrial finished section will be benefited through this project by reducing time, cost and labors. One prototype is done for testing the system flexibility.

Paper ID-112

EqSA: A Golden-IC Free Equal Power Self- Authentication for Hardware Trojan Detection

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Abstract: Due to outsourcing of numerous stages of IC manufacturing process in different foundries, the security risk such as hardware Trojan becomes a potential threat. This work presents a power-based side-channel analysis framework, which magnifies the detection sensitivity and does not rely on a Golden IC. This method exhibits design for security (DFS) addressing scan chain partitioning and segmentation technique for scalability. An equal-power self-referencing approach is proposed in order to detect Trojans. The detection process uses parametric comparison of at least two neighboring regions, which consumes equal power for a set of selected patterns. We generate launch-on-capture test patterns and apply them with modification so as to restrict the switching activities (noises) from other regions. A theoretical analysis in the presence of die-to-die and intra-die process variations with the help of other existing methods is addressed. In our experiments, conducted for both combinational and sequential small Trojan circuits, we report a high detection rate thus substantiating its effectiveness in realizing an equal power self-authentication technique which is independent of any Golden IC.

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Paper ID-116

A Low-Cost GPS Based Application for Navigating Shallow Waters

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Abstract: Parts of the Norwegian coastline have a dense population of skerries, which can easily lead to collisions of small boats. Bigger vessels have an abundance of navigation systems, Automatic Identification System (AIS), and similar systems. But smaller boats are not regulated by the same laws and are more likely to traverse shallow areas. With a low-cost GPS receiver in conjunction with digitized maps, it will be possible to classify areas as shallow and notify the user. By creating a mobile application, small boats can also get some of the information and warning systems as larger ships now have. Further, it can be possible to incorporate this into a standalone microcontroller with a GPS module. In order to maximize the number of users, the price of such a product needs to be sufficiently low in order to justify the investment. By implementing this concept with a smartphone application, the cost is reduced substantially, as the hardware is readily available. This paper will provide a mobile-based application that sends in coordinates using GPS and other information from the mobile device to the web-based server, which then returns depth data. The mobile application then decides whether you are approaching a safe or dangerous area. This application was tested on Elgeseter Bridge in Trondheim, Norway. Accuracy testing of the GPS modules on mobile phones and an external GPS module (Quectel L80) were carried out and the outcome of those tests are discussed in the result.

Paper ID- 120

Arduino UNO Based Smart Irrigation System Using GSM Module, Soil Moisture Sensor, Sun Tracking System and Inverter

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Abstract: In this paper, Arduino based Smart Irrigation System using GSM Module and Sun Tracking Solar system has been explored. This system is hoped to be very convenient and affordable for the people of rural areas. The module being targeted for the large population of the rural sector is hoped to be a huge contribution to the community. To meet the demand of efficient irrigation system, this paper presents the design and implementation of a low cost yet flexible smart irrigation system where with the help of cell phone the status of the submersible pump can be observed. The design is based on a standalone Arduino UNO board where the communication between the cell phone and the Arduino UNO board is wireless. The system is designed to be low cost and scalable allowing variety of devices to be controlled with minimum changes to its core. Thus the System is hoped to outperform current smart irrigation systems. It is believed that this paper will play a vital role for the rural people of the under developed and developing countries.

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Paper ID-125

Cost Aware Grid Energy Minimization in Heterogeneous Green Wireless Networks

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Abstract: Recent emphasis on efficient energy utilization in green mobile communication has become a paramount concern of reducing carbon footprints to make the network greener. Energy harvesting from ambient energy sources has the potential to reduce the dependency on grid power supply or diesel generators (DG), providing attractive benefits in diverse domains. This paper's aim is to minimize the on-grid power consumption with the integration of green energy generators such as solar PV modules while satisfying system constraints. We decompose the problem into two categories: grid energy minimization problem and the renewable energy system sizing problem provisioning minimum net present cost. Extensive research has been carried out to address energy yield, cost assessment, and greenhouse gas emissions aspects in the context of LTE heterogeneous cellular networks (HCN) in consideration of the intermittent nature of solar energy generation and temporal dynamics of traffic load demand. Numerical results illustrate a substantial improvement of on-grid energy savings and subsequent carbon footprints of the proposed network model compared to the conventional scheme.

Paper ID- 126

Line Following Autonomous Office Assistant Robot with PID Algorithm

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Abstract: The involvement of assistive robot in every aspect of our life is immensely increasing in today's world. In this paper, a line following robot to assist an office is developed which can securely transfer hard copy of office file, tea snacks etc from one table to another inside an office autonomously as per user direction. Anybody can call the robot from any table by pressing a PUSH button. As a response of calling, the robot will come to the caller table following a path and a locker placed in the robot will be unlocked automatically. The caller then placed the file or any other materials in the locker and can direct the robot to another table by pressing another push button. The locker will not open until the robot reach at directed table to ensure the security. The robot also can detect obstacles and can produce alarm if someone stands in its path. The robot smoothly follows the path with the PID algorithm. The main components that are used to construct the robot are microcontroller, IR sensor module, RF Tx-Rx module, ultrasonic sensor, buzzer and DC motor. In every office there required a peon to transfer the files or other materials whereas they have to perform other tasks too. This robot can be useful to decrease the workload of office peons to involve him with more essential works.

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Paper ID-131

A Demand Side Management Algorithm with Revision of Energy Usage Blocks for Residential Customers of Dhaka City

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Abstract: The traditional grid system is evolving towards smart grid at a rapid rate. All possible measures are being taken in order to reduce the energy usage in residential, commercial & industrial feeders. Peak demand of the residential users of Dhaka city is growing rapidly over the last few years and it is mostly due to the extensive usage of heavy loads such as air conditioner, washing machines, electric cooker, room heater, geyser etc. This paper proposes a revision of the present residential tariff scheme of utility, which encourages the customers to shift their heavy loads to off peak hours. Results show that the proposed scheme successfully lowers the customer bills without burdening the low energy consumers.

Paper ID- 135

Energy Sustainable Traffic Aware Hybrid Powered Off-Grid Cloud Radio Access Network

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Abstract: The aggregate power supply of solar photovoltaic (PV) and diesel generator (DG) is an attractive solution for the next generation off-grid cellular network where the electricity is not available. In this paper, we emphasized on energy efficiency (EE) for cloud radio access network (C-RAN) architecture in the context of 5G cellular networks with hybrid supply. The intermittent nature of PV generation is counter balanced by the DG supply which has emerged as a promising option for energy sustainability. The prime aim is to maximum utilization of green energy harvested from installed PV panels for greener the envisioned network. In addition, the environmental effect such as carbon footprint has been comprehensively analyzed by varying solar capacity. An extensive simulation has been carried out for evaluating EE performance of the proposed network varying different system parameters such as transmission power, solar module capacity in consideration of the real traffic demand. Numerical results justify the effectiveness of the proposed scheme.

Paper ID- 136

An Optimization Framework to Implement Demand Side Management in Hybrid Buildings

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Abstract: In recent times, immense research and initiatives have been carried out to transform the traditional gird into supremely efficient smart grid (SG). An essential section of SG is demand side management (DSM) that facilitates to utilize energy in a prudent way by maneuvering the loads besides following the

mainstream concept of augmenting the power production capacity, and also commensurately curbs the noxious carbon dioxide and sulfur dioxide production. In this paper, the prime motive is to bring the peak to average ratio (PAR) closer to unity of a hybrid building consisting of both residential and commercial customers, which has been an emerging sector in developing countries, by implementing smart strategies of DSM. An effective algorithm based upon DSM methodologies has been formulated keeping in consideration the cardinal comfort constraints of users. The proposed algorithm's efficacy to minimize PAR of a hybrid community has been demonstrated through MATLAB simulation results. The propitious outcomes have shown that DSM strategies could be adopted for hybrid sector by the utility providers with the help of smart energy meters in future without the necessity of manual load controlling during exigencies and avoiding the most undesirable approach of load shedding.

Paper ID-140

Design and Testing of Microcontroller Based Versatile Firing Pulse Generation for Thyristor and Insulated Gate Bipolar Transistor (IGBT)

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Abstract: Thyristor based controlled power is very popular in industrial applications. This paper represents design and implementation of firing pulse generation for a single-phase converter using microcontroller for both Thyristor and IGBT. Different types of firing pulse generation for single phase converter are available for Thyristor only and inadequate work has been found for Insulated Gate Bipolar Transistor (IGBT). In this paper, a digital controlling system has been developed using microcontroller to generate the firing pulse. The performance of the proposed circuit is checked by simulating the model on Proteus Simulations packages. Then a prototype is developed in the lab and tested for successful operation. Experimental results obtained from oscillographic displays are found to be in good agreement with the theoretical expectation and simulation results.

Paper ID-146

Electrical and Optical Properties of Zinc doped Titanium dioxide Thin Films

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Abstract: We have prepared pure Titanium dioxide (TiO2) and Zinc (Zn) doped TiO2 thin films by spray pyrolysis deposition (SPD) technique. The deposition temperature of the prepared films was maintained at 450oC. The structural property of the prepared thin films was observed by X-ray diffraction (XRD) method. The results of XRD data showed that the structure of the as-deposited thin films was amorphous phase. The surface morphology and composition of the thin films were investigated by scanning electron microscope (SEM) and energy dispersive X-ray Spectroscopy (EDS), respectively. The electrical property, in particular, electrical resistivity was observed by four-point probe method as a function of temperature. It is seen that

the resistivity decreased with increasing temperature and exhibited semiconducting nature of the sample. The optical transmittance was measured by the UV-visible spectrometer. The transmittance for the pure TiO2 was investigated and it is about 70% in the visible region.

Paper ID-148

Comparison of Electromagnetic Absorption in Human Head for Dipole and Microstrip Patch Antenna

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Abstract: The paper presents, the investigation of electromagnetic (EM) absorption in the human head using dipole and Microstrip patch antenna (MPA). Both antennas are designed for working in wireless devices at 2.2 GHz. Two parameters are used for the investigation of electromagnetic absorption. These are-peak specific absorption rate (SAR) in the human head tissue and aggregate retained power from the wireless device user. Both antennas are set at a fixed distance to analyze the effects on human head for electromagnetic absorption for MPA and Dipole antenna. Transmission line method was adopted to find out the parameters of MPA. Both antennas are designed and simulated via CST microwave studio. The outcomes demonstrate that, in human head MPA provides a lower peak SAR value than Dipole antenna. So, total absorbed power of Dipole antenna is higher than MPA. Therefore, MPA is a better option for wireless devices regarding EM absorption reduction.

Paper ID- 150

Fabrication and Characterization of a P-N Junction for Large Area Silicon Solar Cell

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Abstract: A solar cell is basically a p-n junction that generates current upon the incidence of solar radiation. The property of a solar cell is strongly influenced by the electrical properties of the junction and the optical property of the n-type surface, which is fabricated by a process called diffusion. In this paper, we report the chemical processing and fabrication of a p-n junction on a large area P-type silicon wafer at three different temperatures 850 degree Celsius, 875 degree Celsius, and 900 degree Celsius using POCl3 as a precursor gas. After each step of processing, the wafers were subjected to optical, electrical, and morphological characterization. It has been found that the reflectance as well as the morphology of the wafers not only changes with chemical processing but also with doping temperature as well. Moreover, Hall-effect measurement for carrier type and concentration, as well as I-V characterization of the doped wafers confirms the formation of a p-n junction.

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Paper ID- 152

K-cyclic Smith Iterative Method for Model Reduction of Index-2 Periodic Control Systems

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Abstract: This paper presents the structure preserving Smith based iterative method for the model order reduction of index-2 periodic control problem in descriptor form. The work of this paper is twofold. First, we demonstrate how to reformulate a discrete-time descriptor system into a generalized discrete-time system. Once the transformed system is obtained, we represent the system in a cyclic lifted form in order to fit it into the framework for balanced truncation-based model order reduction. The second half of our work focuses on applying our proposed Smith method to approximate the solutions of the corresponding lifted discrete-time algebraic Lyapunov equations (LDALEs). We implement cyclic permutation strategies in our proposed algorithm which enables us to preserve the structure of the original solution in its iterative computations. Numerical results are provided to verify the accuracy and effectiveness of the proposed algorithm.

Paper ID-156

Design of a Miniaturized Slotted T-Shaped Microstrip Patch Antenna to Detect and Localize Brain Tumor

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Abstract: This paper presents a miniaturized, single-fed, slotted T-shaped, body worn antenna mainly designed for detecting and locating brain tumor which operates in the frequency band 902-928 MHz of Industrial, Scientific, and Medical (ISM) band. The key prominences of the proposed antenna are its minuscule dimension, vast bandwidth, good parameter results to identify affected and unaffected human brain tissue. The dimension of the proposed antenna is 29.99 mm x 29.99 mm x 0.59 mm, which has been placed over a complete human head phantom model consisting of six different layers; designed in CST Microwave Studio without altering their dielectric properties to carry out the simulation. Several performance measurements have been performed for both normal condition and tumor affected conditions changing the tumor positions with respect to the antenna. Analyzing these data, the location of the tumor can be estimated. A tumor having a radius of 5 mm with conductivity and permittivity of 7 S/m and 55 respectively, has been taken into consideration for the simulation process. The maximum SAR (specific absorption rate) of the proposed model measured 0.332 W/ Kg which satisfies the required safety guidelines.

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Paper ID-157

Evaluation of Antioxidant Activity and Brine Shrimp Lethality Bioassay of Randia Dumetorum Stem Extract

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Abstract: This research study accomplished to explore the antioxidant activity and brine shrimp lethality bioassay of different fractions of Randia dumetorum stem extract. Besides, this research was also assessed to observation the proximate analysis and phytochemical screening by following the conventional method. To fractionate by soxhletion using sequential extraction techniques powdered stem of the plant were treated with different solvents including n-hexane, chloroform, methanol and distill water. Here, we used to evaluate antioxidant activity, total antioxidant capacity determination, reducing power assay, reduction of ferric ions using ortho- phenanthroline color method, determination of total content of phenol and total flavonoids contents by aluminium tricholoride method. In addition, Ascorbic acid and Gallic acid was used as a antioxidant compound in these studies. Evaluating the content of proximate analysis moisture, total ash value, acid insoluble ash and water soluble ash value were observed 10.3%, 4.76%, 4.30%, and 3.21% respectively. The brine shrimp lethality bioassay was used to determine cytotoxicity. For phytochemical screening, different extract of those solvents were utilized that disclosed the presence of alkaloids, reducing sugar, flavonoids, saponin, phenolic compounds, Tannins on different fractions inabsence of gums, protein and amino acid. The consequence reveals that all the Randia dumetorum stem extract possess remarkable antioxidant activity. In the case of brine shrimp lethality bioassay, methanol extract of stem effect to brine shrimp nauplii and exhibiting highest toxicity having LC50 value 1.32 µg/ml as compared to standard dimethyl sulfoxide (LC50 1.31 µg/ml). These evaluations suggest that Randia dumetorum stems indicated a better source of antioxidants and hold important cytotoxic effect.

Paper ID- 162

Detecting Abusive Comments in Discussion Threads Using Naïve Bayes

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Abstract: Comments are supported by various websites and provide a simple approach to increment user involvement. Users can generally comment on different types of media such as: social networks, blogs, forums and news articles. As discussions increasingly move toward online forums, the issue of insulting and abusive comments is becoming prevalent. In addition, a lot of comments are available due to these social media. Hence, it is not feasible for a human moderator to check each comment one by one and flag them as abusive or not abusive. For this reason, an automated classifier which is quick and efficient is necessary to detect such type of comments. To fulfill above purpose, in this paper a Naïve Bayes classifier is designed to detect abusive comments expressed in Bangla. Using a training corpus collected from "Youtube.com", the Naïve Bayes classifier is employed to categorize comments as abusive or not abusive. Finally, the performance is evaluated by using 10-fold cross-validation on unprocessed data.

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Paper ID-166

Performance of Classifiers in Bangla Text Categorization

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Abstract: Automated text categorization or text classification has become an important text mining task especially with the speedy development and increase of the number of on-line documents. Automatic text classification system aims to assign the text documents to their predefined categories based on some linguistic characteristics. Although research has progressed significantly for languages like English, Arabic, Chinese, etc., there has not been much development for the Indian Languages especially for Bangla which is one of the most popular languages of India and Bangladesh. One reason for this is the inherent complexity of Bangla which is accompanied by the unavailability of standard datasets and resources. In this paper, the performance of different classifiers is presented for the task of text classification based on `term association' and `term aggregation' feature extraction methods and an accuracy of 98.68\% has been obtained on dataset of 8000 Bangla text documents procured from various web sources.

Paper ID- 175

Automatic Generation Control of Two Area Reheat Thermal Power System Using Differential Evolution Based Controller

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Abstract: Frequency fluctuation and deviation in tie-line power flow are occurred in a large power system due to unanticipated imbalance between energy production and consumers load demand. A crucial task is carried out by the Automatic Generation Control (AGC) to regulate the generators output power within an acceptable limit due to load perturbation for maintaining the stable system frequency and power flow. This paper illustrates the performance analysis of two area reheat thermal power system through simulation by employing a Proportional-Integral (PI) controller which is being optimized by Differential Evolution (DE) algorithm. DE is used for determining the optimal set of PI controller's gain parameters (Kp and Ki) which depends on the eigenvalue of system matrix of state space equation and objective function's minimum value. Applying load variation in either or both of the areas, the performance of the controller is evaluated by analyzing the transient response of the system. Genetic Algorithm (GA) based PI controller has been considered for comparing the efficacy with the suggested controller which shows the proposed controller's supremacy in most of the cases. Moreover, the proposed controller has performed satisfactorily over variations of system parameters. Required simulations are performed in MATLAB/SIMULINK environment.

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Paper ID- 180

Monitoring of Strut Force in Excavation for Bridge Pier Using Vibrating Wire Strain Gauge

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Abstract: This paper employs vibrating wire strain gauge in the investigation of lateral movement of water and soil supported by sheet pile wall with eight horizontal struts. The struts were installed at the corners of two different levels of excavation. The forces in all the eight struts were estimated from frequency reading taken in every five seconds over a period of six months. Different patterns of strut force variation and lateral soil movement were observed with time passed and the panel temperature. The variation in strut forces at a given level demonstrates the importance of continuous monitoring of excavation using such an advanced technology. The outcome of this study will encourage the practicing engineers to employ monitoring devices to ensure safety at the construction site.

Paper ID- 182

Selective Harmonic and DC Offset Elimination in Grid Connected Single Phase Inverter by Using Optimal Controller and Modified EPLL

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Abstract: This paper proposed a modified Enhancement Phase Lock Loop (EPLL) and an optimal controller to efficiently operate grid-connected inverter for distributed renewable energy application. Conventionally, a basic EPLL structure is used to generate the inverter reference signal and a proportional (P) or proportional integral (PI) controller is used to meet the system specifications. In the presence of small dc offset or lower order harmonics in the grid, this EPLL cannot generate a pure sinusoidal reference signal. Furthermore, P or PI controller is not robust enough to eliminate the disturbance due to the inverter or system uncertainties. In this paper, 1) an optimal controller is designed by using linear quadratic regulation (LQR) technique based on state space approach to remove the effect of the inverter and system uncertainties; and 2) it also presents a systematic design approach of a modified EPLL to eliminate the unwanted dc offset and selective lower order harmonics from the grid. A MATLAB simulation model is developed for the proposed system to investigate the performance of the optimal controller with the modified EPLL. The proposed control system shows better performance compare to the conventional control model in the presence of various system uncertainties and lower order harmonics in the grid.

Paper ID- 183

An Analysis of Bangladesh One Day International Cricket Data: A Machine Learning Approach

Md. Muhaimenur Rahman[1]; Md. Omar Faruque Shamim[2]; Sabir Ismail[3]
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Abstract: Nowadays Data mining is an emerging field in sports analysis. To choose a most effective team or to predict suitable formation for winning a game or to analyze weakness of the opponent, data mining plays a vital role. However, no research has been done yet for the Bangladesh cricket team. So, we analyzed

One Day International cricket data of Bangladesh, based on seventeen features and find out the most important features that are enough for better prediction, not only important features but also can take much decision in our analysis. Our analysis divided into three sections; before starting the game, after one innings played and continuous fall of wickets which leads to the probable prediction of the chances of winning and losing even while the game is in progress. In our analysis, we used the latest version of the decision tree algorithm that is C5.0 on our own collected data set and successfully get the accuracy of 63.63% for before starting the game, 72.72% and 81.81% when Bangladesh played in the first and second innings, finally 80% and 70% for fall of wicket analysis. We also used other classification algorithms and shown the accuracy level of our data set.

Paper ID- 186

Evaluating Alpha Relative Power of EEG Signal during Psycho physiological Activities in Salat

Farzana Khanam[1]; Md. Asadur Rahman[2]; Mohiuddin Ahmad[3]
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Abstract: To investigate human brain activities regarding EEG signal during psychophysiological activities in Salat (Muslim Prayer), several facts have been analyzed in this study. This research work investigated relaxed condition with eyes open and eyes closed and compared with 2 raqat (a single unit of Muslim prayer) Salat. Consequently, we have proposed that Salat provides a more relaxed state of mind than that of relaxing with either eye opened or closed. EEG data were acquired through the B-Alert system from several participants. The effects of EEG alpha band were determined using Welch's power spectral density method. Using student's t-distribution, the p-value was calculated to determine the difference between the alpha relative power of Salat and other relaxed states. During psychophysiological activities in Salat, a significant ($p<0.05$) increase in alpha RP has been observed in the frontal and parietal regions than other two relaxed sessions. This result reflects the relaxed condition of body and soul which raises parasympathetic activity and lessens the sympathetic activity. Therefore, this proposed work concludes that Salat can support proper relaxation and reduce anxiety than the regular relaxed situations.

Paper ID- 195

IoT Based Automated Fish Farm Aquaculture Monitoring System

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Abstract: Internet of Things (IoT) is a very fast-growing technology and the field of IoT is extending its wings in every one of the areas today. With the progression in computers like Arduino, Raspberry pi, the innovation is achieving the ground level with its application in farming and aquaculture. In this work, we have outlined and actualized monitoring of water quality of aquaculture utilizing Raspberry Pi, Arduino, various Sensors, Smartphone Camera and Android application. Water quality parameters used in this work are Temperature, pH, Electrical Conductivity and Colour. Sensor acquisition is conducted by Arduino and Raspberry Pi is used as data processing device as well as server. Photo acquisition is also performed by Raspberry Pi with the help of the smartphone camera to detect the colour of the water. Android phone is used as the terminal device. A user can monitor the water condition using an android app through Wi-Fi

within Wi-Fi range and through Internet from anywhere in the world. Some analysis is performed with the four parameters value to determine the overall approximate condition of the water and required action. Every feature in this checking gadget can work legitimately and easily.

Paper ID-206

Determination of Characteristics and Performance Appraisal of GaN MOSFET

Asif Hasan[1]; Abu Shakil Ahmed[2]; Tasnim Sultana[3]
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Abstract: Several decades in the past have seen the rapid development of modern electronics and recent trends have led to the proliferation of studies that incorporate gallium nitride as a key aspect of fabricating different types of field effect transistors. Moreover, it is fast becoming an essential instrument in other aspects of electronics as well because of its phenomenal inherent properties such as high power, high temperature, and high frequency. A considerable amount of literature has been published on the mathematical formulation of gallium nitride-based field effect transistors. However, there has been little quantitative analysis of various electronic properties like intrinsic delay faced by the carrier. This research article examines several properties such as intrinsic delay, gate to source capacitance, gate to drain capacitance, transconductance, cutoff frequency, and channel current for gallium nitride metal–semiconductor field-effect transistor as well as investigates the impact of variation in gate to source voltage on the channel current with proper evaluation of respective characteristics curves.

Paper ID- 207

Performance Analysis of a Compact Dual-Mode Antenna Operating at UWB and ISM Band for Wireless Medical Applications

Md Mehedi Farhad[1]; Akib Jayed Islam[2], Swarup Chakraborty[3], Md. Siddat Bin Nesar[4]; Md Asif Siddique[5]; Nishako Chakma[6]
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Abstract: In this article, a new design of a flexible dual mode off/in-body antenna is proposed. The main objectives of this proposed antenna refer to its dual mode operating at 5.7808 GHz & 4.1968 GHz, miniaturized dimension, impressive return loss, higher bandwidth that makes it suitable for WBAN applications. The size of the antenna is 12 mm x 10 mm x 0.52 mm which is appropriate for implantable as well as off-body applications. The performance parameters were scrutinized for functioning the proposed antenna in Industrial, Scientific and Medical (ISM) (5.725 GHz – 5.875 GHz) for Off-body communications and Ultra-Wideband (3.1 GHz-10.6 GHz) for implantable applications. A three layers of human phantom model is developed as simulation environment where the antenna is inserted inside the muscle for In-body operation. Biocompatibility test, flexibility and related performance measurements have been utilized using CST Microwave Studio software in both curved and planar states by following different types of dielectric property matching with human tissue model. Finally, Specific Absorption Rate (SAR) is assessed to check its feasibility and workability in wireless medical applications.

ISBN : 978-984-34-4802-6

Paper ID- 210

English to Bengali Machine Translation: An Analysis of Semantically Appropriate Verbs

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Abstract: Machine translator translates a source language into a target language. Obtaining a semantically valid verbal form during the machine translation is an intricate task. The subsisting translators like "Google Translator" still facing quandaries in this issue of translation from English to Bengali. The Bengali verbal inflection is transmuted to compose verb according to the nature of subject and tense. A sentence may have multiple syntactically valid verb form, which introduces intricacy during the machine translation. This study mainly focuses on the analysis of Bengali person, tense and verbal inflections. This paper describes a procedure for finding semantically valid verb within a sentence during the machine translation from English to Bengali.

Paper ID- 215

Design and Performance Measurement of an On-body Capacitively Loaded Planar Inverted-F Antenna for Bio-medical Applications

Shamim Ahmad[1]; Rakibul Hasan[2]; Sudipta Das[3], Md. Hasnat Rabbi[4]
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Abstract: In this research, an on-body capacitively loaded planer inverted-F antenna has been designed for biomedical application, which is able to operate in MICS (Medical Implant Communication Service) band. The primary reason behind choosing MICS band (401MHz-406MHz) because of its availability, accepted propagation, safest frequency band for human body, easy fabrication etc. For making this antenna bio-medically suitable to use on human body tissue the antenna has mounted on the human body phantom model where all the properties of human body tissue has been maintained. The antenna is suitable for real time monitoring of different type body signals and also for communicating with other sensors related to on-body devices. To make this antenna bio-compatible and improve its performance an additional silicon layer has been used between the patch and human body phantom. As this antenna is designed for biomedical application it needs to be harmless to human body tissue, for which its SAR is calculated and found at a safety region. VSWR<2, radiation pattern, bandwidth, return loss also observed though simulation and measurement by using CST microwave studio.

Paper ID- 217

Numerical Analysis of Wind Flow over Various Shaped Rooftop of Buildings for Renewable Energy Application in Bangladesh

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Abstract: A numerical study has been conducted particularly graphical analysis to investigate wind flow above roof of the constructed structure of various shapes from side views such as the conventional structure, fillet, dome shaped, half wedges. The velocity contours and velocity profiles have been the points of

ICISET '18
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Seminar entitled "University-Industry Collaboration"

Panel Moderator: **AzfarAdib**
Manager, IoT &M2M Services, Grameen phone Ltd. & Industrial Activities Coordinator, IEEE BDS

Session Theme: Fostering Industry-Academia Collaboration in Chattogram, the Commercial Capital of Bangladesh
Organized By: International Islamic University Chittagong (IIUC) in association with IEEE Bangladesh Section
Date & Time: 28 October, 2018; 09:30 AM to 01:00 PM
Participants: Professionals, Academicians and Students
Objective: This session aims to facilitate exchange of opinion, awareness creation and sorting feasible schemes under IEEE Bangladesh framework to establish best possible practices of industry-academia collaboration in Chattogram, the Commercial Capital of Bangladesh.
Chief Guest: Prof. K M Golam Mohiuddin, Honorable Vice-Chancellor, IIUC
Chair: Prof. Dr. Md. Delawer Hossain, Dean, Faculty of Science & Engineering, IIUC
Anchor of the Inaugural program: Shahidul Islam Khan
Convener, University-Industry Collaboration Seminar Organizing Committee & Associate Professor, Dept. of CSE, IIUC
Panel Moderator: Azfar Adib
Manager, IoT & M2M Services, Grameenphone Ltd. & Industrial Activities Coordinator, IEEE BDS

Panel Speakers:

Name	Affiliation
Prof. Dr. Md. Shahadat Hossain	Professor, Dept of CSE, University of Chattogram
Prof. Dr. Md. Nurunnabi Mollah	Head of BME, KUET
Dr. Mohammed Moshiul Hoque	Director, Students' Welfare, CUET & Conference Coordinator, IEEE BDS
Prof. Dr. Shamsul Arefin	Head, Dept of CSE, CUET
Prof. Ahsanullah Bhuiyan	Member, Board of Trustee, IIUC
Md. Abdullah Farid	Head of IT, PHP Family
Abul Kashem	CEO, XPONENT InfoSystem PVT Ltd
Sujat Anwar Siddiquee	Head of IT, Youngone (CEPZ) Ltd.
Manzarey Khorshed Alam	Former General Manager, Eastern Refinery Chattogram
Tamim Wahid Saimu	Head of IT, BSRM Group of Companies
Vasker Bhowmick	DGM IT, KDS Garments Industries Ltd.
Mrinal Nath	CEO, Techno Zone
Engr. Prabir Kumar Sen	Chief Engineer (Distribution) BPDB Chattogram
Faisal Mohsin	Manager, Bangabandhu Satellite & Member, Industrial Activities Committee, IEEE BDS
A R M Abdullah Rocky	Digital Solutions & Service Specialist Engineer, Banglalink & Chair, IEEE BDS Young Professionals AG
Md. Mizanur R. Sarkar	Executive Engineer PGCB. and Member, Membership Development Committee, IEEE BDS

ISBN : 978-984-34-4802-6

Technical Session Schedule in Detail

Technical Sessions: Day 1, Saturday, 27 October 2018

Plenary Session 1: Day 1, Saturday, 27 October 2018	
Venue: IIUC Auditorium	**Time: 11:00– 13:15**
Session Chair:Prof.Dr. Mohammad Kaykobad, Bangladesh University of Engineering and Technology and Fellow, Bangladesh Academy of Sciences. Chair, Technical Program Committee, ICISET 2018	
Name of Keynote Speaker	**Topic**
Prof. Dr. Phalguni Gupta Department of Computer Science & Engineering Indian Institute of Technology Kanpur and Director, National Institute of Technical Teachers' Training & Research, Kolkata	**Challenges in Fingerprint based Biometric System**
Prof. Dr. Debatosh Guha, FIEEE Institute of Radio Physics and Electronics, India Centre for Research in Nanoscience and Nanotechnology, University of Calcutta, India	**Scientific Innovations for the Antennas, by the Antennas**
Prof. Dr. A.K.M. Azharul Islam, FInstP, CPhys Professor Emeritus & Former Vice Chancellor International Islamic University Chittagong, Bangladesh	**New Nanomaterial MXenes: Opening Exciting Technological Horizon**

TS–1A: Electronics and Materials Science – 1	
Venue: Seminar Hall, Auditorium Building	**Time: 14:15 – 15:30**
Session Chair: Prof. Dr. MuhibulHaqueBhuyan, Southeast University, Dhaka	
Invited Talk	**Smart Technology/Algorithm of Speech Communication for Smart Community** **Prof. Dr. Celia Shahnaz, SMIEEE**, Professor, Department of Electrical and Electronic Engineering, Bangladesh University of Engineering and Technology Chair, IEEE Bangladesh Section
Paper ID	**Title of the Paper**
14	Modeling, Simulation And Performance Analysis of SEPIC Converter Using Hysteresis Current Control And PI Control Method
33	Short Channel Effects Characterization of 3-D FinFET For High-k Gate Dielectrics
140	Design And Testing of Microcontroller Based Versatile Firing Pulse Generation for Thyristor and Insulated Gate Bipolar Transistor (IGBT)
206	Determination of Characteristics and Performance Appraisal of GaN MESFET

TS–1B: Data Science and Machine Learning – 1	
Venue: Room 305, Central Library	**Time: 14:15 – 15:30**
Session Chair: Prof. Dr. A. K. M. Ashikur Rahman, Bangladesh University of Engineering and Technology	
Invited Talk	**Cloud Computing: Security Issues and Challenges** **Prof. Dr. Subarna Shakya**, Department of Electronics and Computer Engineering, Pulchowk Campus, Institute of Engineering, Tribhuvan University, Nepal
Paper ID	**Title of the Paper**
290	Application of Deep Neural Network for Predicting River Tide Level
313	Supporting The Treatment of Mental Diseases Using Data Mining
320	Predicting Default Payment of Credit Card Users: Applying Data Mining Techniques
363	Improving Healthcare Services of Community Clinics Using Machine Learning Techniques

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TS–1C: Renewable and Green Energy	
Venue: Room 306, Central Library	**Time: 14:15 – 15:30**
Session Chair: Prof. Dr. Mahmud Abdul MatinBhuiyan, Chittagong University of Engineering and Technology	
Paper ID	**Title of the Paper**
34	Probabilistic Power Flow Model for The Uncertainty Analysis of Wind Energy and Loads
125	Cost Aware Grid Energy Minimization in Heterogeneous Green Wireless Networks
217	Numerical Analysis of Wind Flow Over Various Shaped Rooftop of Buildings for Renewable Energy Application in Bangladesh
331	Energy Sustainable Provisioning for Green Data Centers
386	Optimization of PV Energy Generation based on ANFIS

TS–1D: Computer Vision and Image Processing	
Venue: Room 308, Academic Building 4	**Time: 14:15 – 15:30**
Session Chair: Prof.Dr. Mohammed Jahirul Islam, Shahjalal University of Science and Technology	
Paper ID	**Title of the Paper**
26	Paper Currency Detection System Based On Combined SURF And LBP Features
222	Bangla Handwritten Character Recognition Using Local Binary Pattern and Its Variants
405	Human Activity Recognition Using Mixture of Gaussians And Pair-wise Oriented Local Binary Pattern
407	Comparative Analysis of Stairways Detection Based on RGB And RGB-D Image

TS–1E: Embedded Systems and IoT – 1	
Venue: Room 208, Academic Building 4	**Time: 14:15 – 15:30**
Session Chair: Prof. Dr. Shamim Ahmed, University of Rajshahi	
Paper ID	**Title of the Paper**
195	IoT Based Automated Fish Farm Aquaculture Monitoring System
330	IoT Based Power Efficient Agro Field Monitoring And Irrigation Control System: An Empirical Implementation in Precision Agriculture
357	An Internet of Things (IoT) Based Smart Traffic Management System : A Context of Bangladesh
362	Design And Analysis of IoT Based Ionizing Radiation Monitoring System
387	An IoT based Interactive Speech Recognizable Robot with Distance control using Raspberry Pi

TS–1F: Antenna and Propagation – 1	
Venue: Room 313, FSE Building	**Time: 14:15 – 15:30**
Session Chair:Prof. Dr. Ahsanullah, Chittagong University of Engineering and Technology	
Paper ID	**Title of the Paper**
303	Performance Studies of UWB Microstrip Antenna for Multipurpose Biotelemetry Applications
335	Design and Performance Analysis of a Multiband Microstrip Patch Array Antenna at Ku And K Band
348	Comparative Analysis on Tropospheric Scintillation Prediction Models for Bangladeshi Climate
364	Electromagnetic Performances Analysis of A Microwave Imaging System (MIS) for Breast Tumor Detection
366	Computational analysis of Microwave Imaging System for Post Stroke Screening Using Unidirectional Antenna

ISBN : 978-984-34-4802-6

Plenary Session 2: Day 1, Saturday, 27 October 2018	
Venue: IIUC Auditorium	**Time: 16:00 – 17:30**
Session Chair: Prof. Dr. A.K.M. Azharul Islam, FInstP, CPhys, Professor Emeritus & Former Vice Chancellor, International Islamic University Chittagong, Bangladesh	
Name of Keynote Speaker	**Topic**
Prof. Dr. Nowshad Amin Institute of Sustainable Energy, Universiti Tenaga Nasional (The National Energy University), Malaysia	**Large Scale Solar Farms in Energy Sufficiency Roadmap**
Prof. Dr. Abu Bakar bin Abdul Majeed Faculty of Pharmacy Universiti Teknologi MARA, Malaysia	**Early Detection of Brain Diseases Through Blood Testing**

TS–2A: Data Science and Machine Learning – 2	
Venue: Seminar Hall, Auditorium Building	**Time: 18:00 – 19:15**
Session Chair: Prof. Dr. Mohammad ShamsulArefin, Chittagong University of Engineering and Technology	
Invited Talk	**Big Data Issues and Challenges** **Dr. Wael Yafooz**, Associate Professor, Dean , Faculty of Computer and Information Technology, Al-Madinah International University, Malaysia
Paper ID	**Title of the Paper**
183	An Analysis of Bangladesh One Day International Cricket Data: A Machine Learning Approach
254	Comparison of Different Extract Transform and Loading Tools for Data Warehousing
289	Which Programming Language and Platform Developers Prefer for the Development? A Study Using Stack Overflow
381	Prediction of Upcoming Conferences Ranking in Bangladesh Based on Analytic Network Process And Machine Learning

TS–2B: Electronics and Materials Science – 2	
Venue: Room 305, Central Library	**Time: 18:00 – 19:15**
Session Chair: Prof. Dr. MuhibulHaqueBhuyan, Southeast University, Dhaka	
Invited Talk	**Nanostructured Materials and Applications in Gas Deduction Systems** **Dr. Sadullah ÖZTÜRK**, Department of Biomedical Engineering, Fatih Sultan Mehmet Vakıf Üniversitesi, Istanbul, Turkey
Paper ID	**Title of the Paper**
146	Electrical and Optical Properties of Zinc doped Titanium dioxide Thin Films
150	Fabrication And Characterization of A P-N Junction for Large Area Silicon Solar Cell
180	Monitoring of Strut Force in Excavation for Bridge Pier Using Vibrating Wire Strain Gauge
234	Fabrication And Characterization of Zinc Selenide (ZnSe) Thin Film in Solar Cell Applications

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TS–2C: Pharmacy – 1	
Venue: Room 306, Central Library	**Time: 18:00 – 19:15**
Session Chair: Prof. Dr. Md. Abdur Rashid, University of Dhaka	
Invited Talk	**Application of Organic Synthesis for Construction of Complex Bioactive Compounds and Biomolecules** **Prof. Dr. S. M. Abdur Rahman,** Dean, Faculty of Pharmacy and Professor, Department of Clinical Pharmacy and Pharmacology, University of Dhaka
Paper ID	**Title of the Paper**
45	Methanol Leaves Extract of Diploclisia Glaucescens Shows Hypoglycemic Activity in Mice Model
50	Molecular Docking Studies and Virtual Screening of Rapamycin and Its Derivatives Against mTOR for Treatment of Cancer
157	Evaluation of Antioxidant Activity And Brine Shrimp Lethality Bioassay of Randia Dumetorum Stem Sxtract

TS–2D: Mobile and Wireless Communication	
Venue: Room 308, Academic Building 4	**Time: 18:00 – 19:15**
Session Chair:Prof. Dr. Ahsanullah, Chittagong University of Engineering and Technology	
Paper ID	**Title of the Paper**
135	Energy Sustainable Traffic Aware Hybrid Powered Off-Grid Cloud Radio Access Network
148	Comparison of Electromagnetic Absorption in Human Head for Dipole And Microstrip Patch Antenna
265	Design And Simulation of A Single Element High Gain Microstrip Patch Antenna for 5G Wireless Communication
359	Cell Tower Radiation And Effect on Human Body: Bangladesh Perspective
360	Performance Evaluation of MIMO in Urban Microcell for Dhaka City at 28 GHz Frequency

TS–2E: Power Electronics and Power System	
Venue: Room 208, Academic Building 4	**Time: 18:00 – 19:15**
Session Chair: Dr. Nur Mohammad, Chittagong University of Engineering and Technology	
Paper ID	**Title of the Paper**
16	Design of A Compact 600 VA Sinusoidal Inverter With Battery Storage System
175	Automatic Generation Control of Two Area Reheat Thermal Power System Using Differential Evolution Based Controller
182	Selective Harmonic and DC Offset Elimination in Grid Connected Single Phase Inverter by Using Optimal Controller and Modified EPLL
221	Series Dynamic Braking Resistor Based Protection Scheme for Inverter Based Distributed Generation System
240	A Novel Approach of Reactive Power and Voltage Control in Grid Connected Wind Farms Using STATCOM

ISBN : 978-984-34-4802-6

TS–2F: Embedded Systems and IoT – 2	
Venue: Room 313, FSE Building	**Time: 18:00 – 19:15**
Session Chair: Prof. Dr. Shamim Ahmed, University of Rajshahi, Rajshahi.	
Paper ID	**Title of the Paper**
37	Developing A Self-Learning Braille Kit For Visually Impaired People
76	A New Design Approach for Gesture Controlled Smart Wheelchair Utilizing Microcontroller
232	Design And Implementation of an Embedded System to Observe the Atmospheric Condition Using a Helium Balloon
339	Design And Implementation of an Automated Reminder Medicine Box for Old People And Hospital
392	Unmanned Multiple Railway Gates Controlling and Bi-directional Train Tracking with Alarming System Using Principles of IoT

Technical Sessions: Day 2, Sunday, 28 October 2018

Plenary Session 3: Day 2, Sunday, 28 October 2018	
Venue: IIUC Auditorium	**Time: 09:00 – 11:15**
Session Chair: Prof.Dr. Mohammed Jahirul Islam, Shahjalal University of Science and Technology,Sylhet	
Name of Keynote Speaker	**Topic**
Prof. Dr. Atsushi Inoue BaaSid Lab / Eastern Washington University	**Blockchain and Artificial Intelligence ~Information Management Platform for the Next Generation~**
Prof. Dr. Syoji Kobashi, SMIEEE University of Hyogo / Director, Advanced Medical Engineering Center (AMEC), Japan	**Radiomics for Neonatal Cerebral Diseases with MR Images**
Prof. Dr. V.R.Singh, FIEEE Chair, IEEE-IMS/EMBS Delhi National Physical Laboratory, New Delhi and PDM University, NCR-Delhi, India	**Innovations in Sensors Technology for better Health Care**

TS–3A: Software Engineering	
Venue: IIUC Auditorium	**Time: 11:45 – 13:00**
Session Chair: Prof. Dr. Mohammed Moshiul Hoque, Chittagong University of Engineering and Technology, Chittagong	
Invited Talk	**The R&D Strategies for Developing Countries** **Dr. Ali Nizam**, Assistant Professor, Fatih Sultan Mehmet Vakif University, Turkey
Paper ID	**Title of the Paper**
116	A Low-Cost GPS based Application for Navigating Shallow Waters
258	A Comparative Usability Experience Analysis of Card Sorting And Interactive Dialogue Model Design Technique
372	An Expert System Based on Belief Rule to Assess Bank Surveillance Security
385	Human Activity Recognition Using Multiple Smartphone Sensors

ISBN : 978-984-34-4802-6

TS–3B: Electrical Drives and Controls	
Venue: Room 305, Central Library	**Time: 11:45 – 13:00**
Session Chair: Dr. Md. Azad Hossain, Chittagong University of Engineering and Technology,Chittagong	
Invited Talk	**Partial Discharge Detection & Location Techniques for Covered-Conductor Overhead or Underground Distribution Lines** **Dr. Muzamir Isa**, Associate Professor, School of Electrical System Engineering, Universiti Malaysia Perlis (UniMAP), Malaysia
Paper ID	**Title of the Paper**
18	Consumer Perception About Prepaid Energy Meter System-A Study In Khulna City
91	Automatic Shrinking and Sorting of Industrial Finished Products
277	Low-Frequency Inter-Area Mode Detection in Power System using Continuous Wavelet Transform
376	Electricity Generation from Train Wheel Axle

TS–3C: Electronics and Materials Science – 3	
Venue: Room 306, Central Library	**Time: 11:45 – 13:00**
Session Chair: Prof. Dr. Md. Sherajul Islam, Khulna University of Engineering and Technology,Khulna	
Invited Talk	**Random Laser: A new potential biosensor** **Dr. Wan Zakiah Wan Ismail,** Senior Lecturer, Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia, Malaysia
Paper ID	**Title of the Paper**
250	Comparison of Crystallite Parameters of ZnO Nanoparticles Using Various Peak Profile Analysis
260	Graphene Based Surface Plasmon Resonance (SPR) Sensors : An Approach to Enhance the Performance
270	Optimization of Electrophoretic Deposition Parameters for Uniform Titanium Oxide Deposition on Conductive Glass Substrate

TS–3D: Pharmacy – 2	
Venue: Room 308, Academic Building 4	**Time: 11:45 – 13:00**
Session Chair: Prof. Dr. SohelRana, Jahangirnagar University	
Invited Talk	**Production, optimization and purification of xylanase by Brevibacillusborstelensis – MTCC 9874 isolated from soil sample of eastern Nepal** **Dr. Uttam Budhathaki,** Department of Pharmacy, Katmandu University, Nepal
Paper ID	**Title of the Paper**
264	In vitro Antimicrobial And Antiarthritis Effects of Methanolic Extract of Zanthoxylum Rhetsa Leaves
301	In vitro Antimicrobial, Cytotoxicity, Antioxidant And In vivo Analgesic Activities of Methanolic Extracts of Dipterocarpus Turbinatus Leaves
304	Assessment of In-vitro Antioxidant Capacity And In-vivo Anti-stress Potential of Methanol Extract of Combretum Indicum Leaves and Its Different Fractions

ISBN : 978-984-34-4802-6

TS–3E: Computer Networks and Security	
Venue: Room 208, Academic Building 4	**Time: 11:45 – 13:00**
Session Chair: Prof. Dr. Mohammad Sanaullah Chowdhury, University of Chittagong, Chittagong	
Paper ID	**Title of the Paper**
97	An Extension of Vigenere Technique to Enhance the Security of Communication
263	An Adaptive Routing Protocol for The Performance of Real-Time Applications
307	A Differentiate Analysis for Credit Card Fraud Detection
319	Towards Blockchain-Based E-voting System
328	Design And Implementation of A Secured Enterprise Network Using Dynamic Multipoint VPN with HSRP Protocol
344	Performance Analysis of DTN Routing Protocols: Single-Copy And Multi-Copy in ICMN Scenario

TS–3F: Embedded Systems and IoT – 3	
Venue: Room 313, FSE Building	**Time: 11:45 – 13:00**
Session Chair: Prof. Dr. Mamun-Ur-Rashid Khandkar, University of Rajshahi, Rajshahi	
Paper ID	**Title of the Paper**
120	Arduino UNO Based Smart Irrigation System Using GSM Module, Soil Moisture Sensor, Sun Tracking System and Inverter
340	An Efficient Model to Limit the Vehicle Speed and Horn Sound in Sensitive Public Zone with Encrypted Wireless Communication
342	Design, Development, and Performance Analysis of a Low-Cost Health-Care Monitoring System Using an Android Application
397	Automatic Accident Detection and Human Rescue System: Assistance Through Commu nication Technologies
406	An Intelligent System for Conversion of Bangla Sign Language into Speech

Plenary Session 4: Day 2, Sunday, 28 October 2018	
Venue: IIUC Auditorium	**Time: 14:15 – 15:45**
Session Chair: Prof. Dr. V.R. Singh, FIEEE, Chair, IEEE-IMS/EMBS Delhi National Physical Laboratory, New Delhi and PDM University, NCR-Delhi, India	
Name of Keynote Speaker	**Topic**
Prof. Dr. Weerakorn Ongsakul, CFA Dept. of Energy, Environment and Climate Change, School of Environment, Resources and Development, Asian Institute of Technology, Thailand	**Short-Term Solar Forecasting by Deep Long-Short Term Memory Recurrent Network Program Considering Time Sequence Data**
Prof. Dr. Md. Atiqur Rahman Ahad, SMIEEE Department of EEE University of Dhaka, Bangladesh. Now in Osaka University, Japan	**Human Activity Recognition & Future Challenges**

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TS–4A: VLSI Design and Embedded System	
Venue: Seminar Hall, Auditorium Building	**Time: 16:15 – 17:30**
Session Chair: Prof. Dr. Mamun-Ur-Rashid Khandkar, University of Rajshahi,Rajshahi	
Invited Talk	**Early Design Space Exploration of Networks-On-Chip (NoC)** **Dr. M. Norazizi Sham Bin Mohd Sayuti**, Senior Lecturer, Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia, Malaysia
Paper ID	**Title of the Paper**
73	Design of a Two Stage CMOS Operational Amplifier in 100 nm Technology with Low Offset Voltage
112	EqSA: A Golden-IC Free Equal Power Self-Authentication for Hardware Trojan Detection
126	Line Following Autonomous Office Assistant Robot with PID Algorithm

TS–4B:Antenna and Propagation – 2	
Venue: Room 305, Central Library	**Time: 16:15 – 17:30**
Session Chair: Prof. Dr. Md. Nurunnabi Mollah, Khulna University of Engineering and Technology, Khulna.	
Paper ID	**Title of the Paper**
156	Design of a Miniaturized Slotted T-Shaped Microstrip Patch Antenna to Detect and Localize Brain Tumor
207	Performance Analysis of a Compact Dual-Mode Antenna Operating at UWB and ISM Band for Wireless Medical Applications
215	Design and Performance Measurement of an On-body Capacitively Loaded Planar Inverted-F Antenna for Bio-medical Applications
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TS–4C: Natural Language Processing	
Venue: Room 306, Central Library	**Time: 16:15 – 17:30**
Session Chair: Prof. Dr. Mohammed MoshiulHoque, Chittagong University of Engineering and Technology, Chittagong	
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162	Detecting Abusive Comments in Discussion Threads Using Naïve Bayes
166	Performance of Classifiers in Bangla Text Categorization
210	English to Bengali Machine Translation: An Analysis of Semantically Appropriate Verbs
403	Emotion Detection From Text Using Skip-thought Vectors

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Venue: Room 308, Academic Building 4	**Time: 16:15 – 17:30**
Session Chair: Prof. Dr. Atiqur Rahman Ahad, University of Dhaka.Dhaka	
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152	K-cyclic Smith Iterative Method For Model Reduction of Index-2 Periodic Control Systems
186	Evaluating Alpha Relative Power of EEG Signal During Psychophysiological Activities In Salat
318	A Low Cost And Ionizing Radiation-free Method Based on Pulse-Echo Ultrasonic for The Diagnosis of Osteoporosis
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Session Chair: Prof. Dr. Md. Sherajul Islam, Khulna University of Engineering and Technology	
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ICISET-2016: At a Glance

Prof. Dr. Md. Delawer Hossain
Chair, Organizing Committee, ICISET -2016

Alhamdulillah, International Conference on Innovations in Science, Engineering and Technology (ICISET) -2016, the 1st of its kind, organized by International Islamic University Chittagong (IIUC), initiated by Faculty of Science and Engineering in association with CRP was held during 28-29 October, 2016. Universiti Sains Islam Malaysia was the co-organizer and IEEE, Bangladesh section was the technical Co-sponsor of the conference. Prof. Dr. A.K.M. Azharul Islam, Honorable Vice Chancellor, IIUC presided over the program.

Honorable guests showing tributes on the recitation of the National Anthem of Bangladesh

With the kind presence of Professor Dr. Jamilur Reza Chowdhury as the chief guest, Prof. Dr. M. Kaykobad, BUET, Chair Technical Program Committee, ICISET-2016, Professor A.K.M. Azharul Islam, FInstP, CPhys, Honorable Vice Chancellor, IIUC, Prof. Dr. Md. Delawer Hossain, Pro-Vice Chancellor, IIUC, Professor Dr. Kamaruzzaman Seman, Dean, Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia, ICISET-2016 was inaugurated.

The conference included 6 keynote speeches, 4 invited speeches and 3 plenary sessions and 15 oral sessions. A total of 289 papers were received and reviewed, only 77 papers were selected for the presentation. And finally, 67 papers were registered for the presentation in ICISET-2016.

Professor Dr. Jamilur Reza Chowdhury addressing the session as the chief guest at inaugural session, ICISET -2016

The conference was enlightened with the kind presence of a few world famous scientists as keynote speakers and guests including Professor A.K.M. Azharul Islam, FInstP, CPhys, Professor Dr. Kamaruzzaman Seman, Dean, Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia, Prof. Dr. Mohammad Tariqul Islam, Department of Electrical, Electronic and Systems Engineering, UKM, Malaysia, Prof. Dr. Choudhury Mahmood Hasan,VC, MIU, Bangladesh, Prof. Dr Nowshad Amin, Department of Electrical, Electronic and Systems Engineering, Faculty of Engineering and Built Environment, The National University of Malaysia, and Dr. Anis Haque, PEng, Associate Head and Senior Instructor, Department of Electrical and Computer Engineering, University of Calgary, Canada.

Prof. Dr. A.K.M. Azharul Islam, Vice Chancellor, IIUC is handing over the IIUC crest to honorable chief guest Prof. Dr. Jamilur Reza Chowdhury

A group of renowned researchers including Dr. Janatul Islah Mohammad, Dean, Centre for Graduate Studies, Universiti Sains Islam Malaysia, Dr. Nadia Mohd Effendy, Universiti Sains Islam Malaysia, Dr. Azni Haslizan Ab Halim, Deputy Dean, Division of Corporate and Data Management, Centre for Graduate Studies, Universiti Sains Islam Malaysia, Dr. Mohammad Safiqul Islam, Associate Professor, Dept. of Pharmacy NSTU, Bangladesh were present as the invited speakers in ICISET-2016.

Prof. Dr. A.K.M. Azharul Islam, Vice Chancellor, IIUC is handing over the IIUC crest to honorable special guest Prof. Dr. Kamaruzzaman Seman

There were 15 technical sessions on various areas like software engineering and data sciences, communication engineering, power systems and renewable energy, circuit, device & system, image, signal and multimedia processing, computer networks, motor drives and control systems and pharmaceutical sciences etc. in the conference.

A group of participants with Professor Dr. Jamilur Reza Chowdhury at IIUC premises during ICISET -2016

A group of experts on the related fields including Prof. Dr. Md. Shahadat Hossain, CU, Prof. Dr. Muhammad Quamruzzaman ,CUET, Dr. Muhibul Haque Bhuyan, SEU, Prof. Dr. Saiful Islam, DU, Prof. Dr. Shorif Uddin, JU, Prof. Dr. Saiful Islam, BUET, Dr. Abdul Matin Bhuiyan, CUET, Prof. Dr. M. Jahirul Islam, SUST, Prof. Dr. Abdul Goffar Khan, RUET, Prof. Dr. Kamaruzzaman Seman, USIM, Prof. Dr. Quazi Delowar Hossain, CUET, Dr. Md. Atqur Rahman Ahad, DU, Prof. Dr. Abdur Razzaque, DU, Dr. Md. Nurunnabi Mollah, KUET, Dr. Md. Abdur Rashid, DU were present as the technical chairs during technical sessions.

A partial view of Guests and participants at inaugural ceremony of ICISET -2016

Prof. Dr. Md. Delawer Hossain, Professor, Dept. of EEE, IIUC was the Chair, Mr. Md. Shamsul Alam, Associate Professor, CSE, IIUC was the Co-chair and Mr. Tanveer Ahsan, Associate Professor, CSE, IIUC was the Member Secretary of the Organizing Committee of ICISET -2016.

The two- daylong conference ended with the attractive cultural program on the second day of the conference.

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Album on ICISET-2016

Professor Dr. Jamilur Reza Chowdhury addressing the session as the chief guest at inaugural session, ICISET -2016

Professor Dr. Kamaruzzaman Seman, Dean, Faculty of Engineering and Built Environment, University Sains Malaysia is delivering his speech at inaugural ceremony of ICISET -2016

Prof. Dr. A.K.M. Azharul Islam, honorable Vice Chancellor, International Islamic University Chittagong, Bangladesh is speaking at inaugural ceremony of ICISET -2016

Prof. Dr. Md. Delawer Hossain, Professor, Dept. of EEE, IIUC , Honorable Pro-Vice Chancellor (in-charge), IIUC & Chair, Organizing Committee of ICISET -2016 is delivering his speech

Prof. Dr. Mohammad Kaykobad, Department of Computer Science & Engineering, Bangladesh University of Engineering & Technology (BUET) & Chair, Technical Program Committee of ICISET-2016 is speaking at Inaugural Session of ICISET -2016

Prof. Dr. Md. Monirul Islam, Dean, Faculty of Science and Engineering, IIUC is seen to deliver his speech at inaugural ceremony of ICISET -2016

Mr. Tanveer Ahsan, Associate Professor, CSE & Member Secretary, organizing committee , ICISET -2016 is delivering his speech

Mrs. Shahnaj Parvin, Associate Professor, CSE is presenting the inaugural ceremony of ICISET -2016

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A partial view of Guests and participants at inaugural ceremony of ICISET -2016

A partial view of Guests and participants at inaugural ceremony of ICISET -2016

A partial view of Guests and participants at inaugural ceremony of ICISET -2016

A partial view of Guests and participants at inaugural ceremony of ICISET -2016

A partial view of Guests and participants at inaugural ceremony of ICISET -2016

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Technical session 1C conducted by Dr. Muhibul Haque Bhuyan, SEU

Technical session 1D conducted by Dr. Saiful Islam, DU

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Technical session 2A conducted by Dr. Shorif Uddin, JU

Technical session 2B conducted by Prof. Dr. Md. Saiful Islam, IICT, BUET

Technical session 2C conducted by Dr. Mahmoud Abdul Matin Bhuiyan, CUET

Technical session 3A conducted by Dr. M. Jahirul Islam, SUST

Mr. Mohammad Shamsul Alam, Co-chair, organizing committee is giving crest to Dr. Quazi Delowar Hossain, CUET.

Technical session 3C conducted by Dr. Quazi Delowar Hossain, CUET

Technical session 3C conducted by Dr. Quazi Delowar Hossain, CUET

Technical session 4A conducted by Dr. Md. Atiqur Rahman Ahad, DU

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TTechnical session 4C conducted by Dr. Md. Nurunnabi Mollah, KUET

A partial view of a workshop for Industrial Collaboration with IIUC

Students explaining and showcasing their Projects during conference.

Students explaining and showcasing their Projects during conference.

Students' poster presentation during conference

Workshop on University-Industry Collaboration during conference

Guests and audience at Workshop during ICISET -2016

View exchange with USIM delegates during ICISET -2016

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Cultural Program of ICISET -2016

Participants collecting their Conference ID Card

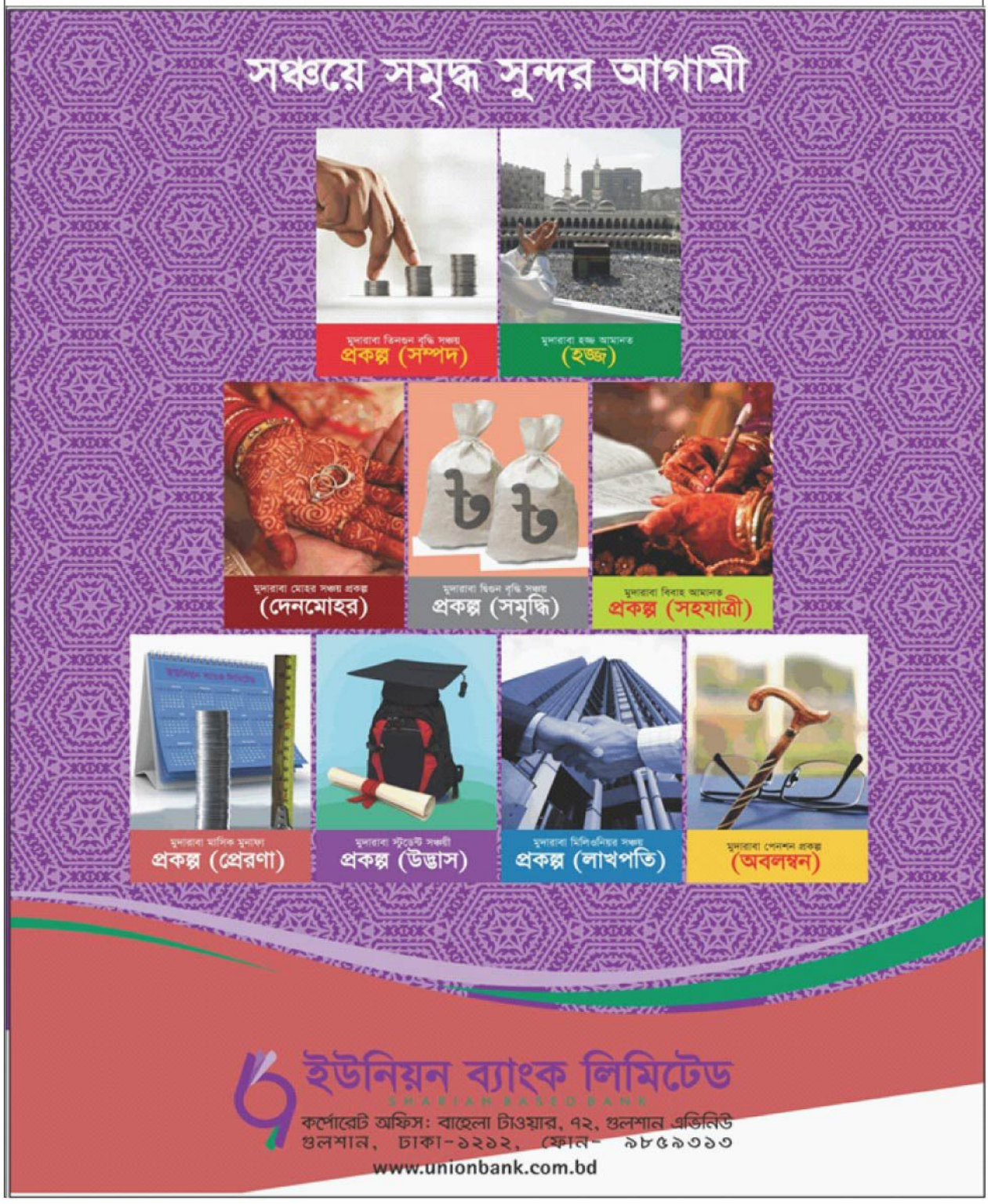
Participants are drinking tea

News of the conference has been broadcasting in national electronic media (NTV)

A partial view of IIUC campus at ICISET -2016

IIUC campus during ICISET -2016

With best compliments



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