ISBN : 978-984-34-1383-3

ICISET 2016

ICISET 2016

28 - 29 October 2016

2016 International Conference on Innovations in Science, Engineering and Technology

International Partner

Universiti Sains Islam Malaysia

Technical Co-Sponsor

IEEE Bangladesh Section

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

ICISET 2016

International Conference on Innovations in Science, Engineering and Technology 2016 (ICISET-2016)

28-29 October, 2016

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

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

International Partner
Universiti Sains Islam Malaysia

Technical Cosponsor
IEEE Bangladesh Section

Platinum Sponsor
Kashem Noor Foundation

Gold Sponsor
Al-Arafah Islami Bank Limited

Silver Sponsor
NITOL-NILOY Nitol Motors Limited

Media Partner
দৈনিক আজাদী
সমকাল

ICISET 2016

CONFERENCE BOOK

International Conference on Innovations in Science, Engineering and Technology 2016 (ICISET-2016)

28-29 October, 2016

ISBN
978-984-34-1383-3

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

Design & Print
Ad Home

Date of Publication
27 October, 2016

ICISET 2016

International Conference on Innovations in Science, Engineering and Technology 2016 (ICISET-2016)

BRIEF CONTENTS

ICISET 2016

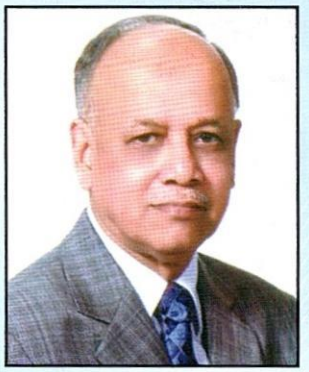
Conference Program Schedule in Brief

Day 1, Friday, 28 October 2016		
Time	**Program**	**Venue**
08:30 – 09:00	Conference Kit Collection	IIUC Central Library
09:00 – 10:30	Inaugural Ceremony	IIUC Auditorium
10:30 – 11:00	Refreshment	IIUC Auditorium
11:00 – 12:30	Plenary Session 1	IIUC Auditorium
12:30 – 13:30	Prayer Break	IIUC Central Mosque
13:30 – 14:30	Lunch	Cafeteria 2
14:30 – 15:00	Invited Talk 1	IIUC Auditorium
15:00 – 16:00	Technical Session: 1A	IIUC Auditorium
14:30 – 16:00	Technical Session: 1B	Seminar Room 3, Academic Building 4 (2nd Floor)
14:30 – 16:00	Technical Session: 1C	Seminar Room 2, Academic Building 4 (1st Floor)
14:30 – 15:00	Invited Talk 2	Seminar Room 1, Auditorium Building (1st Floor)
15:00 – 16:00	Technical Session: 1D	Seminar Room 1, Auditorium Building (1st Floor)
16:00 – 16:30	Prayer and Tea Break	IIUC Auditorium / Academic Building 4
16:30 – 18:00	Technical Session: 2A	Seminar Room 3, Academic Building 4 (2nd Floor)
16:30 – 18:00	Technical Session: 2B	Seminar Room 1, Auditorium Building (1st Floor)
16:30 – 18:00	Technical Session: 2C	Seminar Room 2, Academic Building 4 (1st Floor)
18:15 – 19:15	Cultural Program	IIUC Auditorium

Day 2, Saturday, 29 October 2016		
Time	**Program**	**Venue**
08:30 – 09:00	Conference Kit Collection	IIUC Central Library
09:00 – 10:30	Plenary Session 2	IIUC Auditorium
10:30 – 11:00	Tea Break	IIUC Auditorium
11:00 – 12:30	Technical Session: 3A	Seminar Room 3, Academic Building 4 (2nd Floor)
11:00 – 12:30	Technical Session: 3B	IIUC Auditorium
11:00 – 12:30	Technical Session: 3C	Seminar Room 2, Academic Building 4 (1st Floor)
12:30 – 14:00	Prayer and Lunch	IIUC Central Mosque / Cafeteria 2
14:00 – 15:30	Plenary Session 3	IIUC Auditorium
15:30 – 16:00	Prayer and Tea Break	IIUC Auditorium
16:00 – 17:30	Technical Session: 4A	Seminar Room 1, Auditorium Building (1st Floor)
16:00 – 16:30	Invited Talk 3	IIUC Auditorium
16:30 – 17:30	Technical Session: 4B	IIUC Auditorium
16:00 – 17:30	Technical Session: 4C	Seminar Room 3, Academic Building 4 (2nd Floor)
16:00 – 16:30	Invited Talk 4	Seminar Room 2, Academic Building 4 (1st Floor)
16:30 – 17:30	Technical Session: 4D	Seminar Room 2, Academic Building 4 (1st Floor)
19:00 – 22:00	Closing Ceremony Buffet Dinner	Lord's Inn

Message

ICISET



বাংলাদেশ
বিশ্ববিদ্যালয় মঞ্জুরী কমিশন

Chairman
University Grants Commission, Bangladesh

It gives me immense pleasure to know that Faculty of Science and Engineering (FS&E) of International Islamic University Chitthagong (IIUC), Bangladesh is going to organize an International Conference on Innovations in Science, Engineering and Technology 2016 (ICISET 2016) on 28-29 October, 2016 at its permanent campus in Kumira, Sitakunda, Bangladesh. I am also glad to know that Universiti Sains Islam Malaysia (USIM), is an International partner of the Conference and IEEE Bangladesh section is the technical co-sponsor of the conference. I heartily appreciate the initiative of FS&E, IIUC for arranging such a time demanding international conference.

In this contemporary world of globalization, the demand of technological advancement is ever growing. The unprecedented growth of engineering has eased our life. It is to mention that the gift of science & technology in this era has surpassed all innovation of previous centuries.

I am delighted to learn that several prominent researchers and scientists are going to gather here from home and abroad to share their research work. I firmly believe that this conference will provide a platform for exchanging innovative scientific, technical and engineering ideas. I hope this conference would pave the way for creating ample opportunities for the researchers, academia, professionals and policymakers to explore the latest developments in the field of science, engineering & technology and enable them to contribute the betterment of mankind.

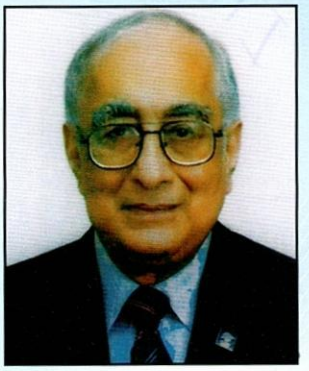
Finally I extend my greetings and felicitations to eminent speakers who have consented to share their expertise, experiences and scientific knowledge with the delegates and to everyone involved in this conference.

I ardently wish a grand success of ICISET-2016 and memorable ending.

Abdul Mannan
09/10/16

Professor Abdul Mannan

Message



Vice Chancellor
University of Asia Pacific, Dhaka, Bangladesh &
Former Adviser to Caretaker Government of Bangladesh

I am delighted to learn that an International Conference on "Innovations in Science, Engineering and Technology 2016" (ICISET2016) 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 28th to 29th October, 2016. I am also happy to know that Universiti Sains Islam Malaysia (USIM), a reputed University in Malaysia, is an international partner of the Conference and IEEE Bangladesh section is the technical co-sponsor of the conference.

Recent developments in Science and Technology have ushered in revolutionary changes in almost every sphere of our lives. By making life easier, science and technology have given us the chance to pursue societal concerns such as ethics, aesthetics, education and justice, and to improve human conditions. For any successful economy, particularly in today's quest for knowledge-based economies, science, engineering and technology are the basic prerequisites. Achievement of the 17 goals of the "Sustainable Development Goals" (SDGs) by the year 2030, adopted by the United Nations in 2015 would be possible only by laying strong emphasis on Science, Engineering and Technology. For example, goal 9 envisages building "resilient infrastructure" and promotion of "sustainable industrialization", which are not possible without Science, Engineering and Technology. Research cooperation in Science and Technology are included in almost all thematic goals in SDGs.

I believe that this prestigious International Conference will become an important congregation of leading scientists, engineers, technologists, researchers, academicians and scholars from home and abroad to exchange and share their research works and experiences before such an august gathering. Their mutual interaction and extensive brain storming will facilitate our young learners in exploring the un-explored areas of Science, Engineering and Technology. I hope this conference will enlighten us in understanding new developments in these fields.

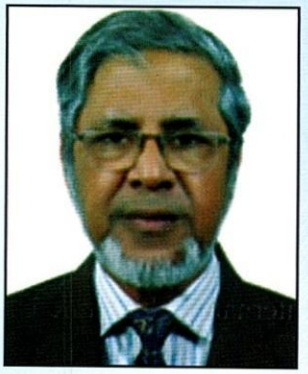
I extend my greetings and felicitations to the organizers for organizing the conference.

I wish ICISET 2016 all success.

Professor Dr. Jamilur Reza Chowdhury

Message

ICISET



Vice-Chancellor
International Islamic University Chittagong

I am really glad that the International Islamic University Chittagong (IIUC) is going to hold its 10th International Conference on Innovations in Science, Engineering and Technology 2016 (ICISET 2016) 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 and Universiti Sains Islam Malaysia (USIM), at its Campus, Kumira during 28 -29th October 2016.

On behalf of International Islamic University Chittagong I would like to extend a very warm welcome to all distinguished guests and participants to the Conference which will be held in our campus situated at Kumira, which is filled with bounty of natural beauty, free from city noises.

In the light of importance of science and technology in the world today, there is a need for scholarly work on its social dimensions. Therefore this prestigious event is organized with a motivation to provide an excellent international platform for the academicians, researchers, students to deliver the latest innovative research results and the most recent development and trends in the field of engineering and applied sciences.

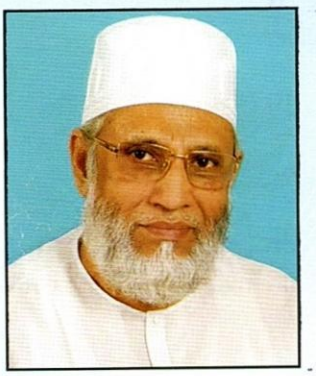
The conference offers a great opportunity to bring together academicians, researchers and scholars around the globe to exchange new ideas, recent results, and future perspectives in all aspects of science and engineering. The conference will include keynote lectures by distinguished researchers as well as ample space for young researchers to present their works. This conference will also offer opportunity to network and discuss the practical challenges encountered and the solutions adopted in their respective domains worldwide.

I should thank the organizer of the conference for making all necessary arrangements. I must also thank the participants, well-wishers from home and abroad who have so kindly undertaken the trouble of coming over here travelling a long distance in order to be with us in this conference.

I wish the conference a grand success, which it rightly deserves.

Prof. Dr. A.K.M. Azharul Islam
Chair
Advisory Committee, ICISET2016

Message



Chairman
Board of Trustees
International Islamic University Chittagong

It is a matter of great pleasure that 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 is going to organize an International Conference on Innovations in Science, Engineering and Technology. I am happy to know that Universiti Sains Islam Malaysia (USIM) is an International partner of the conference. I am, indeed, delighted to know that a conference book containing the conference abstracts and some other important information is going to be published on the eve of the conference to be held on 28 and 29 October 2016.

I hope this conference will provide a platform to bring together the academic researchers, students and professionals from home and abroad and will initiate collaborative research projects in different areas of engineering and technology with exchange of views, ideas, knowledge and experiences.

On behalf of the Board of Trustees of International Islamic University Chittagong, I offer my heartfelt gratitude to the Faculty of Science and Engineering (FS&E) for taking initiative to organize the conference. I believe the conference will surely prove conducive to all in equal length.

I wish the conference a fabulous success.

A.N.M. Shamsul Islam

Message

ICISET 2016 ICISET

Pro Vice Chancellor (In charge)
International Islamic University Chittagong
& Chair, Organizing Committee, ICISET 2016

In the name of Allah, The Most Beneficent The Most Merciful.
On behalf of the Organizing Committee, it is my pleasure to welcome you all to the International Conference on "Innovations in Science, Engineering and Technology 2016 (ICISET2016), which is being held during October 28-29, 2016 at the green premise of IIUC. It is a matter of honour and great pride that Universiti Sains Islam Malaysia is the International Partner and IEEE Bangladesh Section is the Technical Co-Sponsor of the Conference.We thank all the participants for taking the time and effort to attend this conference and interact with IIUC for the greater good of society that can be enabled with science and technology.

We hope that the ICISET2016 will provide a wonderful forum for the leading scientists, engineers and researchers to exchange and share their experiences. We also hope that participants can share their research results about all aspects of Computer Science, Electrical, Electronics and Communication Engineering, Pharmacy and discuss the practical challenges being encountered and the solutions adopted. I am sure that this conference will serve as a useful learning platform for them.

We express our heartfelt gratitude towards the authors and paper presenters, keynote and invited speakers from home and abroad for their thoughts and time in preparing well-written meaningful papers which are the major concern for the conference.We express our gratitude to reviewers from various countries that reviewed these articles and have given their effective judgments even in their busy schedule.

We are glad to receive 289 papers from authors across the country and abroad. The received papers have been peer reviewed by experts in the field at three levels and only 28% of the received papers were finally accepted for presentation.The accepted and presented papers will be published at "IEEE Explore" and IIUC Studies. We have sincerely tried to accommodate original & quality research work by the authors of various universities in Bangladesh and around the world, who are from Canada, Australia, India, Malaysia, Thailand, South Korea and Saudi Arabia. The conference includes 6 keynote speeches, 4 invited speeches and 3 plenary sessions and 15 oral sessions. We have successfully managed the whole ICISET2016 conference with a comprehensive on-line process for abstract, paper submission, reviewer report and notification of acceptance.

This conference is the first of its kind initiated by the Faculty of Science and Engineering since its establishment in 1995. My personal thanks should go to my colleagues belonging to this Faculty who have promoted the idea of this conference and have supported me continuously from the very beginning of the planning of this endeavour. The honorable Vice-Chancellor Prof. Dr. A. K.M. Azharul Islam deserves my special gratitude for his permission to organize this conference. I am also grateful to Center for Research and Publication (CRP) of this University and IIUC authority for providing financial and logistic supports in all respects. We are thankful to all sponsors for their generous support for this conference.

It is indeed undeniable that ICISET-2016 is the result of sincere efforts by the members of the organizing committee, sub-committees, the technical program committee,faculty members and all other who helped to make this program success. 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 thanks to Prof. Dr. Sk. Anowarul Fattah , the Chair IEEE Bangladesh sectionand his team for their sincere effort to select original& quality research work for this conference.The editorial board of this souvenir deserves special thanks for their outstanding efforts in preparing the manuscripts for publication.We are grateful to all of them.

I wish this conference will be a most fruitful for participants with interesting and stimulating discussions and exchange of knowledge so that we can, together, envisage the future of an innovative Bangladesh.

We hope everyone will enjoy their stay at this beautiful campus of the International Islamic University Chittagong. 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

Message

ICISET

Vice-Chancellor
Universiti Sains Islam Malaysia (USIM)

Assalamu'alaikum warahmatullahi wabarakatuh
Salam Sejahtera, Salam 1Malaysia dan Salam Integrasi Naqli dan Aqli

I am pleased that Universiti Sains Islam Malaysia is a partner in the 10th International Conference on Innovations in Science, Engineering and Technology (ICISET 2016) that will be held on 28 and 29 October, 2016. I would like to congratulate the organizers of ICISET 2016 and also the technical co-sponsor, The Institute of Electrical and Electronics Engineers Incorporation (IEEE) Connunications Society BD chapter for this initiative.

Science and Technology is one of the core sectors where sustainable development is required. ICISET maintains a high-quality peer-review process for about 300 submitted papers from home and abroad. For the local students and researchers, this experience is invaluable. It is gratifying to note that a good number of foreign participants, experts and academicians are going to attend and share their latest research results and expertise through several keynote speeches and technical sessions. I firmly belief that this conference will provide a wide platform for discussion and exchange of ideas and experiences among researchers from the academia and the industry- this will certainly boost in streamlining the role of scientists and engineers in the development of the Digital World. Let us hope that there will be several such undertakings in the future.

Congratulations to the participants for their contributions in making the conference a grand success. I hope this conference will promote collaborations among researchers in science and technology and create partnerships among universities and industries. Once again my appreciation to the organizers for their untiring effort in putting together this conference.

Let us continue to learn and develop our professional knowledge.

PROFESSOR DATO' DR. MUSA AHMAD

Message

Chairman
Center for Reseach and Publication (CRP)
International Islamic University Chittagong

In the name of Allah the most Compassionate the most Beneficent

It gives me much pleasure to take this opportunity of writing few words expressing my feelings for the upcoming 10th International Conference on Innovation of Science, Engineering and Technology (ICISET), 2016.

This Conference is going to be organized by the International Islamic University Chittagong (IIUC) under the auspices of the Center for Research and Publication (CRP), and by the initiatives of the Faculty of Science and Engineering (FSE), IIUC. Promoting research has become one of the priorities that are being emphasized by IIUC since its inception.

Nine International Conferences have been organized so far by the active participation of IIUC. In most of the cases IIUC has either played the role of hosting the Conference and the main sponsor or the co-sponsor. We are pleased to say that IIUC is hosting this ICISET Conference at its green premises at Kumira, Chittagong, in a serene atmosphere of its natural and attractive environment.

We are especially grateful to Universiti Sains Islam Malaysia (USIM) and IEEE, Bangladesh for extending their helping hands to be the co-sponsor of this Conference, which has encouraged us much and has enabled us to organize such an important event successfully. We are also thankful to all those educational institutions and research organizations, which have come forward to encourage us by strengthening our hands as international partners of the Conference.

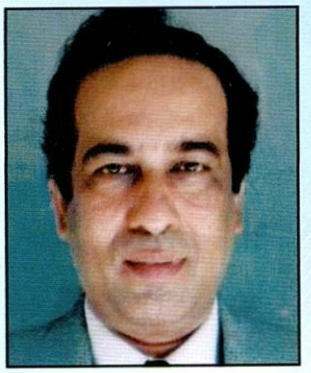
We congratulate to all those scholars who are participating in this conference with their valuable and scholarly papers on different dimensions of the theme of this Conference. We do hope, the findings and the recommendations of a good number of these papers will pave the way to make effective contribution to sustainable techno-based solution for the developing countries in the face of rapidly changing world of information, science and technology of this new millennium.

May Allah give us the best of tawfique to make this Conference successful and beneficial for the generation to come.

Prof. Dr. Abu Bakr Rafique

Message

ICISET 2016 ICISET



Professor
Department of CSE, BUET and
Fellow
Bangladesh Academy of Sciences

I have the pleasant experience of being associated with association with the the international conference titled Innovations in Science, Engineering and Technology 2016 (ICISET 2016) being held during 28-29 October, 2016 at its beautiful campus in Kumira, Bangladesh with the initiative of Faculty of Science and Engineering (FSE) of International Islamic University Chittagong (IIUC), Bangladesh in collaboration with the Center for Research and Publication (CRP). It is also a matter of happiness that Universiti Sains Islam Malaysia (USIM) is the international partner and IEEE Bangladesh section (IEEE-BDS) is the Technical Co-sponsor of the International Conference.

For a country like Bangladesh with a population density 24 times as much as world average, challenges of globalization can only be effectively faced through harnessing the benefits of technology and pushing the frontier of science, which can be facilitated through holding such an international conference. In spite of the advancements in almost all sectors, still the world is not free from hunger, disease, pollution, illiteracy and poverty primarily due to uneven distribution of not only natural resources but also knowledge of science and technology lack of which is forcing the developing nations to be mere markets of the advanced ones.

I believe ICISET 2016 is going to provide an excellent platform for exchange of ideas among talented scientists, engineers, technologists, researchers and practitioners from home and abroad. There's also a tremendous opportunity for researchers at home to come in contact with themselves and foreign researchers. This may open the door for new collaboration which will lead the young scientists to the future opportunities.

I thank IEEE for generously supporting the conference with their expertise, and forcing us to maintain their standard. I welcome all of you to the beautiful campus of IIUC, enjoy Bangladeshi hospitality, be familiar with our rich culture and scenic beauty of the south eastern part of the country. I thank all speakers and delegates for taking the trouble of attending the conference, enrich it and create a vibrant atmosphere of research. I thank all committees for their hard work and university administration for creating an opportunity to host such a conference.

Dr Mohammad Kaykobad
Chair
Technical Program Committee
ICISET 2016

Message

ICISET 2016 ICISET

IEEE Bangladesh Section

Chair,
IEEE Bangladesh Section

It is a great pleasure of IEEE Bangladesh Section (IEEE-BDS) for being the Technical Co-sponsor of theInternational Conference on Innovationsin Science, Engineering and Technology (ICISET 2016)to be organized by theFaculty of Science and Engineering (FSE) of International Islamic University Chittagong (IIUC) during 28-29 October 2016.IEEE, being the world's largest technical professional association, is dedicated to advancing technological innovation and excellence for the benefits of humanity. IEEE BDS was established in 1993with 56 members. The membership reached the landmark of 1000 after 21 years in 2014. I was elected Section Chair in 2015 and tried my best to enhance the number and quality of our activities. As a result, now membership is around 2000. IEEE-BDS was awarded "Outstanding Section Membership Recruitment Performance" in 2015 and again in 2016. Currently BDS has chapters of four technical societies: communication (COMSOC), power and energy (PES), electron device/solid state circuit (EDS/SSCS)), and Engineering in Medicine and Biology (EMBS), two affinity groups: women in engineering (WIE) and young professional (YP), several student chapters of different societies, two SIGHT groups (FLASH and CARG), 25 student branches (eight of them have WIE student branches) in 25 engineering universities. During my tenure as Section Chair, some of the notable events conducted in BDS are: technical seminars/workshops, SYW Congress, industrial tours, IEEE Day celebration, project competitions, outreach programs, humanitarian activities, international robotic challenges, award programs, industrial, educational and professional activities.

In 2015, for the first time in history, IEEE-BDS has successfully organized the IEEE Region 10(Asia Pacific) 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. BDS also launched new events like IEEE ProTalks 2015, IEEE BDS MiniPOCO, IEEE R10 Counselors'/Chairs'/Mentors' Summit 2016, IEEE R10 University-Industry Collaboration 2016, BDS SB Execom Summit 2015; YP AG arranged YP Summit 2015and 2016, WIE arranged R10 WIE STAR program and R10 WIE AGE program, Society Chapters launched area specific conferencesIEEE ICTP2015andMediTec 2016. This year IEEE BDS has provided sponsorship/technical co-sponsorship to 12 international conferences:sponsorship to IEEE WIECON-ECE 2016 (jointly with IEEE Pune Section) and ICIVPR 2016 and tech. co-spon. toICCIT, ICECE, ICECTE, ICEEICT, ICISET, IWCI,MediTech, and NSYSS to be held in 2016 and ECCE and NSYSS to be held in 2017. IEEE BDS is going to organize IEEE R10 POCO 2016 which will serve as a best platform to learn detail about all steps to successfully organize international conferences.

During 2015 and 2016, some of our dedicated volunteers have been selected in different Region 10 committees. In particular, Prof. Celia Shahnaz, founding WIE AG Chair of BDS, who own most prestigious awards from region 10 and international WIE, was selected as 2016 IEEE R10 WIE Coordinator. For the first time BDS got a coordinator position in R10. For the 50 years celebration of Region 10, in R10 SYWL Congress 2016at Bangalore, Bangladesh Section was chosen as one of the five support sections. This year delegates of IEEE BDSreceived 8 awards/prizes in different categories in SYWL Congress. Our greatest achievement is 2016 IEEE R10 Outstanding Humanitarian Activity Award and 2016 IEEE R10 WIE Affinity Group of the Year Award for the activities held in 2015.

I especially thank the conference organizer for hosting the IEEE R10 Workshop on University-Industry Collaboration collocated at the same venue. Interested participants of this conference are getting an opportunity to attend the workshop and gather valuable experience. It is to be noted that IEEEIIUC Student Branch has been formed in the IEEE BDSunder R10 and the petition for forming the IEEE IIUC WIE Student Affinity Group in the BDSis at the final stage, just waiting to receive a formal letter. I express my sincere gratitude to all the authors, speakers, track committees, reviewers, sponsors, advisers and other members whose sincere efforts are the key factors for the success of this conference. Special thanks to TPC Chair Prof. M. Kaykobad for his endless effort to maintain the quality of the conference.I appreciate feedback from all the participants.I wish ICISET2016 all the success

Dr.Shaikh Anowarul Fattah
Professor, Dept. of EEE, BUET

Message

ICISET

Dean
Faculty of Science and Engineering
International Islamic University Chittagong, Bangladesh

It's my pleasure to extend a cheerful welcome to you all at the International Conference on Innovations in Science, Engineering and Technology (ICISET-2016). The conference 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 28th to 29th October, 2016. I am also delighted to say that Universiti Sains Islam Malaysia (USIM), a reputed public University in Malaysia, is an international partner and also the conference is technically co-sponsored by the Institute of Electrical and Electronics Engineers (IEEE) Bangladesh Section.

The Faculty of Science and Engineering (FSE), previously the Faculty of Modern Science, was founded in 1995 at the very opening of IIUC. Currently the Faculty consists of four departments 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. Faculty offers 4 Bachelor programs: B. Sc. in CSE, B.Sc. in EEE, B. Sc in ETE, Bachelor of Pharmacy and a Masters program: M. Sc. in CSE. This faculty being the pioneering faculty of the university, has been offering all round quality education to all its students, while advancing the general mission of the university, and creating and disseminating knowledge for the enhancement of the nation. Though this conference is the 10th international conference organized by IIUC, it is the 1st under the above title which accommodates all four departments of the Faculty of Science and Engineering.

On behalf of FSE family, I would like to express my deep gratitude to all researchers belonging to computer science, electrical and electronics engineering, telecommunications, pharmacy and all other related fields from around the world. 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 research 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 with pioneering spirits and highly specialized engineers who command advanced skills and knowledge in science and technology. I express my heartiest thanks to all the researchers, sponsors, partners, organizing committee members for their contributions in making the conference a grand success. I wish every success of the conference and may your time at IIUC be both fruitful and enjoyable.

Professor Dr. Md. Monirul Islam

Message

Associate Professor
Dept. of Computer Science & Engineering
International Islamic University Chittagong
& Co-Chair, Organizing Committee, ICISET 2016

On behalf of organizing committee I am honored to welcome all of you to International Islamic University Chittagong (IIUC), on the occasion of 2016 International Conference on Innovations in Science, Engineering and Technology (ICISET 2016), 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, Universiti Sains Islam Malaysia (USIM) and IEEE Bangladesh Section as the Technical Co-sponsor of the conference.

The aim of the ICISET 2016 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 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. About 289 paper were submitted from 12 different countries and all individual papers were blind reviewed by minimum two experts. The paper acceptance rate of this conference is about 25.6%. All accepted and presented papers are expected to be included in IEEE Xplore and will be indexed by EI. The Papers which will not be covered in IEEE scope will be considered for publication in IIUC Studies.

The conference features, keynote speakers from six outstanding researchers: Professor Dr. A.K.M. Azharul Islam (Vice Chancellor, International Islamic University Chittagong), Professor Dr. Kamaruzzaman Seman (Dean, Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia (USIM)), Professor Dr. Choudhury Mahmood Hasan (Vice Chancellor, Manarat International University), Professor Dr. Mohammad Tariqul Islam (Universiti Kebangsaan Malaysia),Professor Dr. Nowshad Amin (Universiti Kebangsaan Malaysia) and Dr. Anis Haque (University of Calgary, USA).

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

I wish your active participation in ICISET 2016 and make this conference a grand success. Have an enjoyable stay in the IIUC green Campus and the Port City of Chittagong, Bangladesh.

Mohammed Shamsul Alam

Message

ICISET 2016 ICISET

Associate Professor
Dept. of Computer Science & Engineering
International Islamic University Chittagong
& Member Secretary, Organizing Committee, ICISET 2016

It gives me immense pleasure to welcome everyone to the 2016 International Conference on Innovations in Science Engineering and Technology (ICISET 2016). I greet experts, academicians, researchers, entrepreneurs and students from diverse grounds who have come together to discuss the issues of concern to the state of the art technology and contribute to the enrichment of human civilization. This conference will definitely give us the opportunity to know the trends of technological advancement in different areas of science and engineering. ICISET 2016 gives researchers and practitioners a unique opportunity for sharing their perspectives with others interested in the various aspects of science and technology.

ICISET 2016 invited research papers from academia around the world. A total of 289 submissions were received and reviewed. After a rigorous review based on novelty and technical merit, only 77 full papers have been selected for presentation. This conference features keynote speeches from six outstanding researchers: Dr. A. K. M. Azharul Islam, Dr. Kamaruzzaman Seman, Dr. Choudhury Mahmood Hasan, Dr. Mohammad Tariqul Islam, Dr. Nowshad Amin and Dr. Anis Haque.

It is my great pleasure to acknowledge that putting together all these events of ICISET 2016 was a great team effort. I first thank our keynote and invited speakers for participating in our conference. I am grateful to the authors for providing the content of the program. I must thank the Chair, Co-chairs and the members of the Technical Program Committee of ICISET 2016, whose contribution was immense to make this event successful. I also thank the reviewers for their hard work in timely reviewing papers and providing their valuable feedback for the authors. I would like to take this opportunity to express my gratitude to IEEE Bangladesh Section, especially to the Executive Committee members for supporting us as the Technical Co-sponsor of ICISET 2016. Finally, I thank all the members of Organizing Committee and different Sub-committees for their relentless effort.

I would like to thank our sponsors and partners for their spontaneous support. I would specially like to thank the Faculty of Science and Engineering of International Islamic University Chittagong (IIUC) for hosting the conference and would like congratulate all its teachers, students and staff on this auspicious occasion.

I have the best wishes for the grand success of this conference.

Tanveer

Tanveer Ahsan

ICISET

Editor's Note

At the very outset, I would like to express my heartfelt gratitude to Almighty Allah (SWT) who has enabled us to publish a Conference Book on the occasion of ICISET–2016.

It is necessary to mention that International conference on Innovations in Science, Engineering and Technology 2016 (ICISET–2016) is going to be organized on 28-29 October, 2016 by the Faculty of Science & Engineering of International Islamic University Chittagong (IIUC) for the first time with Technical Co-Sponsorship of IEEE, Bangladesh Section and International partnership of Universiti Sains Islam Malaysia (USIM). Nine International conferences have been initiated by International Islamic University Chittagong (IIUC) in association with Center for Research and Publication (CRP) so far. In this regard, this conference is the 10th international conference of IIUC.

It is thrilling to write an editorial on the eve of publishing the Conference Book, ICISET–2016. All the readers are welcome to receive this book which has been published on the occasion of International Conference on Innovations in Science, Engineering and Technology.

The contents of the conference Book are initiated with the messages from dignitaries followed by keynote speech, invited speeches, abstract of registered papers, list of members of different committees and sub-committees, program schedule etc. The full papers are available on CD.

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. All the affairs of CSE, EEE, ETE, Physics, Applied physics etc. have been categorized in Track-01 and the particulars of Genetic Engineering, Biotechnology, Pharmacy etc have been grouped in Track-02. There are 59 abstract of papers in Track-01 and 8 abstract of papers in Track-02. So any author can easily find his paper as per Track. Moreover, an author index is available in the last portion of the book.

In order to produce a better output in publishing this conference book, a sincere laborious team sprit has been retained. The members of this publication committee deserve special thanks for their outstanding efforts in preparing this publication.

I would like to extend my ardent gratitude to all those who have contributed sincerely in various ways to make the publication successful. Despite our all-out care, there might remain some printing mistakes. I apologize if anything happens so. It is our expectation that we will strive to make every publication better than the one before.

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

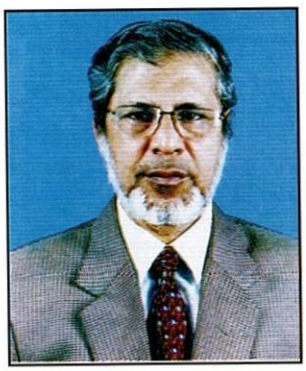
ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

Exciting 3D MAX Phases and the Derived 2D New Wonder Materials

Professor A.K.M. Azharul Islam, FInstP, CPhys
Vice-Chancellor
International Islamic University Chittagong
Chittagong, Bangladesh

Abstract: Recently synthesized nano-laminated 3D MAX phases are found to be exciting materials which combine certain best attributes of metals with those of ceramics. We utilized first-principles DFT method to predict the electronic, thermal, and optical properties of several such MAX phases. Further the prediction of yet unobserved phases is attempted by considering several hypothetical phases using the finite-temperature calculation of the Gibbs energy difference between the predicted compound and the competing phases obtained from the phase diagram to study thermodynamic stability.

We also review on the major breakthrough in materials science involving the transformation of the 3D MAX phases into 2D structure called MXenes, as a kin to Grapheme. These so-called MXenes have greatly different and unique properties that demonstrate good performance as cathode materials in Li-S rechargeable batteries and great potential for applications in nano-electronics and nano-spintronics due to their unique quantum confinement effects.



Biography: Prof. Dr. A. K. M. Azharul Islam is the Vice-Chancellor of International Islamic University Chittagong, Bangladesh. He 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: Elementary particle physics during 1967 to 1978, (ii) Condensed Matter Physics with current interest in Superconductivity, defects of solids, electronic structure of materials, MAX phases.

National and International Awards:

- United Group Research Paper Award 2016 (Awarded by the Educ. Minister at Dhaka, 22 April 2016).
- Honor as Author: UGC Accorded Reception to Authors of Books published by UGC (Certificate & Crest by the Education Minister at Dhaka UGC Auditorium, 9 March 2016).
- Bangladesh Academy of Sciences Gold Medal 2006 – in Recognition of significant contributions in the field of Condensed Matter Physics (2006)" (Awarded 31 July 2008) – awarded by the Hon'ble President of Bangladesh.
- International ISESCO Science Award 2001 - in Recognition of Meritorious Achievements in the Field of Physics (award money $5000 + Travel & stay abroad also provided) – awarded in Sharjah (UAE) Meeting.
- University Grants' Commission Award (1997) for Original Research in Science – 2006.
- 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).
- Regular Associate (six years) and Senior Associate, Int. Centre for Theoret. Physics (Trieste, Italy).
- President's Medal for Pride of Performance (1968) – (Gold Medal, Prize-money & tour-cost to only one student in the then East Pakistan at the PG stage) - presented by the President of erstwhile Pakistan at a Ceremony in the President's House.

ISBN : 978-984-34-1383-3

- Merit Scholarship Award for doctoral work at Imperial College of Sci. & Tech. in 1967.

Professional Experience: Prof. Islam served Rajshahi University as a Lecturer in Physics from January 1968. He was promoted to higher posts till he became Professor in early 1984. During his long 45-year 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 a dozen International Journals, and eight national journals.

Publications and Research Guidance: Professor Islam already guided 89 research students for their M.Sc, M.Phil and Ph.D works – currently guiding 3 research students including 1 Ph.D student.

Total number of publications is 258 – Among these are 173 research publications mostly in intern journals, (Visit: https://www.researchgate.net/profile/A_K_M_Islam3/publications); 72 general articles on Science, Education & National & Intern issues; 13 books (published nationally & in India and in 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 27 countries and attended 45 international conferences; Organized two international workshops (participation from 15 countries) in 1996 and 1998.

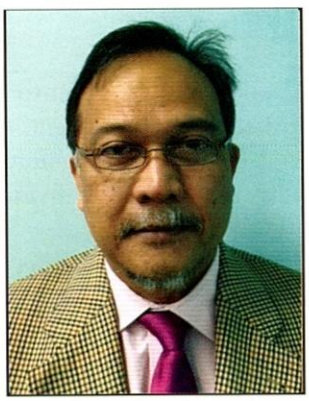
Prof Islam is an elected Fellow of (i) The Institute of Physics (London), and (ii) Bangladesh Academy of Sciences. He is also Member of different professional bodies such as: (i) The New York Academy of Sciences, (ii) The American Physical Society, (iii) AAAS (USA), (iv) The Asian Physical Society, (v) 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.

ISBN : 978-984-34-1383-3

Internet of Things: Technology and Standardization

Professor Dr. Kamaruzzaman Seman
Dean
Faculty of Engineering and Built Environment
Universiti Sains Malaysia

Abstract: Internet of Things (IoTs) have been the latest buzzword in networking technology. It provides a complete connectivity for devices such sensors, actuators, etc over the Internet. IoTs enable users to monitor and control the sensors remotely as long as they are hooked to the network. Since the introduction IoTs, industries have been fed with a plethora of technologies that underpins their applications. A critical issue faced by the industry players is on how to interface the varius technologies so that they can talk to each other seamlessly. The focus of this presentation is to look into various Internet of Things technologies and the standard bodies that are involved directly to support the seamless connectivity of the networked devices.



Biography: He obtained Bachelors' Degree in Electrical Engineering from Universiti Teknology Malaysia (UTM) in 1985, MSc of Telematics from Esses University UK in 1986, and PhD in Electrical Engineering (Telecom Networks) from Strathclyde University UK in 1994. From May 1985 to Nov.2001 he was at the Faculty of Electrical Engineering UTM where he was appointed as a full professor in telecommunication engineering. From Dec 2001 he did his industrial attachment at a provate ICT companies working on various ICT related projects. From Dec 2002 he joined Telekom Malaysia Research and Development, which is a subsidiary of Telekom Malaysia as Senior Principle Researcher working on various telecom research projects such as switch and router design, optical switching, network security, and NGN systems. The last post held at Telekom Malaysia R & D was the Head of Department of Applied Research. In Dec 2005, he joined University Sains Islam Malaysia as a Professor in Network security. Since 4th January 2016 he has been the founding Dean of the Faculty of Engineering and Built Environment Universiti Sains Malaysia. His is also a member of IoT Malaysian Working Group. His research interests are networking technologies, queuing theory for network performance, IoTs, and Cryptography.

ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

UHF/VHF Planar Antennas for Small Satellite Applications

Mohammad Tariqul Islam
Professor, Department of Electrical, Electronic and Systems Engineering Universiti Kebangsaan Malaysia (UKM), Malaysia
Visiting Professor, Kyushu Institute of Technology, Japan.

Abstract: Small Satellites are cube-shaped small satellites with dimension of 10 cm per side and a mass less than 1 kg. The cubic structure includes an enclosed aluminium box with solar cells fixed to the outside walls. Antennas, usually flexible monopoles, are deployed perpendicular to the faces, at the corners. The small satellites also known as CubeSats have been mostly used for university projects, giving students practical experience in designing and testing hardware for space. Reliable, high-performance, commercial CubeSats are now available and there is an increasingly compelling case for CubeSats to be used in many applications, including science, communications, Earth observation and technology demonstration. CubeSats usually employ VHF and UHF communication and it is very challenging to design compact high-performance antennas for this due to their small physical dimensions. Usually, independent flexible monopoles are mounted on one face of the box to provide up- and downlink capability. The antennas are rolled around the satellite before deployment and held in place with monofilament secured using a short length of Nichrome wire inside the spacecraft. Upon deployment, a current is passed through the Nichrome wire, which heats and melts the monofilament releasing the antennas. The use of wire monopoles, though simple, severely limits the data transmission rate for small satellite. Using UHF and VHF require large, deployable antennas that increase the risk of mission failure. It is a challenge to provide all necessary components within the physical limitations and restrictions. One of the main concerns for Cube satellite is to have adequate, efficient and economically viable antenna. Printed antennas are one the principal candidates for this kind of application, especially because of their lightweight characteristics. In this speech, a compact UHF/VHF printed antenna has presented for CubeSat apllication. To compact the dimension of the antenna, meander line patch has designed on one side of the substrate and partical ground plane has printed on another side of the substrate. Rogers substrate has been considered as substrate material because its high reliability characteristics for aerospace applications and a coaxial fed line is used to excite the patch and ground plane of the substrate. The numerical design has been conducted through electromagnetic simulator and experimental prototype through PCB fabrication has done in UKM, Microwave Lab. The final prototype will be integrated in the Joint Global Multi-Nation Birds Satellite project. acronym as "Birds project." is a cross-border interdisciplinary satellite project for non-space faring countries supported by Japan (participating countries are; Ghana, Mongolia, Nigeria and Bangladesh). The mission of this BIRDS project is "Make the first step toward creating an indigenous space program by designing, building, testing, launching, and operating, the first satellite for participating nations.

Biography: Mohammad Tariqul Islam is a Professor at the Department of Electrical, Electronic and Systems Engineering of the Universiti Kebangsaan Malaysia (UKM) and visiting Professor of Kyushu Institute of Technology, Japan. He is currently the group leader of the Radio Astronomy Informatics group at UKM. He is the author of over 300 research journal articles, nearly 165 conference articles, 4 research level books and a few book chapters on various topics related to antennas, microwaves and electromagnetic radiation analysis with 11 inventory patents filed. Thus far, his publications have been cited 2505 times and his H-index is 28 (Source: Scopus). He is now handling many research projects from the Malaysian Ministry of Science, Technology and Innovation and Ministry of Education, and some international research grants from Japan. His research interests include communication antenna design, radio astronomy antennas, satellite antennas, and electromagnetic radiation analysis.

Dr. Islam currently serves as the Editor-in-Chief for the International Journal of Electronics and Informatics and Associate Editor for International Journal of Antenna and Propagation and Electronics Letter. He received several International Gold Medal awards, a Best Invention in Telecommunication Award, a Special Award from Vietnam for his research and innovation, and Best Researcher Awards in 2010 and 2011 at UKM. He also won the best innovation award in 2011 and the Best Research Group in ICT niche in 2014 by UKM.

He was the recipient of Publication Award from Malaysian Space Agency in 2014, 2013, 2010, 2009 and the Best Paper Presentation Award in 2012 International Symposium on Antennas and Propagation, (ISAP 2012) at Nagoya, Japan and in 2015 in IconSpace. He is a senior member of the IEEE and member of the Applied Computational Electromagnetic Society (ACES) and Institute of Electronics, Information and Communication Engineers (IEICE).

ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

Future Prospects of Pharmacists in Bangladesh

Prof. Dr. Choudhury Mahmood Hasan
Vice-Chancellor
Manarat International University (MIU)
Bangladesh

Abstract: Pharmacy is an integral part of the interdisciplinary healthcare system that links health sciences with chemical sciences and aims to ensure the safe and effective use of pharmaceutical drugs. The pharmaceutical industry in Bangladesh is one of the most developed technology sectors within Bangladesh. This sector provides 97% of the total medicinal requirement of the local market. Our local industries export a wide range of pharmaceutical products, covering all major therapeutic classes and dosage forms to more than 100 countries, including Europe. Along with regular forms like tablets, capsules and syrups, Bangladesh also exports specialized products like HFA inhalers, CFC inhalers, suppositories, nasal sprays, injectables, IV infusions, etc. Pharmaceutical companies are expanding their business with the aim to expand the export market. This talk will summarize the future prospects of pharmacists in different sectors in Bangladesh like industry (medicine and API), hospitals, clinics, marketing, community pharmacy, drug administration, academia, research, drug informatics, etc.

In the developed and most of the developing countries, clinical pharmacy and community pharmacy have established into a separate discipline and become a vital part of patient care. However, as compared to industrial pharmacy other important branches of this sector, like hospital pharmacy, clinical pharmacy and community pharmacy are still in its infancy in the country. There are ample of opportunities for the pharmacists to work in these sectors and this will contribute much in improving the health care facilities of the general masses of Bangladesh. Active pharmaceutical ingredients (API) are the principal constituents for medicines. Unfortunately, major percentage of demand for APIs is fulfilled through import. This will be another very promising branch of this sector, where pharmacists can also play an important role.

Biography: Choudhury Mahmood Hassan is a Professor of the Faculty of Pharmacy of University of Dhaka, Bangladesh and now working as a Vice-Chancellor in Manarat International University, Bangladesh. He is the authors of over 300 national and international research articles. He is included in the list of "Leading Scientists and Engineer" of OIC Member states. He is the recipient of 'Hakim Habibur Rahman Gold Medal 2003' for outstanding contribution in the field of medicinal plants research. He also the recipients of 'Bangladesh Academy of Sciences Gold Medal 2006', 'Chandraboty Gold Medal 2007', and 'Atish Dipankar Gold Medal 2008'.

Dr. Hassan is a member of the Editorial Board of the Bangladesh Pharmaceutical Journal and Dhaka University Journal of Pharmaceutical Science. He is the main author of two published books. He is the reviewers of more than 8 international scientific journals. During the visiting time of different countries he attended more than fifty six international seminars and symposiam.

ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

Solar Photovoltaic Energyfor a RE(Renewable Energy)-Enriched, Sustainable World with Versatility in Applications

Nowshad Amin
Professor, Department of Electrical, Electronic and Systems Engineering,
Faculty of Engineering and Built Environment,
The National University of Malaysia,
43600 Bangi, Selangor, Malaysia
Dept. of Electrical Engineering, College of Engineering,
King Saud University, Riyadh 11451, Saudi Arabia

Abstract: We, mankind, are at clear threat of extinction of conventional energy resources' known reserves. Moreover, nuclear powerplants, once thought-to-be-savior, have proven to be vulnerable to pose severe accidental/environmental threats to mankind's quenching thirst of energy. Solar cells as the most potential renewable energy resourcehave come acrossvarious generations afterbeing demonstrated first at Bell Labs (6% in 1954)to today's multi mega watt-peak solar farms with the utmost achievable conversion efficiencies (over 25%) for electrical power generation. It is not exaggerated to say we have replaced over 250 Nuclear Power Plants with almost 250 GW of Solar Photovoltaic energy harvesting plants by 2015. However, researchers around the world are still trying to find energy harvesting in the form of electricity with many kinds of solar cells starting from inorganic silicon based to organic based ones. Even though, the first generation solar cells that are mainly crystalline or multicrystalline silicon based ones are still dominating, the quest for other options presented many other potential candidates such as amorphous silicon, cadmium telluride, copper-indium-suphide etc. since early 70s. Ever since the second generation solar cells came into the scenario, most of these are thin films based which require many supporting layers to form the complete cells in homo or hetero junction configurations but within a total thickness of 2-10 micron. Semiconductor material science including fabrication technology on many compound semiconductors has been evolving over the period of time to take them to commercialization stages whereas conversion efficiencies continue to mark over 20% till present (e.g. CIGS, CdTe, CZTS). This talk will include thin film solar cells from its inception in research arena toward successful commercialization till to date. However, this will also include the current status on many novel materials like Perovskites based solar cells as they have tremendously achieved conversion efficiencies to the extent in just 2 years that 2nd generation e.g. thin films have got in 20-30 years. This will boost the hope for renewables in the coming era of energy crisis, giving sustainability to smaller calculator to BIPV or even flying aircraft.

Biography: Dr. Nowshad Amin is currently serving as a Professor at the Dept. of Electrical, Electronic & Systems Engineering of The National University of Malaysia (@ UniversitiKebangsaan Malaysia), where he also leads the Solar Photovoltaic Research Group under the Solar Energy Research Institute (SERI). After the higher secondary education (HSC 1989) from Comilla Cadet College 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 has also been serving as the CTO cum director of a University Spin-off company financed by the Malaysian Technology Development Center (MTDC). He has been serving 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 more than 200 peer-reviewed publications, a few books and book chapters. He has been holding a visiting professorship position at the King Saud University of Saudi Arabia since Dec. 2009. 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.

ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

Health and Safety Education in Science and Engineering

Dr. Anis Haque, PEng
Associate Head and Senior Instructor
Department of Electrical and Computer Engineering
University of Calgary, Canada

Abstract: This presentation will cover the need of health and safety education for science and engineering educators and students in universities across Bangladesh. It will discuss the gap between the safety education and regulations in place. This presentation will help students learn the benefit of health and safety education in their future career. It will also help them differentiate between safety enforcement and safety culture. It is a known challenge for the educators to adopt new courses in the existing curricula. Current models in some of the engineering schools in Canada will be shared to address the challenges. The presenter, a Director on Minerva Canada's Board, will present how this not-for profit organization is helping science and engineering schools enhance their health and safety curricula in Canada.

Biography: Dr. Anis Haque has 24 years of university teaching and research experiences in science and engineering. His primary research interests are in nanotechnology, renewable energy and engineering education. He received PhD in Materials Science from the Japan Advanced Institute of Science and Technology (JAIST) in Japan and completed a master degree in Computer Science from the University of Cambridge in England. Heholds another master degree and a bachelor degree with honors in Applied Physics and Electronics. He is the Associate Head and a Senior Instructor in the Department of Electrical and Computer Engineering at the University of Calgary, in Canada. He received several Teaching Excellence Awards nominated by the students. He is a professional engineer registered at the province of Alberta, in Canada.

Dr. Haque is dedicated to promoting the teaching of Health & Safety in Canadian universities and colleges. He has been instrumental as a Director on Minerva Canada's Board for 6 years, a not-for-profit organization for advancing Health and Safety education in Canada. He has been a major contributor in developing educational materials, which are now being used by engineering schools in Canada. He is also involved in a major initiative at the University of Calgary for upgrading their Health and Safety curriculum in engineering. In 2014, Dr. Haque received 'Minerva Education Award of Honour' for his dedication and significantcontributions in advancing Health and Safety education.

He has true passion for science and engineering outreach among elementary to high school (K-12) students. Dr. Haque founded AASEE (Association for the Advancement of Science and Engineering Education), a registered charity, in 2011 and has been serving as the Chair since then. He has reached more than 5,000 students directly in the K-12 classrooms.He had also been the Chair of TISP Canada, an educational activity of IEEE. He is a Program Director at SHAD since 2013, a registered Canadian charity that empowers exceptional high school studentsat a pivotal point in their education. helps recognize their own capabilities and envision their extraordinary potential as tomorrow's leaders and change makers. He served for 4 years as a member on the Board of Examiners of APEGA, the organization that regulates the practices of engineers in Alberta.

ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

Invited Paper

Revelation of Acoustics Knowledge Based on the Holy Quran

Associate Professor Ir. Dr. Janatul Islah Mohammad
Dean,
Centre for Graduate Studies,
Universiti Sains Islam Malaysia

Abstract: The Holy Quran was revealed to Prophet Muhammad p.b.u.h. from 609 to 632 A.D. over a period of 23 years, by aural revelation. Muslims believe that the Holy Quran is the final and complete testament from God, the one and only, to be used as the main reference in any aspects of human lives. However, there are not many work in science-related studies, acoustics for example, which refer to the Holy Quran as a book of knowledge. This paper explores several interesting verses in the Holy Quran and relates them with the known theory and current findings with respect to acoustics, the science of sound.

Biography: Associate Professor Ir. Dr. Janatul Islah Mohammad obtained her Bachelor's Honours Degree in Electronic Engineering with Music Technology Systems from the University of York, United Kingdom in 1999 and a Master's degree in Sound and Vibration Studies from the University of Southampton, United Kingdom in 2002. She received her Doctoral degree in Sound and Vibration Studies from the University of Southampton in 2006. She used to work as an Acoustic Engineer in Kuala Lumpur prior to continuing her Master's degree. From March 2003 until April 2014, she was working as Lecturer and promoted to Senior Lecturer (2008) and Associate Professor (2012) at the Universiti Teknikal Malaysia Melaka (UTeM). She joins the Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia (USIM) in April 2014 and has been appointed as the Dean of Centre for Graduate Studies since May 2015. She has a vast experience as administrator after her secondment at the Ministry of Higher Education, Malaysia from 2008 until 2014. She has many experiences in presenting lectures, talks and technical papers at national and international conferences. She has published tremendous articles in highly esteemed journals. Her research interests are on acoustics and noise control.

ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

Invited Paper

Alternative Medicines on Osteoporosis

Dr. Nadia Mohd Effendy
B.BiomedSc, PhD (Pharmacology)
Faculty of Medicine & Health Sciences,
Universiti Sains Islam Malaysia

Abstract: Osteoporosis is characterized by skeletal degeneration with low bone mass and destruction of microarchitecture of bone tissue which is attributed to various factors including inflammation. Women are more likely to develop osteoporosis than men due to reduction in estrogen during menopause which leads to decline in bone-formation and increase in bone-resorption activity. Estrogen is able to suppress production of proinflammatory cytokines such as IL-1, IL-6, IL7, and TNF-α. This is why these cytokines are elevated in postmenopausal women. Studies have shown that estrogen reduction is able to stimulate focal inflammation in bone. Labisia pumila (LP) which is known to exert phytoestrogenic effect can be used as an alternative to ERT which can produce positive effects on bone without causing side effects. LP contains antioxidant as well as exerting anti-inflammatory effect which can act as free radical scavenger, thus inhibiting TNF-α production and COX-2 expression which leads to decline in RANKL expression, resulting in reduction in osteoclast activity which consequently reduces bone loss. Hence, it is the phytoestrogenic, anti-inflammatory, and antioxidative properties that make LP an effective agent against osteoporosis.

Biography: Dr. Nadia Mohd Effendy obtained her Bachelor's Degree in Biomedical Sciences from Universiti Kebangsaan Malaysia (UKM) in 2011 and Doctorate degree in Pharmacology in 2014 from the same University. She was appointed as Assistant Professor at Cyberjaya University College of Medical Sciences from 2014-2015. She is currently Senior Lecturer in Faculty of Medicine & Health Sciences, Universiti Kebangsaan Malaysia. She has many experiences in presenting research talks and papers at national and international conferences. She has also published tremendous articles in highly esteemed journals. Her research interests are on Pharmacology, Toxicology, Radiology, Drug Metabolism, Bone Metabolism and Alternative Medicine.

ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

Invited Paper

Framework of Packet Sanitization for Information Hiding in TCP/IP

Dr. Azni Haslizan Ab Halim
Deputy Dean,
Division of Corporate and Data Management,
Centre for Graduate Studies,
Universiti Sains Islam Malaysia

Abstract: Traces of the packets transmitted across network can be beneficial for troubleshooting network which aid as crucial data source for monitoring and management of computer network. Still, they often contain sensitive information such as user logon credentials, website address users have visited, files transfer details, locations of user emails, banking details, names or addresses that belong to someone. There are numerous sanitization or anonymization tools available to hide sensitive information, but they tend to be focused on to sanitizing large volumes of network traces to feed repositories of traces that researchers can use to study network traffic flows rather than sanitizing small number of packet traces or focusing on traffic trace for a single user. Moreover, these existing tools are concentrating on sanitizing on lower layer protocols up to the TCP layer and eliminate application layer headers. This paper study an enhanced methods and techniques on how to sanitize the sensitive information in the application layer of TCP/IP stack. The aim of this paper is to improve packet traces sanitization. In addition, a new application-level specific framework for packet sanitization is also designed. The framework can be served as a stand-alone application to assist network troubleshooting or for learning purposes in a small scale organization.

Biography: Dr. Azni Haslizan obtained her Bachelor's Degree in Computer Information Systems from Bradley University, Illinois, USA in 1998 and M.Sc in Digital Communication from Monash University, Clayton Australia in 2002. She received her PhD in Computer Science (Wireless Security) from Universiti Technical Melaka Malaysia (UTeM) in 2014. From May 2003 until May 2007, she was at the Faculty of Computer Science and Information Technology, Universiti Malaysia Sarawak (UNIMAS). She joins Universiti Sains Islam Malaysia (USIM) in May 2007 and has been appointed as Deputy Dean of Centre for Graduate Studies. She has many experiences in presenting research talks and papers at national and international conferences. She has also published tremendous articles in highly esteemed journals. Her research interests are on Wireless Security, IoTs, and Cryptography.

ICISET
International Conference on Innovations in Science, Engineering and Technology (ICISET-2016)
ISBN : 978-984-34-1383-3

Invited Paper

Association of Different Genetic Polymorphisms with the Risk of Lung, Breast and Colorectal Cancer in the Bangladeshi Population

Dr. Mohammad Safiqul Islam
Associate Professor
Department of Pharmacy, Noakhali Science and Technology University, Sonapur, Noakhali-3814, Bangladesh, E-mail: research_safiq@yahoo.com

Abstract: The incidence and mortality rates of lung, breast and colorectal cancer are increasing day by day worldwide as well as in Bangladesh. CYP1A1, CYP2A6, CHRNA5, CYP3A4, CYP3A5 SULT1A1, XRCC1, GSTM1, GSTP1, GSTT1, XPC, ERCC1 and TP53 are biologically plausible genes as risk factors for lung cancer whereas BRCA1, BRCA2, RAD51, and HER2, GSTP1 and ABCC4 and TP53 are considered either responsible for the development of breast cancer or affect the response of chemotherapy. The DPYD and MTHFR gene polymorphisms affect the 5-Fluorouracil (5-FU) related toxicity and response in the colorectal cancer patients whereas TP53 gene polymorphisms are associated with colorectal cancer. Six, three and two case-control pharmacogenomics studies have been conducted by our research group on the Bangladeshi lung, breast and colorectal cancer patients respectively. CYP1A1*2B, TP53rs1042522, SULT1A1rs9282861, XRCC1rs25487 and GSTP1rs1695 polymorphisms are associated with an increased lung cancer risk and CYP2A6*4 is associated with a decreased lung cancer risk in our population. XRCC1rs25487, GSTP1rs1695 and XPCrs2228001 polymorphisms are also associated with the outcome (response and toxicity) of platinum based chemotherapy in the lung cancer patients. Patients carrying BRCA1/2 mutations, RAD51rs1801320, HER2rs1136201, TP53rs1042522 and CDH1rs16260 have an elevated risk for the development of breast cancer. We also found that GSTP1rs1695 polymorphism was strongly associated with the response of chemotherapy whereas ABCC4rs9561778 polymorphism was significantly associated with the cyclophosphamide-epirubicin-5-fluorouracil based chemotherapy induced toxicities. In case of colorectal cancer, we found both TP53rs1042522 and CDH1rs16260 polymorphisms are responsible to increase the risk of colorectal cancer development in the Bangladeshi population whereas MTHFR C677T polymorphism was found to significantly increase the response to 5-FU and DPYD*2A is associated with 5-FU related life-threatening toxicities. Our studies indicate that there is a strong association between the genetic polymorphisms of the above-mentioned genes with the risk of lung, breast and colorectal cancer in the Bangladeshi population.

Biography: Dr. Mohammad Safiqul Islam is serving as an Associate Professor and Chairman, Department of Pharmacy, Noakhali Science and Technology University. He is a selfmotivated research oriented personnel. After the secondary education (SSC, 1991) from Ideal High School, Motijheel, Dhaka and higher secondary education (HSC, 1993) from Notre Dame College, he completed B.Pharm and M.Pharm from the University of Dhaka. He also completed his Ph.D. from the same University under the supervision of Professor Dr. Abul Hasant, where one of his PhD publications obtained the University Grants commission (UGC) Bangladesh award, 2013. He got JSPS Postdoctoral fellowship (standard, 2 years) for completing Postdoctoral research in the Shimane University, Japan. He has collaboration with some local and international research institutes. A research article was published from the coloration with a Canadian research group in the Neuron, having impact factor 13.97. Dr. Islam also works with Professor Dr. Ann K Daly of the Newcastle University, UK and published a research article with her. He has also collaboration with a faculty member of Monash University Malaysia and recently an article has been published from this collaboration. He received a grant from the Ministry of Science and Technology, Bangladesh in 2013. His research is focused in the areas of Pharmacology and Clinical Pharmacy, pharmacogenomics, molecular biology, cancer biomarkers and pharmacology of natural products. He has also expertise in HPLC, LC/MS/MS, PCR-RFLP, ELISA, DNA sequencing and 3T3L1 cell culture and pharmacokinetic study of pharmaceuticals in human model. Dr. Islam is now working with the pharmacogenomics of schizophrenia, preeclampsia, autism and breast and lung cancer. He has more than 63 peer-reviewed publications and submitted few more in the related peer-reviewed journals. He also worked as a guest faculty in Southeast University, Daffodil International University, Northern University Bangladesh and BGC Trust University. He is also working in as a reviewer of some good impact journals and also included in the editorial board of some peer-reviewed journals.

ISBN : 978-984-34-1383-3

Technical Session Schedule in detail

Technical Sessions: Day 1, Friday, 28 October 2016

Plenary Session 1: Day 1, Friday, 28 October 2016		
Venue: IIUC Auditorium		**Time: 11:00 – 12:30**
Session Chair: Dr. M. Kaykobad, Dean, Faculty of Electrical and Electronic Engineering, Bangladesh University of Engineering and Technology (BUET)		
Keynote Session	**Name of Keynote Speaker**	**Topic**
Keynote Speech 1	Dr. A.K.M. Azharul Islam, Vice-Chancellor, International Islamic University Chittagong (IIUC)	Exciting 3D MAX phases and the derived 2D new wonder materials
Keynote Speech 2	Dr. Kamaruzzaman Seman Dean, Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia (USIM)	Internet of Things: Technology and Standardization

Invited Talk 1	
Venue: IIUC Auditorium	**Time: 14:30 – 15:00**
Session Chair: Dr. Md. Shahadat Hossain, CU	
Name of the Speaker	**Topic**
Dr. Janatul Islah Mohammad, Dean, Centre for Graduate Studies, Universiti Sains Islam Malaysia	Revelation of acoustics knowledge based on the Holy Quran

Technical Session: 1A		
Software Engineering and Data Sciences – I		
Venue: IIUC Auditorium		**Time: 15:00 – 16:00**
Session Chair: Dr. Md. Shahadat Hossain, CU		
Paper ID	**Title of Paper**	
34	Land Cover Change Detection Using GIS and Remote Sensing Techniques: A Spatio- Temporal Study on Tanguar Haor, Sunamganj, Bangladesh	
110	Predicting the Popularity of Online News from Content Metadata	
135	Adopting Factors of Electronic Human Resource Management: Evidence from Bangladesh	
165	Development of a Telemedicine Model with Low Cost Portable Tool Kit for Remote Diagnosis of Rural People in Bangladesh	

ISBN : 978-984-34-1383-3

Technical Session: 1B	
Power Systems and Renewable Energy – I	
Venue: Seminar Room 3, Academic Building 4 (2nd Floor)	**Time: 14:30 – 16:00**
Session Chair: Dr. Muhammad Quamruzzaman, CUET	
Paper ID	**Title of Paper**
21	Prospects and Potential of Biogas Technology in Bangladesh
89	Switching Signal Reduction of Load Aggregator with Optimal Dispatch of Electric Vehicle Performing V2G Regulation Service
90	Optimal Placement of Phasor Measurement Units for Transmission Grid Observability
93	Solid State Lighting, A solution for Power Crisis in Bangladesh
261	Solar Energy as an Alternative of IPS in Bangladesh

Technical Session: 1C	
Circuit, Device & System - I	
Venue: Seminar Room 2, Academic Building 4 (1st Floor)	**Time: 14:30 – 16:00**
Session Chair: Dr. Muhibul Haque Bhuyan, SEU	
Paper ID	**Title of Paper**
81	Analysis of Charge-Shared Matchline Sensing Schemes and Current race scheme in High-Speed Ternary Content Addressable Memory (TCAM)
91	Effect of Higher Carrier Injection Rate on Charge Transport and Recombination In Mixed-Host Organic Light Emitting Diode
107	Optoelectronic Performance of Vertical Cavity Surface Emitting InGaAs/InP QW Laser in non-conventional orientation
127	Design, Fabrication and Performance Evaluation of a Three Electrode ECG Recorder
162	Structural, Dielectric and Conductivity Studies of Ni-Cu-Cd Ferrite Nanoparticles

Invited Talk 2	
Venue: Seminar Room 1, Auditorium Building (1st Floor)	**Time: 14:30 – 15:00**
Session Chair: Dr. Saiful Islam, DU	
Name of the Speaker	**Topic**
Dr. Nadia Mohd Effendy, Faculty of Medicine & Health Sciences, Universiti Sains Islam Malaysia	Alternative Medicines on Osteoporosis

ISBN : 978-984-34-1383-3

Technical Session: 1D	
Pharmacy – I	
Venue: Seminar Room 1, Auditorium Building (1st Floor)	**Time: 15:00 – 16:00**
Session Chair: Dr. Saiful Islam, DU	
Paper ID	**Title of Paper**
16	In vitro, in vivo and in silico drug-drug interaction study between Vildagliptin and Bisoprolol fumarate
25	In vitro reconstitution of mutant catalytic domains of Enterococcus hirae V-ATPase
41	Antimicrobial Activities of Isolated Probiotics and Their Metabolites against Some Pathogenic Microorganisms
289	Future drug delivery technologies: Bench top to industry

Technical Session: 2A	
Image, Signal and Multimedia Processing – II	
Venue: Seminar Room 3, Academic Building 4 (2nd Floor)	**Time: 16:30 – 18:00**
Session Chair: Dr. Shorif Uddin, JU	
Paper ID	**Title of Paper**
6	Hand Sign Language Recognition for Bangla Alphabet using Support Vector Machine
20	An Integrated Approach to Classify Gender and Ethnicity
77	Human Facial Feature Detection Based on Skin Color and Edge Labeling
150	FDLP-Based Robust Text-Dependent Speaker Identification
203	Rotation Invariant Power Line Insulator Detection Using Local Directional and Support Vector Machine

Technical Session: 2B	
Communication Engineering and Computer Networks – I	
Venue: Seminar Room 1, Auditorium Building (1st Floor)	**Time: 16:30 – 18:00**
Session Chair: Dr. Saiful Islam, BUET	
Paper ID	**Title of Paper**
56	Design Evolution of Planar Slot Antennas for Ultra-wideband Wireless Communication
123	A Process to Improve Bandwidth and Return Loss of V-slotted Patch Antenna for WiMAX
130	Selection of Better Strategy for Self Organized Data Aggregation Techniques Using Evolutionary Game Theory
163	A Compact Patch Antenna for Ultrawideband Application
191	Performance Measurement of Different Backoff Algorithms in IEEE 802.15.4
199	A Compact Triangular Shaped Microstrip Patch Antenna with Triangular Slotted Ground for UWB Application

ISBN : 978-984-34-1383-3

Technical Session: 2C	
Circuit, device & System – II	
Venue: Seminar Room 2, Academic Building 4 (1st Floor) | Time: 16:30 – 18:00	
Session Chair: Dr. Mahmoud Abdul Matin Bhuiyan, CUET	
Paper ID	**Title of Paper**
79	Effect of Acceptor Concentration on Performance of CdTe Solar Cell from Numerical Analysis
182	A Highly Efficient InGaN Single Junction Solar Cell Using MATLab
224	Manipulation of Structural. Electrical and Magnetic Properties on Zinc Substitution in Cobalt Zinc Nanoferrite
236	Analytical Study of High Efficient Cu(In.Ga)Se2 Solar Cell with In2S3 Buffer Layer
256	Variation of Structural and Mechanical Properties as 20 wt% ZrO2 Added to Al2O3 for Biomedical Application
278	Modeling of Highly Efficient Molybdenum Telluride Solar Cells with Zinc Telluride as a Novel BSF

ISBN : 978-984-34-1383-3

Technical Sessions: Day 2, Saturday, 29 October 2016

Plenary Session 2: Day 2, Saturday, 29 October 2016		
Venue: IIUC Auditorium		**Time: 09:00 – 10:30**
Session Chair: Dr. Anis Haque, PEng, Associate Head & Senior Instructor, Department of Electrical and Computer Engineering, University of Calgary		
Keynote Session	**Name of Keynote Speaker**	**Topic**
Keynote Speech 3	Dr. Mohammad Tariqul Islam, Department of Electrical, Electronic and Systems Engineering, Universiti Kebangsaan Malaysia	UHF/VHF planar antennas for small satellite applications
Keynote Speech 4	Dr. Choudhury Mahmood Hasan, Vice Chancellor, Manarat International University (MIU)	Future Prospects of Pharmacists in Bangladesh

Technical Session: 3A		
Software Engineering and Data Sciences – I		
Venue: Seminar Room 3, Academic Building 4 (2nd Floor)		**Time: 11:00 – 12:30**
Session Chair: Dr. M. Jahirul Islam, SUST		
Paper ID	**Title of Paper**	
72	Short Term Wind Speed Forecasting Using Artificial Neural Network: A Case Study	
116	Combining a Rule-based Classifier with Weakly Supervised Learning for Twitter Sentiment Analysis	
152	Automated Weather Event Analysis with Machine Learning	
173	Financial Instability Analysis using ANN and Feature Selection Technique: Application to Stock Market Price Prediction	
183	An Analysis of the Problems for Health Data Integration in Bangladesh	

Technical Session: 3B		
Power Systems and Renewable Energy – II		
Venue: IIUC Auditorium		**Time: 11:00 – 12:30**
Session Chair: Dr. Abdul Goffar Khan, RUET		
Paper ID	**Title of Paper**	
138	Design of a low-cost lighting system for the rural areas of Bangladesh	
147	Bio Inspired Cyber Security Architecture for Smart Grid	
184	A Prospective Model of Bangladesh Electricity Market	
212	Grid-voltage Synchronization Algorithm for Grid Tied Renewable Energy Sources During Adverse Grid Fault Condition	
266	Design and Simulation of Piezoelectric Cantilever Beam Based on Mechanical Vibration for Energy Harvesting Application	

ISBN : 978-984-34-1383-3

Technical Session: 3C	
Circuit, Device & System – III	
Venue: Seminar Room 2, Academic Building 4 (1st Floor)	**Time: 11:00 – 12:30**
Session Chair: Dr. Quazi Delowar Hossain, CUET	
Paper ID	**Title of Paper**
66	Design & Implementation of a Digital Calling Bell with Door Lock Security System Using Fingerprint
76	Design of an Universal Numeric Segmented Display and Implementation of Its Decoder Circuit in FPGA
80	Search and Rescue System for Alive Human Detection by Semi-autonomous Mobile Rescue Robot
100	Design of N-Segmented Display System for Bengali vowels
160	Bomb Disposal Robot

Plenary Session 3: Day 2, Saturday, 29 October 2016		
Venue: IIUC Auditorium		**Time: 14:00 – 15:30**
Session Chair: Dr. Kamaruzzaman Seman, Dean, Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia (USIM)		
Keynote Session	**Name of Keynote Speaker**	**Topic of the Speech**
Keynote Speech 5	Dr. Nowshad Amin, Department of Electrical, Electronic and Systems Engineering, Universiti Kebangsaan Malaysia	Solar Photovoltaic Energyfor a RE(Renewable Energy)-enriched, Sustainable World with Versatility in Applications
Keynote Speech 6	Dr. Anis Haque, PEng, Associate Head & Senior Instructor, Department of Electrical and Computer Engineering, University of Calgary	Health and Safety Education in Science and Engineering

Technical Session: 4A	
Image, Signal and Multimedia Processing – I	
Venue: Seminar Room 1, Auditorium Building (1st Floor)	**Time: 16:00 – 17:30**
Session Chair: Dr. Md. Atiqur Rahman Ahad, DU	
Paper ID	**Title of Paper**
149	GFCC-Based Robust Gender Detection
168	Human Activity Recognition using Depth Body Part Histograms and Hidden Markov Models
211	Occlusion Handling and Human Detection Based on Histogram of Oriented Gradients for Automatic Video Surveillance
228	HSV and Template Matching Based Bengali Road Sign Recognition Technique
254	Segmentation Analysis on Magnetic Resonance Imaging (MRI) with Different Clustering Techniques: Wavelet and BEMD

ISBN : 978-984-34-1383-3

Invited Talk 3	
Venue:	**Time: 16:00 – 16:30**
Session Chair: Dr. Abdur Razzaque, DU	
Name of the Speaker	**Topic**
Dr. Azni Haslizan Ab Halim, Deputy Dean, Division of Corporate and Data Management, Centre for Graduate Studies, Universiti Sains Islam Malaysia	Framework of Packet Sanitization for Information Hiding In TCP/IP

Technical Session: 4B	
Communication Engineering and Computer Networks – II	
Venue:	**Time: 16:30 – 17:30**
Session Chair: Dr. Abdur Razzaque, DU	
Paper ID	**Title of Paper**
132	Effects of Buffer Size and Mobility Models on the Optimization of Number of Message Copies for Multi-Copy Routing Protocols in Scalable Delay-Tolerant Networks
140	Logical Clipper and De-clipper Technique to Reduce PAPR from OFDM Signal
178	Implementation of 1xN Router Based on Mach-Zehnder Interferometer Electro-Optic Switch
267	A Comprehensive Study and Performance Based Evaluation on Routing Protocols of WiMAX

Technical Session: 4C	
Motor Drives and Control Systems	
Venue:	**Time: 16:00 – 17:30**
Session Chair: Dr. Md. Nurunnabi Mollah, KUET	
Paper ID	**Title of Paper**
44	Design and Practical Implementation of Universal Driver Circuit for LED Lamps
103	A Comparative Analysis Among PWM Control Z-source Inverter with Conventional PWM Inverter for Induction Motor Drive
190	Design & Implementation of an UAV (Drone) with Flight Data Record
219	Experimental Verification of Regenerative Braking Characteristics by Applying Different Motor Armature Voltage

ISBN : 978-984-34-1383-3

Invited Talk 4	
Venue:	**Time: 16:00 – 16:30**
Session Chair: Dr. Md. Abdur Rashid, DU	
Name of the Speaker	**Topic**
Dr. Mohammad Safiqul Islam, Associate Professor and Chairman, Department of Pharmacy, Noakhali Science and Technology University	Association of different genetic polymorphisms with the risk of lung, breast and colorectal cancer in the Bangladeshi population

Technical Session: 4D	
Pharmacy – II	
Venue:	**Time: 16:30 – 17:30**
Session Chair: Dr. Md. Abdur Rashid, DU	
Paper ID	**Title of Paper**
22	Alkaline Serine Protease Production from Bacterial Isolates by Using Organic Municipal Solid Wastes
28	Phytochemical and biological investigation on Artocarpus chaplasha Roxb.
30	Evaluation of in vitro anti-inflammatory activity of Leea rubra by membrane stabilization assay and against the denaturation of protein
287	Labisia Pumila Regulates the Expressions of Bone-Related Genes and Pro-Inflammatory Cytokines in Postmenopausal Osteoporosis Rat Models

ISBN : 978-984-34-1383-3

Index of Registered Papers

Track-1

(Science & Engineering)

ISBN : 978-984-34-1383-3

ISBN : 978-984-34-1383-3

ISBN : 978-984-34-1383-3

ISBN : 978-984-34-1383-3

ISBN : 978-984-34-1383-3

Index of Registered Papers

Track-2

(Pharmaceutical Sciences)

ISBN : 978-984-34-1383-3

Abstract of Papers
Track-01
(Science & Engineering)

Paper ID-6
Hand Sign Language Recognition for Bangla Alphabet using Support Vector Machine

Md Azher Uddin[1] and Shayhan Ameen Chowdhury[2]
[1]Computer Science & Engineering Kyung Hee University South Korea
[2]Computer Science & Engineering International Islamic University Chittagong Chittagong, Bangladesh
[1]azher006@yahoo.com and [2]shayhan@yahoo.com

Abstract: The sign language considered as the main language for deaf and dumb people. So, a translator is needed when a normal person wants to talk with a deaf or dumb person. In this paper, we present a framework for recognizing Bangla Sign Language (BSL) using Support Vector Machine. The Bangla hand sign alphabets for both vowels and consonants have been used to train and test the recognition system. Bangla sign alphabets are recognized by analyzing its shape and comparing its features that differentiates each sign. In proposed system, hand signs are first converted to HSV color space from RGB image. Then Gabor filters are used to acquire desired hand sign features. Since feature vector obtained using Gabor filter is in a high dimension, to reduce the dimensionality a nonlinear dimensionality reduction technique that is Kernel PCA has been used. Lastly, Support Vector Machine (SVM) is employed for classification of candidate features. The experimental results show that our proposed method outperforms the existing work on Bengali hand sign recognition.

Paper ID-20
An Integrated Approach to Classify Gender and Ethnicity

Md. Azher Uddin[1] and Shayhan Chowdhury[2]
[1]Computer Science & Engineering Kyung Hee University South Korea
[2]Computer Science & Engineering International Islamic University Chittagong Chittagong, Bangladesh
[1]azher006@yahoo.com and [2]shayhan@yahoo.com

Abstract: Faces express many social indications, including gender, ethnicity, age, expression and identity, most of them have drawn thriving attention from various research communities, for instance neuroscience, computer science and psychology. In this paper, we propose a new approach to classify gender and ethnicity by merging both texture and shape features extracted from face images. Gabor filter is used to extract the texture features and histogram of oriented gradients (HOG) is used to extract the shape features from face images. In order to achieve higher performance we combined both texture and shape features. After combining, the size of feature vector obtained is in a high dimension, to decrease the dimensionality Kernel PCA has been implemented. Finally, to classify the gender and ethnicity we used Support Vector Machine. The experimental result shows the effectiveness of proposed framework.

ISBN : 978-984-34-1383-3

Paper ID-21

Prospects and Potential of Biogas Technology in Bangladesh

Md. Rafsan Nahian[1] and Md. Nurul Islam[2]
[1,2]Department of Mechanical Engineering
Rajshahi University of Engineering & Technology
Rajshahi, Bangladesh
[1]samsrafsan@gmail.com and [2]nurul50.ruet@gmail.com

Abstract: The issues of energy crisis, depletion of fossil fuel and global warming are growing concern in the world. To cope up with this situation, the role of renewable energy is becoming more and more significant to meet partially demand of global energy. Biogas is an auspicious renewable energy source that can solve the energy crisis problem at a great extent. As Bangladesh is an agricultural country, it has blessed with plenty of biomass which has been used for extracting energy by generating biogas. Animal manures being accessible in the rural areas are greatly used in producing biogas to be used for cooking and electricity. In Bangladesh around 59.6% of the total population is covered by electricity and 6% is covered under natural gas network. About 62.59% of total electricity develops from natural gas. The main concern of this paper is to quantify the solution of energy crisis through biogas and assess the economical, environmental and social impacts of biogas technology in Bangladesh.

Paper ID-34

Land Cover Change Detection Using GIS and Remote Sensing Techniques

Md. Inzamul Haque[1] and Rony Basak[2]
[1]Department of Geography and Environment,Shahjalal University of Science Technology,Sylhet-3114, Bangladesh.
[2]Department of Geography & Environment,Shahjalal University of Science & Technology,Sylhet-3114, Bangladesh
[1]sazal.edu@outlook.com and [2]rbasak-gee@sust.edu

Abstract: Tanguar Haor undergoes a radical change in its form over the decades. This study illustrated that, about 40% land cover of the total study area has been converted. Forested and High land vegetation's are disappearing rapidly, deep water bodies consist of large lakes are becoming the rare feature of the study area. Widespread development of settlement and dominant shallow water feature are converting the natural wetland a permanent low lying agricultural land. Both pre classification and post classification change detection approach was used to assess the change. Several satellite images were taken as the fundamental secondary data for detail analysis from USGS satellite data archive. Change Vector Analysis (CVA), Natural Difference Vegetation Index (NDVI) and Natural Difference Water Index (NDWI) analysis were implemented to assess the change dynamics. Maximum likelihood supervised classification technique was performed to create the signature class of significant land cover category (Deep Water, Shallow Water,Vegetation and Settlement). Image differencing, Statistical change detection techniques (transition probability matrix), change dynamics analysis was operated to evaluate the past change relative to present.

ISBN : 978-984-34-1383-3

Paper ID-44

Design and Practical Implementation of Universal Driver Circuit for LED Lamps

Md. Tanvir Hossan[1] and Md. Nayeem Shakkhar[2]
[1,2]Department of Electrical & Electronic Engineering
Khulna University of Engineering & Technology, Bangladesh
[1]tanvir.hossan.shaon@gmail.com and [2]nayeem-eee@hotmail.com

Abstract: This paper presents a universal driver circuit using linear current regulation technology for Light Emitting Diode (LED) operating from either wide-range of voltage (180 to 240V) in Alternating Current (AC) or voltage (12 to 15V) in Direct Current (DC). Available LED driver circuits in the market have some drawbacks like higher cost, higher self-power consumption, a lower load driving technique, designed separately for AC and DC power supply, using too many inductive components. In this scenario the proposed LED driver circuit shows universality in both power supplies with leading power factor (near to unity) as well as its cost & self-power consumption is lower with greater efficiency. To verify the feasibility, a laboratory prototype for LED driver circuit is designed and performance is tested with 3 to 30 LEDs.

Paper ID-56

Design Evolution of Planar Slot Antennas for Ultra-wideband Wireless Communication

Rezaul Azim[1] and Mohammad Tariqul Islam[2]
[1]Department of Physics, University of Chittagong, Chittagong 4331, Bangladesh
[2]Dept. of Electrical, Electronic and Systems Engineering, Universiti Kebangsaan Malaysia, 43600 Bangi, Malaysia
[1]razim71@gmail.com and [2]tariqul@ukm.edu.my

Abstract: The design evolution of planar ultra-wideband slot antennas is presented in this paper. The basic antenna with a Tshaped radiator and ground plane with wide slot is able to exhibits UWB characteristics. Insertion of a curve slit in the front side of the basic antenna helps to generate a stop band at around 3.5GHz while etching of a pair of symmetric slits in the rear side helps to produce a stop band for WLAN. Dual stop band centered at 3.5GHz and 5.5GHz can be obtained by putting both types of slits together. The insertion of slits does not alter the size and shape of basic antenna which gives us an upper hand in the designing of UWB antenna with notch band/s.

Paper ID-66

Design & Implementation of a Digital Calling Bell with Door Lock Security System Using Fingerprint

Mohammed Abdul Kader[1],Md. Yousuf Haider[2],Md.Rezaul Karim[3],Md. Saiful Islam[4] and Mohammad Mamun Uddin[5]
[1-5]International Islamic University Chittagong, Bangladesh
[1]kader05cuet@gmail.com, [2]yousufhaider7@gmail.com, [3]ssuton71@gmail.com and [4]si.iiuc@yahoo.com

Abstract: The term 'Home Security' numerously growing as a major concerning issue in today's life. The challenge of developing a home security device is to make it user friendly which can reduce human effort as well as ensure safety and security of people and their home. In this paper, a security device is proposed which is developed from the concept of conventional calling bell. The device analyzes the fingerprint of a person and matches it with stored fingerprint database to categorize the person as home member or known

ISBN : 978-984-34-1383-3

guest or unknown guest. When it detects a home member the entrance door automatically opens. In case, the person categorize as known guest, the device sounds a tune but don't open the door automatically rather people inside home can open the entrance door from anywhere of the home. As guest is known people don't need to walk towards door to open it. And when device detects the person as unknown guest, it generates a tunes which is different from previous one making aware the people inside that an unknown person wish to enter your home.

Paper ID-72

Short Term Wind Speed Forecasting Using Artificial Neural Network: A Case Study

Hasan Masrur[1], Meas Nimol[2],Mohammad Faisal[3] and Sk. Md. Golam Mostafa[4]

[1-2]Energy field of study, SERD,Asian Institute of Technology,
Pathumthani-12120, Thailand

[3-4]Department of Electrical and Electronic Engineering,International Islamic University Chittagong
Chittagong-4203, Bangladesh

[1]hmasrur@gmail.com

Abstract: The intermittency of wind speed is very challenging in order to produce wind energy via wind turbine to synchronize with the power system. The accurate wind forecasting models are very important for effective power system management. There are many ways have been introduced for short term accurate wind forecasting. In this paper, Artificial Neural Network (ANN) is used with feed forward back propagation algorithm to forecast short-term wind speed of Asian Institute of Technology (AIT). After simulating the model in MATLAB, the result shows that the mean absolute percentage error (MAPE) between the predicted and measured wind speed is quite low and noteworthy. It represents the high prediction correctness of short-term wind speed forecasting using the above mentioned model.

Paper ID-76

Design of an Universal Numeric Segmented Display and Implementation of Its Decoder Circuit in FPGA

Mohammed Abdul Kader[1], Kazi Sahadat Hossain[2], Mohammad Serajum Munir[3], Rajvi Sutra Dhar[4], and Md. Arifur Rahaman[5]

[1-5]International Islamic University Chittagong,Bangladesh

[1]kader05cuet@gmail.com, [2]khsahadat91@gmail.com, [3]mamuneeeiiuc201132@gmail.com,
[4]tanmoy.sd333iiuc@gmail.com and [5]arifrahaman1971@gmail.com

Abstract: Segment display is very important in displaying numeric data. Although matrix display can be used to show any number with better font but it has some major disadvantages compared to segment display. Matrix display uses scanning techniques to show something, this technique is complex to implement and needs more memory. Here, a 20-segment display is proposed which can show numbers and mathematical symbols of 14 different languages. Also a decoder circuit is proposed which takes BCD input and generates output binary combination for 20-segment display of selected language. Finally a prototype of 20-segment display is implemented by LED's and the decoder circuit is implemented in FPGA. The system is checked for 14 different languages and some mathematical symbols.

ISBN : 978-984-34-1383-3

Paper ID-77

Human Facial Feature Detection Based on Skin Color and Edge Labeling

Md. Khaliluzzaman[1], Md. Faisal Alam[2] and Tanveer Ahsan[3]

[1-3] Dept. of Computer Science and Engineering, International Islamic University Chittagong, Chittagong-4203 Bangladesh

[1]khalil_021@yahoo.co.in, [2]md.alamfaisal@gmail.com and [3]tanveer.ahsan@gmail.com

Abstract: In the recent years facial feature detection and recognition is an interesting and challenging work in the field of image processing in which facial region detection is the most basic step. This paper proposes a framework for detecting the facial region and facial features from a frontal facial image.Initially, an RGB facial image is used to detect the facial region.In the next step, the facial features, i.e. eyebrows, eyes, nose, and lips regions are detected from the extracted facial region. For that, the binary information is used to detect the facial region from the input facial image. After that, the RGB image is converted into YCbCr based skin color image from where the edges of the facial features are extracted. In the next step, labeling operation is performed on the edge image to identify the location of the facial features region. Various frontal facial images are utilized to evaluate the proposed framework and presented outcomes demonstrate the adequacy.

Paper ID-79

Effect of Acceptor Concentration on Performance of CdTe Solar Cell from Numerical Analysis

M.A.A. Noman[1], M.S. Islam[2], M.J. Abden[3], M. Arifuzzaman[4] and M.A. Islam[5]

[1-4]Department of Electrical and Electronic Engineering,
International Islamic University Chittagong, Chittagong-4314, Bangladesh

[5]Graduate School of Material Science,
NARA Institute of Science and Technology, Ikoma, Nara 630-0101, Japan

[3]mjaynul@gmail.com

Abstract: In this study, the absorber layer of Cadmium Telluride (CdTe) ultra-thin solar cell was analyzed by using the one dimensional simulator Analysis of Microelectronic and Photonic Structures (AMPS 1D) software. A novel structure of ultra-thin CdS:O/CdTe solar cell is suggested in this research that emphases on conversion efficiency. The maximum conversion efficiency of ~ 26.24% (JSC = 27.05 mA/cm2, VOC = 1.2 V, FF = 0.886) is achieved with 600 nm CdTe absorber layer at the acceptor concentration of 5 × 1019 cm-3. The temperature effect is also examined with an aim to realize the environmental impact on performance of the cell. Our outcomes offer innovative research guidelines for resolving persistent challenges of CdTe photovoltaics.

Paper ID 80

Search and Rescue System for Alive Human Detection by Semi-autonomous Mobile Rescue Robot

Zia Uddin[1] and Mojaharul Islam[2]

[1,2]International Islamic University Chittagong Bangladesh

[1]ziauddin.kcpsc@gmail.com and [2]mojahar.bd@gmail.com

Abstract: In this modern era, technological development lead the creation of sky scraper buildings and dwellings which increase risks of losing life due to natural and manmade disasters. Many people died by trapping under debris as their presence cannot detect by the rescue team. Sometimes, it is impossible to

ISBN : 978-984-34-1383-3

reach in certain points of the disasters in such calamity hit zones. The situation is worst for developing country like Bangladesh because of low quality design and construction. In this paper, PIR sensor based semi-autonomous mobile rescues robot is developed which can detect live human being from an unreachable point of the disaster area. RF technology is used to control the semi-autonomous robot and communicate with control point. Ultrasonic sensor is used for obstacle detection and gas sensor is used to detect gas leak inside the building. IP Camera is also integrated to observe and analyze conditions that will facilitate human detection in reliable manner.

Paper ID 81

Analysis of Charge-Shared Matchline Sensing Schemes and Current Race Scheme in High-Speed Ternary Content Addressable Memory (TCAM)

Raqqib Bin Kadir[1], Ahmed Selim Anwar[2] and Muntasim-Ul-Haque[3]
[1-3] Department of Electrical and Electronic Engineering,
Islamic University of Technology,
Board Bazar, Gazipur 1704, Bangladesh.

Abstract: Due to emerging of hi-speed communication larger TCAMs with higher speed is needed. A comparative analysis of different Matchline sensing schemes in high speed Ternary content addressable memory (TCAM) is presented in this paper. With the conventional current race scheme, two different methods of charge sharing matchline sensing schemes are being analyzed. The power is distributed along the matchline by dividing it and sharing charge. This two charge shared schemes also improve search time and voltage margin. Simulations are performed using 180nm 1.8V CMOS logic in HSPICE.

ISBN : 978-984-34-1383-3

Paper ID 89

Switching Signal Reduction of Load Aggregator withOptimal Dispatch of Electric Vehicle Performing V2GRegulation Service

M. Shafiul Alam[1], Md Shafiullah[2], MdJuel Rana[3], M. S. Javaid[4], Usama Bin Irshad[5] and Muhammad Athar Uddin[6]

[1-5]Dept. of EE, King Fahd University of Petroleum and Minerals Dhahran, Saudi Arabia
[6]Dept. of EEE, International Islamic University Chittagong, Bangladesh
[1]shafiul@kfupm.edu.sa

Abstract: Environmental concerns over the production of greenhouse gas have led to the development of environmental friendly transportation such as electric vehicle (EV). As the number of EVs is increasing day by day, it will have a great impact on grid operation and electricity market. Significant amount of EV charging during peak hour will cause branch congestions and low voltage. Moreover, high penetration of EVs plays an important role in altering electricity price. Thus, optimal scheduling of EVs charging is inevitable from the perspective of both system reliability and market. Load aggregators can combine the capacities of many EVs to participate in wholesale energy market. In this paper, optimal dispatch algorithm of EVs is developed and tested on a system consisting 1000 EVs. The advantage of the algorithm is that it requires less number of communication signals and less expensive infrastructure. EVs are turned on and turned off in binary fashion based on priority to follow the regulation signal.

Paper ID 90

Optimal Placement of Phasor Measurement Units for Transmission Grid Observability

Md Shafiullah[1], Md Juel Rana[2], Md Shafiul Alam[3] and Muhammad Athar Uddin[4]

[1-3]Electrical Engineering Department, King Fahd University of Petroleum & Minerals
Dhahran, Saudi Arabia
[4]Department of Electrical & Electronic Engineering, International Islamic University Chittagong
Chittagong, Bangladesh
[1]shafiullah@kfupm.edu.sa, and [4] mau_iiuc@yahoo.com

Abstract: Phasor Measurement Unit (PMU) provides both magnitude and phase information of current and voltage signals with appropriate time stamp which is very useful in controlling power system networks in real time. Consequently, PMU is considered as one of the most significant measurement devices for complete observability of the future electricity grids. But placing PMU in every bus of the network is not economically viable. This paper aims to place PMUs in different buses of electric network to ensure full network observability employing five evolutionary, colony and swarm optimization algorithms namely backtracking search algorithm (BSA), differential evolution (DE), artificial bee colony (ABC), particle swarm optimization (PSO) and invasive weed optimization (IWO). The proposed algorithms have been tested on IEEE 14-bus, 30-bus, 39-bus and 57-bus test networks. The obtained results illustrate the compatibility of the proposed schemes in compared to each other as well as in compared to available techniques in literatures.

ISBN : 978-984-34-1383-3

Paper ID 91

Effect of Higher Carrier Injection Rate on Charge Transport and Recombination In Mixed-Host Organic Light Emitting Diode

Riku Chowdhury[1], Md. Rashedul Haq[2], Md. Sarwar Uddin Chowdhury[3], Sharmin Afrose[4] and Sukanta Paul[5]

[1,2,4]Department of Electrical & Electronic Engineering, Faculty of Science, Engineering and Technology
University of Science and Technology Chittagong (USTC), Chittagong-4202, Bangladesh
[3]Department of Electrical & Electronic Engineering,
Chittagong University of Engineering and Technology (CUET), Chittagong-4349, Bangladesh
[5]Department of Computer Science & Engineering
Chittagong University of Engineering and Technology (CUET), Chittagong-4349, Bangladesh
[1]eeeriku@gmail.com, [2]rasahaq_17@yahoo.com, [3]sarwarcuet@gmail.com, [4]sharminafrose99@gmail.com, and [5]skpauluste@gmail.com

Abstract: The effect of anode surface modification on performance of uniformly mixed-host (MH) emissive layer (EML) based organic light emitting diode (OLED) has been investigated by the numerical simulation. Indium Tin Oxide (ITO) used as anode in the device. Due to proposed surface modification technique of ITO, the energy barrier at anode/organic layer interface is reduced which consummately enhanced the hole injection rate that leads to balance of carriers transportation and recombination in the EML. Through the numerical simulation, the electrical characteristics and internal device physics of uniform MH-OLED have been analyzed quantitatively. Calculated current balance factor which is related to the external quantum efficiency also confirmed the efficiency enhancement of MH-OLED by the proposed ITO work function modification technique.

Paper ID 93

Solid State Lighting, A Solution for Power Crisis in Bangladesh

K. M. Ahsan -Uz- Zaman[1], Kafi Mohammad Ullah[2], Md. Shaidul Kabir Milon[3], A S M Sayam[4] and Abdul Wahed[5]

[1-5]Mymensingh Engineering College, Bangladesh
[1]k.m.ahsanuzzaman@gmail.com, [2]kafi.mec.07@gmail.com, [3]milon.732@gmail.com,
[4]sayam.siam.09@gmail.com and [5]ab.wahed.eee@gmail.com

Abstract: Electricity is the most usable form of energy. For a developing country like Bangladesh, electricity plays an important factor. Due to increasing population and rapid industrial growth, the country lags behind than its rising demand of electric power supply. Power generation in Bangladesh is mostly dependent on natural gas, coal and fossil fuel which are also responsible for carbon emission. Alternative measures should be taken to resolve this power crisis. If the present power consumption can be reduced using smart energy efficient appliances then it would be possible to meet up the demand of the consumers with the present production capacity. Lighting is responsible for a gentle amount of energy consumption over the year. In this paper we discussed about using smart technologies like Solid State Lighting in terms of reducing energy consumption on lighting sector. Light emitting diode (LED) based solid state lighting technology have potential to exceed the efficiency of conventional lamp based lighting systems. LED offers better quality in lighting, have much longer lifespan and comparatively better on durability with only drawback of initial high pricing. In terms of much longer lifespan, this initial cost is not much accountable. This paper represents the features and efficiency of solid state lighting.

ISBN : 978-984-34-1383-3

Paper ID 100

Design of N-Segmented Display System for Bengali Vowels

Saif Hannan[1] and Ahasan Ullah Shohag[2]
[1, 2]Department of Electronic and Telecommunication Engineering
International Islamic University Chittagong, Bangladesh.
Corresponding e-mail: [1]saifhannan@yahoo.com

Abstract: Different segmented display systems have been proposed for representing Bangla and English alphabets and numerals in past few years. In order to distinguish Bengali Vowels in precise form, they must be represented with their unavoidable curved shapes. Accurate recognition of Vowels is difficult due to their complex shapes. In this paper, we tried to represent a total of 11 Bangla vowels in simpler and accurate look. To improve their accuracy, we have proposed a 58-segmented display. And we derived a very simple, scientific logic to find segments out of matrix display. We have introduced a 4-bit input line to represent all the Bengali Vowels, analyzed all the 58-sements against each and every Vowel, and designed the suitable circuit for each of the 58 segments.

Paper ID 103

A Comparative Analysis Among PWM Control Z-source Inverter with Conventional PWM Inverter for Induction Motor Drive

Md. Khurshedul Islam[1], Md. Mustafa Zaved[2], Air Mohammad Siddiky[3] and Khandakar Abdulla Al Mamun[4]
[1-4]Department of Electrical & Electronic Engineering, International Islamic University Chittagong (IIUC)
Chittagong, Bangladesh
[1]khurshedeeeiiuc@gmail.com, [2]mustafaxaved@gmail.com, [3]armaneeeiiuc@yahoo.com and
[4]k.a.a.mamun@gmail.com

Abstract-The uses of induction motor is ever-growing day by day because of its superiority and high efficiency over dc machine. So for wide range of use in the industry, this machine requires an efficient driver circuitry arrangement. Currently conventional Voltage Source Inverter (VSI) or Current Source Inverter (CSI) is dealing as key part in the field of induction motor driver circuit. These converters fail to perform at our desire level due to some crucial drawbacks like they can perform as either buck or boost operation and they contain considerable amount of harmonics as well as EMI noise. So we are trying to replace these traditional inverters by PWM control Z-Source Inverter (ZSI) which offers buck-boost operation capability by utilizing shoot through state and provides less EMI noise. This paper presents a comparative study among these three inverters. Firstly three MATLAB simulation model of Induction motor driver by using VSI, CSI and ZSI (having almost same environment) have arranged. Then some important motor characteristics such as rotor speed, electromagnetic torque, rotor current and stator current have observed for three system models at various loading conditions. The model using Z-source inverter exhibits efficient performance in all cases compared to the other models.

ISBN : 978-984-34-1383-3

Paper ID 107

Optoelectronic Performance of Vertical Cavity Surface Emitting InGaAs/InP QW Laser in Non-conventional Orientation

Sourav Roy[1], Md. Imtiaz Kabir[2], K.M Abdullah Al-Mamun[3]

[1-3]Department of Electrical and Electronic Engineering, JUST, Jessore-7408, Bangladesh

[1]souravroy2k9@gmail.com, [2]imtiazkabir70@gmail.com and [3]animeshpoddar2k9@gmail.com

Abstract: Here, the optoelectronic performance of lattice matched InGaAs/InP vertical cavity surface emitting LASER is numerically simulated using MATLAB in (100), (110), (111), (113) and (131) crystal orientation by solving an eight-band k.p Hamiltonian using finite difference scheme including spin-orbit coupling. Tensor plane rotation formulae is applied to change the wave-vector k and Hamiltonian from orthodox (100) plane orientation. It is shown that there is a notable interrelationship between optical emission spectra and crystal plane orientations. The highest and lowest gains are estimated in (111) and (100) orientations with their respective peak emission wavelengths of 1770nm and 1680 nm at the carrier injection density of 2.5 × 1018 cm-3. The outcome of this paper would be a stimulus to design ultra-speed optoelectronic devices with performance.

Paper ID 110

Predicting the Popularity of Online News fromContent Metadata

Md. Taufeeq Uddin[1], Muhammed Jamshed Alam Patwary[2], Tanveer Ahsan[3] and Mohammed Shamsul Alam[4]

[1-4]Department of Computer Science and Engineering, International Islamic University Chittagong, Bangladesh

[1]mohamed.taufeeq.uddin@gmail.com

Abstract: Popularity prediction of online news aims to predict the future popularity of news article prior to its publication estimating the number of shares, likes, and comments. Yet, popularity prediction is a challenging task due to various issues including difficulty to measure the quality of content and relevance of content to users; prediction difficulty of complex online interactions and information cascades: inaccessibility of context outside the web; local and geographic conditions; social network properties. This paper focuses on popularity prediction of online news by predicting whether users share an article or not, and how many users share the news adopting before publication approach. This paper proposes the gradient boosting machine for popularity prediction using features that are known before publication of articles. The proposed model shows around 1.8% improvement over previously applied techniques on a benchmark dataset. This model also indicates that features extracted from articles keywords, publication day, and the data channel arehighly influential for popularity prediction.

ISBN : 978-984-34-1383-3

Paper ID 116

Combining a Rule-based Classifier with WeaklySupervised Learning for Twitter Sentiment Analysis

Umme Aymun Siddiqua[1], TanveerAhsan[2] and Abu Nowshed Chy[3]
[1,2]Department of Computer Science & Engineering, International Islamic University Chittagong
Chittagong-4314, Bangladesh
[3]Toyohashi University of Technology, Toyohashi, Aichi, Japan
[1]aymun@kdml.org, [2]tanveer.ahsan@gmail.com and [3]nowshed@kde.cs.tut.ac.jp

Abstract: Microblog, especially Twitter, have become an integral part of our daily life, where millions of user sharing their thoughts daily because of its short length characteristics and simple manner of expression. Monitoring and analyzing sentiments from such massive amount of twitter posts provide enormous opportunities for companies and other organizations to learn about what user think and feel about their products and services. But the ever-growing unstructured and informal user-generated posts in twitter demands sentiment analysis tools that can perform well with minimum supervision. In this paper, we propose an approach for sentiment analysis on twitter, where we combine a rule-based classifier with weakly supervised Naive-Bayes classifier. To classify the tweets sentiment, we introduce a set of rules for the rule-based classifier based on the occurrences of emoticons and sentiment-bearing words, whereas several sentiment lexicons are applied to train the Naive-Bayes classifier. We conducted our experiments based on the Stanford sentiment140 dataset. Experimental results demonstrate the effectiveness of our method over the baseline in terms of recall, precision, F1 score, and accuracy.

Paper ID 123

Design and Simulation of an Improved Bandwidth V-slotted Patch Antenna for Wimax

Nasimul Hyder Maruf Bhuyan[1], Mamun Ahmed[2], Masoud Khazaee[3] and Zoraze Ali[4]
[1,3,4]Blekinge Tekniska Högskola. Karlskrona, Sweden. [2]BTH, Sweden

Abstract: A conventional rectangular V-slotted patch antenna is commonly used for Wireless local area network (WLAN) (2.4 GHz) applications. The microstrip patch antenna has the inherent characteristic of narrow bandwidth that limits the use of rectangular V-slotted patch antenna for broadband technologies, like world-wide interoperability for microwave access (WiMAX) In this paper, a corner truncated scheme is used to enhance the operational bandwidth of the subjected antenna to make it operational for WiMAX (2~6 GHZ) applications. From the simulation carried out it is shown that by truncating the corners of rectangular V-slotted patch antenna, results in enhanced operational bandwidth and better return loss for WiMAX.

Paper ID 127

Design, Fabrication and Performance Evaluation of a Three Electrode ECG Recorder

Mehdi Hasan Chowdhury[1], Quazi Delwar Hossain[2], Pradipta Saha[3] and Md. Mushfiqur Rahaman[4]
[1-4]Department of Electrical and Electronic Engineering, Chittagong University of Engineering and Technology
Chittagong, Bangladesh
[1]arnob_eee@yahoo.com, [2]qdhossain@yahoo.com, [3]pradiptasaha999@yahoo.com and
[4]shovon_eee_cuet@yahoo.com

Abstract: Frequent monitoring is required for chronically ill cardiac patients to ensure superior treatment. This paperpresents a low-cost, novel wearable electrocardiogram (ECG) measuring unit for consistent use.

ISBN : 978-984-34-1383-3

In this study, the ECG signal is accumulated by a three electrode data acquisition system and measured by an integrated signal conditioning block AD8232. The analog signal from AD8232 is converted to digital data and recorded on a computer using unique software developed for this study. This automated software can store electronic records of the patients. These patient particulars can be forwarded to a proper medical support system if needed. To confirm the quality of ECG recorded by this prototype, clinical tests are conducted. The results of these assessments demonstrate the viability and efficacy of this system.

Paper ID 130

Selection of Better Strategy for Self Organized DataAggregation Techniques using Evolutionary Game Theory

Md.Salehin Ferdous Kader[1], Mir Muntasir Hossain[2],Sanchita Ghose[3] and Kazi Rehnuma Zafreen[4]

[1]Department of Electrical and Electronic Engineering, Fareast International University, Bangladesh
[2]Department of Electrical and Electronic Engineering, Northern University Bangladesh, Bangladesh
[3]Department of Electrical and Electronic Engineering, Bangladesh University, Bangladesh
[4]Department of Electrical and Electronic Engineering, Bangladesh University, Bangladesh
[1]princemahin4@gmail.com, [2]mirmuntasir.ece@gmail.com, [3]sanchita_xmr@yahoo.com and [4]rehnumazafreen@gmail.com

Abstract: Self Organized Data Aggregation Technique applying Evolutionary Game Theory is one of the most effectivemethods to select the optimum strategy for Delay Tolerant Network (DTN). In DTN, reliable end-to-end data transfer is provided by custody transfer mechanism where special nodes (custodians) exchange information with custody following hopby- hop manner. For multi cluster Delay Tolerant Network, message ferrying approach is considered here. Now, the strategy selection (to become an aggregator or sender) is considered as a game in Evolutionary Game Theory, where, each node will draw result after interaction. For strategy selection, Imitation Update Rule of Evolutionary Game Theory has been utilized. We will focus mainly on the Birth-Death and Death-Birth Update Rules of Evolutionary Game Theory and select the better Update rules among three update rules.

Paper ID 132

Effects of Buffer Size and Mobility Models on the Optimization of Number of Message Copies for Multi-Copy Routing Protocols in Scalable Delay-Tolerant Networks

Md. Sharif Hossen[1], Md. Tofael Ahmed[2] and Muhammad Sajjadur Rahim[3]

[1-2]Department of Information and Communication Technology, Comilla University, Comilla
[3]Department of Information and Communication Engineering, University of Rajshahi, Rajshahi Bangladesh
[1]sharif5613@gmail.com, [2]tofael_ice_ru@yahoo.com and [3]sajid_ice@ru.ac.bd

Abstract: In Delay-Tolerant Network (DTN), there exists a lackof direct path from source to destination, and it is also featuredby extremely high bit error rate, unwanted delay, limited resource, etc. For such network, we have investigated the effects of buffer size and mobility models on the optimization of the number of message copies for multi-copy routing protocols such as Spray-and-Focus (SNF) and Spray-and-Wait (SNW). This investigation is essential for providing us with the insight on the number of message copies that would provide better delivery, lower latency and lower overhead considering the effects of

ISBN : 978-984-34-1383-3

buffer size and mobility models in scalable delay-tolerant networks. In this investigation, we have considered three performance metrics, namely delivery probability, average latency, and overhead ratio. Simulation is done using Opportunistic Network Environment (ONE) simulator, which is designed basically for evaluating the performance of DTN routing strategies. Here we have considered three mobility models, namely Shortest Path Map Based (SPMB) movement, Random Walk, and Random Direction. Simulation results show that for increasing buffer size and number of nodes on these considered mobility models for a particular value of number of message copies, indicated by L, SNF routing exhibits satisfactory performance, especially in the case of SPMB movement using only L = 2 copies. Since our purpose is to provide a satisfactory performance, i.e., higher delivery, lower latency and lower overhead, SNW routing shows overall good performance using L = 10 copies. Therefore, it would be a good optimization using Shortest Path Map Based movement model using L = 2 copies for SNF routing, and L = 10 copies for SNW in scalable DTN scenario, where there may be a high possibility of varying buffer size with number of mobile nodes.

Paper ID 135

Adopting Factors of Electronic Human Resource Management: Evidence from Bangladesh

Abdul Kadar Muhammad Masum[1] Md. Golam Rabiul Alam[2] Mohammed Shamsul Alam[3] and Md. Abul Kalam Azad[4]

[1]Associate Professor, Department of Business Administration, International Islamic University Chittagong, Bangladesh &
PhD Candidate, Department of Administrative Studies & Politics, University of Malaya, Malaysia,
[2]PhD Candidate, Department of Computer Science and Engineering,
Kyung Hee University, South Korea
[3]Associate Professor, Department of Computer Science & Engineering, International Islamic University Chittagong, Bangladesh
[4]PhD Candidate, Department of Applied Statistics, University of Malaya, Malaysia
[1]akmmasum@yahoo.com, [2]robi@khu.ac.kr, [3]alam_cse@yahoo.com and [4]azadiiuc@gmail.com

Abstract: The incorporation of information technology (IT) instincts the legacy of human resource management (HRM) towards agile HRM. To achieve agility, this paper explores the factors or determinants inducing the organisation decisions to adopt electronic human resource management (e-HRM) in organisations of Bangladesh through structural equation modeling (SEM) of data science. To realize the influencing determinants, a research model was developed based on technology-organisation-environment (TOE) model. A total number of 320 respondents were participated from 48 organisations in Bangladesh using simple random sampling. The SEM results indicate that perceived compatibility, perceived cost, top management support, organisational culture, centralisation, IT vendor support, and government support have significant influence on management decision of e-HRM adoption. The applied implication of the findings and the scope of future studies are deliberated at the end of this paper.

ISBN : 978-984-34-1383-3

Paper ID 138

Design of a Low-cost Lighting System for the Rural Areas of Bangladesh

Mohammad Salman Yasin[1], Mohammad Sharier Islam[2], Tanmoy Biswas[3] and M. Saidur Rahman[4]

[1-4]Department of Naval Architecture and Marine Engineering, BUET, Dhaka, Bangladesh
[1]ysalmanctg@gmail.com, [2]tonmoyahmed253@gmail.com, [3]tanmoy.biswas18@gmail.com and [4]said.buet10@gmail.com

Abstract: This study was conducted to find a solution to solve the problem of deprivation of light present in the rural society of Bangladesh. More than 50percent of our rural population are deprived of electricity. This in turns results in absence of light in houses. A device was designed using bottles, Light Emitting Diode, solar panel and battery for an alternative lighting system. This device is not so costly and can be reproduced very easily. Different variations of this device was tested using a light meter (Model-LX 1102). A brief overview of this newly proposed lighting system is discussed in the study.

Paper ID 140

Logical Clipper and De-clipper Technique to ReducePAPR from OFDM Signal

Md. Salim Raza[1], Md. Mhedi Hasan[2], Md. Obidul Islam[3] and Md. Shahjahan Ali[4]

[1,3]Department of EEE, Hamdard University ,[2]Department of ICT, Comilla University and [4]Department of APECE Islamic University, Bangladesh
[1]salim_aece04@yahoo.com, [2]mhedi.iu@gmail.com, [3]obidulapece@gmail.com and [4]jahanshah.iu@gmail.com

Abstract: Orthogonal frequency-division multiplexing (OFDM) is the most effective technique for high speed wireless communication systems. The key challenge of OFDM based transceiver is its large peak to average power ratio (PAPR) due to non-linearity effects of power amplifier at final stage of OFDM transmitter. In this work performance of OFDM system using logical clipper and de-clipper in the OFDM transmitter and receiver respectively has been studied. In the proposed method the clipped portion of the signal is transmitted as side information which is subsequently used by the receiver to reproduce the original signal. The whole system was simulated in MATLAB environment considering AWGN channel. It is observed that the proposed system can significantly reduce PAPR of OFDM signal.

Paper ID 147

Bio Inspired Cyber Security Architecture for Smart Grid

Muhammad Mostafa Amir Faisal[1] and Muhammad Ariful Islam Chowdhury[2]

[1,2] Dept. of Electronic and Telecommunications Engineering
International Islamic University Chittagong
Kumira, Chittagong, Bangladesh.

Abstract: Smart grid is an advanced and intelligent form of conventional power grid with high fidelity power-flow control, self-healing, and energy reliability using advance computer and communication technologies. The idea of integrating power systems with complex computer communication has introduced serious cyber security concerns as it requires significant dependence on secured communication infrastructures. Because of the wide nature of smart grid, it is very risky to compromise any component of

ISBN : 978-984-34-1383-3

the grid which may lead to serious damage to the electrical infrastructure, energy theft and unnecessary expenditure. Studying various smart grid security architectures, efficient bio-inspired complete security architecture for smart grid is proposed in this work which can be easily implemented in the smart grid without changing any element of its infrastructure. Bio-inspired cyber security architecture for smart grid is developed with discussion on the core elements of the architecture. The threat detection is tested with simulation using popular KDDDump dataset and real time gas pipe line SCADA data.

Paper ID 149

GFCC-Based Robust Gender Detection

Atiqul Islam
Department of Electrical & Electronic Engineering, International Islamic University Chittagong, Chittagong, Bangladesh
atiq.atrai@gmail.com

Abstract: Gender classification technique is a part of the signal processing comprises with feature extraction and behavioural gender modelling. In this study, Gammatone frequency cepstral coefficient (GFCC)-baseda robust gender classification method has been presented. Speech samples were taken from a text-dependent data set. The prototype behavioural model was created using Gaussian mixture model and only clean signal was used to train the model. The clean signal was contaminated using nine different noises at signal-to-noise ratios (SNRs) from 0 dB to 10 dB. The obtained performance showed the proposed method was very robust against noise and the average performance at 0 dB SNR was almost 96%. So, it could be said the proposed method performance was noise invariant.

Paper ID 150

FDLP-Based Robust Text-Dependent Speaker Identification

Atiqul Islam
Department of Electrical & Electronic Engineering, International Islamic University Chittagong, Chittagong, Bangladesh
atiq.atrai@gmail.com

Abstract: Speaker identification is a technique of determining an unknown speaker's identity among a number of speakers. This technique applications include crime investigation, security control, telephone banking and trading, and information reservation.Frequency domain linear prediction (FDLP) is a 2-D autoregressive model-based feature has been used for robust text-dependent speaker identification. FDLP feature is a time-frequency presentation of an input audio signal were constructed from sub-bands short frame energies estimation. The clean features were used to obtain speaker behavioural model.Support vector machine has been used to train the proposed method. This presented study was tested in both clean and noisy conditions to validate the method extensively.The proposed method got significant improved performance over all traditional methods performances in noisy conditions. The obtained performance was indicated, the proposed method was very robust to noises and showed consistent performance irrespective to noises.

ISBN : 978-984-34-1383-3

Paper ID 152

Automated Weather Event Analysis with MachineLearning

Nasimul Hasan[1], Md. Taufeeq Uddin[2] and Nihad Karim Chowdhury[3]

[1,2] Department of Computer Science and Engineering, International Islamic University Chittagong, Bangladesh
[3]Department of Computer Science and Engineering, University of Chittagong, Bangladesh
[1]nasimul_hsn@yahoo.com, [2]mohamed.taufeeq.uddin@gmail.com and [3]nihadcuet@gmail.com

Abstract: Weather forecasting has numerous impacts in our daily life from cultivation to event planning. Previous weatherforecasting models used the complicated blend of mathematical instruments which was insufficient in order to get higher classification rate. In contrast, simple analytical models are wellsuitedfor weather forecasting tasks. In this work, we focus on the weather forecasting by means of classifying different weather events such as normal, rain, and fog by applying comprehensible C4.5 learning algorithm on weather and climate features. The C4.5 classifier classifies weather events by building the decision tree using information entropy from the set of training samples. We conducted experiments on LA weather history dataset; from evaluation results, it is revealed that C4.5 classifier classifies weather events with f-score of around 96.1%. This model also indicates that climate features such as rainfall, visibility, temperature, humidity, and wind speed are highly discriminative toward events classification.

Paper ID: 160

Bomb Disposal Robot

Abdul Kadir Bin Motaleb[1], Mohammad Busayeed Hoque[2] and Md. Ahsanul Hoque[3]

[1-3]Dept. of Electrical & Electronic Engineering
International Islamic University Chittagong (IIUC)
Kumira, Chittagong, Bangladesh
[1]nabirctg@gmail.com, [2]busayeed23@gmail.c and [3]ahsan_03@yahoo.com

Abstract: Bomb disposal robot has been developed by different experts around the world to make an affordable and safe device which will be useful for emergency rescue support. A 6 DOF articulated robotic arm mounted on a moveable base is been developed to help bomb disposal squad to dispose bomb safely from distance. The whole operation of the robot can be performed wirelessly from a computer. DC servo motor is used as actuator of the arm, and the servo is controlled by the PWM signal generated by microcontroller. This report is concerned with the mathematical modeling of a 6 DOF robotic arm along with the methodology of the entire prototype development. Architectural and circuitry development are separately deliberated. Lastly, the performance of the developed robot has been discussed.

Paper ID: 162

Structural, Dielectric and Conductivity Studies of Ni-Cu-Cd Ferrite Nanoparticles

M. Arifuzzaman[1], M.J.Abden[2] , S. K. Ahmed[3] and M. Belal Hossen[4]

[1-2] Department of Electrical and Electronic Engineering International Islamic University Chittagong
Chittagong-4314, Bangladesh
[3-4]Department of Physics, Chittagong University of Engineering and Technology
Chittagong-4349, Bangladesh
[1]arifphy_uzzaman@yahoo.com, [2]mjaynul@gmail.com, [3]kamal.uits@gmail.com, [4]belalcuet@gmail.com

Abstract: In this study, the nanoparticles (NPs) of Ni0.6Cu0.1Cd0.3Fe2O4 (NCCF) ferrite were successfully synthesized by sol-gel auto combusted process. The effects of temperature and size on the structural,

ISBN : 978-984-34-1383-3

dielectric and conductivity properties of NCCF ferrite nanoparticles were investigated. X-ray diffraction (XRD) analysis of the NPs annealed at 550 and 700 oCdisplayed the single phase cubic spinel structure with the particle size of 11 and 17 nm, respectively. The surface morphology of the annealed NCCF ferrite nanoparticles was studied by using Field emission scanning electron microscopy (FESEM). Dielectric constant of larger partieles shows higher values at low frequency as well as lower dielectric loss tangent. ac conductivity shows conventional trend with size effects.

Paper ID: 163

A Compact Patch Antenna for Ultrawideband Application

M M. Tarikul Islam[1], M. Samsuzzaman[2], M. M. Islam[3] ,M.Z.Mahmmud[4], M.T. Islam[5]
[1]Dept. of Computer and Communication Engineering, [2]Faculty of Computer Science and Engineering
[3]Dept. of Software Engineering, Daffodil International University
[4,5]Dept. of Electrical Electronic and Systems Engineering, Universiti Kebangsaan Malaysia, Malaysia
[1]tarikulislam1994@gmail.com, [2]sobuz@pstu.ac.bd, [3]mmoiislam@yahoo.com,
[4]zulfikerm@siswa.ukm.edu.my and [5]titareq@gmail.com

Abstract: A compact microstrip linefed tapered-shaped slotted ultra-wideband(UWB) antenna is presented. The new design is composed of a rectangular slotted patch with a compact size of 21.44 × 23.53mm2 and fed by microstrip transmission line of 50Ω. The proposed antenna is simulated onto a less expensive FR4 substrate which has a height of 1.6mm. There achieved a wider bandwidth of 8.51 GHz(3.49-12 GHz) with good impedance matching, constant gain, 5.76 dBi of maximum gain and stable radiation pattern results in the proposed antenna more appropriate for using UWB communication applications compared to existing antennas. The proposed antenna is designed and simulated in HFSS and CST Microwave Studio software to see the antenna performance.

Paper ID: 165

Development of a Telemedicine Model with low cost Portable Tool Kit for Remote Diagnosis of Rural People in Bangladesh

Uzzal Kumar Prodhan[1], Mohammad Zahidur Rahman[2], Ahsin Abid[3] and Mohtasim Bellah[4]
[1]Computer Science & Engineering Department , Jatiyá Kabi Kazi Nazrul Islam University
Trishal, Maymensingh, Bangladesh
[2-4]Computer Science & Engineering Department, Jahangirnagar University
Savar, Dhaka, Bangladesh
[1]uzzal_bagerhat@yahoo.com

Abstract: In this paper we have developed a Telemedicine model with portable tool kit for remote patients to collect vital signs of patients which are used for Telemedicine services. This developed system is low cost, portable, and easily maintainable and can be integrated with any complex health system. We have used the GNU health where local doctors can communicate with a low cost terminal. Expert doctors can also take part through this terminal and deliver treatment to the patients. The patient's medical history is stored in GNU health database and accessed from the remote terminal. We have successfully designed the system and collected the patient's data. Through our developed android apps, the data will be stored in the staging server. From the staging server, any health system can collect the data and give the services to the rural people. Finally we can conclude that, Telemedicine service can be given effectively by using our portable tool kit in a cost effective manner which improves the quality and accessibility especially in rural areas.

ISBN : 978-984-34-1383-3

Paper ID: 168

Human Activity Recognition using Depth Body Part Histograms and Hidden Markov Models

Md. Zia Uddin[1], Jim Tørresen[2] and Taskeed Jabid[3]
[1]Department of Computer Education ,Sungkyunkwan University ,Seoul, Republic of Korea
[2] Dept. of Informatics,University of Oslo and [3]Dept. of Computer Science and Engineering, Sogang University
Seoul, Republic of Korea
[1]ziauddin@skku.edu and [2]jimtoer@ifi.uio.no

Abstract: This paper proposes a novel approach for human activity recognition based on body part histograms and Hidden Markov Models. From a depth video frame, body parts are segmented first using a trained random forest. Then, a histogram for each body part is combined to represent histogram features for a depth image. The depth video activity features are then applied on hidden Markov models for training and recognition. The proposed method was superior when compared with other conventional approaches.

Paper ID: 173

Financial Instability Analysis using ANN and Feature Selection Technique: Application to Stock Market Price Prediction

Risul Islam Rasel[1], Nasrin Sultana[2] and Nasimul Hasan[3]
[1,3]Department of Computer Science and Engineering, International Islamic University Chittagong
[2] Department of Computer Science and Engineering, University of Chittagong
[1]risul-islam@cse.iiuc.ac.bd, [2]nasrin_cse@cu.ac.bd and [3]nasimul_hsn@yahoo.com

Abstract: Nowadays, Demand of forecasting stock market price is increasing at a higher rate than the ever before as more people are getting connected to the stock business. Many criteria play more or less strong inductive role over the stock market, the trend and price always keep changing here. So, it is challenging to predict exact price value. But some Data mining and Machine learning techniques can be implemented to do this challenging task to predict stock market price and trend. In this study, Artificial Neural Network (ANN) is used along with windowing operator; which is highly efficient for working with time series data for predicting stock market price and trend. This study is done on Wal-Mart Stores Inc. (WMT) a listed company of New York Stock Exchange. Five years historical dataset (2010-2015) is used to undertake the experiments of this study. According to the result of this study Artificial Neural Network (ANN) can produce a rational result with a small error.

ISBN : 978-984-34-1383-3

Paper ID: 178

Implementation of 1xN Router Based on Mach-Zehnder Interferometer Electro-Optic Switch

Rabeya Khatun[1] and A. Zahed Chowdhury[2]
[1,2]Department of Applied Physics, Electronics & Communication Engineering
University of Chittagong
Chittagong-4331, Bangladesh
[1]shompa.apece@gmail.com and [2]zahed_apece@cu.ac.bd

Abstract: Signal routers are novel photonic components that ensure communication between a large numbers of optical networks. In this paper we present the construction of 1xN router by using 2x2 Mach-Zehnder interferometer electro-optic switches operating at 1.55 μm. The 2x2 Mach-Zehnder Interferometer (MZI) electro-optic switches in the routers are made by titanium diffused potassium niobate (Ti:KNbO3) and the results of the routers were compared with titanium diffused lithium niobate (Ti:LiNbO3) based routers to ease the choice of materials in implementing large networks. Enhanced performance of a single switch was evaluated at first to obtain reduced insertion loss, high extinction ratio & low excess loss. Then we implemented the 1x2, 1x4, 1x8 and 1x16 routers using that optimized switches. We can switch the input optical power to each of the output ports of the routers by the application of applied voltage at each second electrode of the MZI switches. The originality of this work is to introduce Ti:KNbO3 waveguide in the design of signal router. The simulation is done and also outputs are calculated by using OptiBPM12.2 simulation software.

Paper ID: 182

A Highly Efficient InGaN Single Junction Solar Cell Using MATLab

Nargis Akter[1],Sanjida Sharmin[2], Rahima Afrose[3] , M.A.Matin[4] and N. Amin[5]
[1-3]Department of Computer Science and Engineering, International Islamic University Chittagong
Chittagong, Bangladesh
[4]Department of Electrical and Electronic Engineering, Chittagong University of Engineering and Technology
Chittagong, Bangladesh
[5]Department of Electrical, Electronic and System Engineering, Universiti Kebangsaan Malaysia
Bangi, Selangor, Malaysia
[1]nargis.cuet@gmail.com, [2]ssharmin114@gmail.com, [3]iiucrahima@gmail.com, [4]imamatin@yahoo.com,
and [5]nowshad@eng.ukm.my

Abstract: Though the expenditure of world energy is increasing exponentially, it is obvious that a solution of renewable energy must be utilized. In order to fulfill the energy demand of the mankind, utilization of the huge energy of the sun by transforming it into electricity is an emerging alternative way. Recently developed InGaN is a direct band gap solar photovoltaic material that has an amazing tunable band gap of 0.7 eV to 3.4 eV and a high optical absorption coefficient over 105 /cm. In this paper, numerical simulations has been done using MATLab to explore the unknown potential of this promising material to design a high performance InGaN solar cell.All the required parameters for simulation were determined from the theory, literature and in some cases reasonable estimation. This simulation were done with different ratio of In and Ga content for the single junction solar cell and found a high conversion efficiency of 27.3% with this InGaN compound material.

ISBN : 978-984-34-1383-3

Paper ID: 183
An Analysis of the Problems for Health Data Integration in Bangladesh

Shahidul Islam Khan[1] and Abu Sayed Md. Latiful Hoque[2]
[1,2]Department of Computer Science and Engineering (CSE), Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
[1]nayeemkh@gmail.com and [2]asmlatifulhoque@cse.buet.ac.bd

Abstract: Discovering the hidden knowledge from different health data repositories requires the integration of health data from widely diversified sources. While integration, maintaining record linkage is a critical research issue for developing countries such as Bangladesh. Researchers have given different solutions to this problem that are applicable for developed countries where electronic health record of patients are maintained with identifiers like social security number (SSN), Universal Patient Identifier (UPI), etc. These algorithms cannot be used for integrating health data in Bangladesh because of many missing data, different ID used for the same patient in same or different systems and high amount of noise in other patient information. In this paper, we have defined the constraining factors of healthcare date available in Bangladesh and other developing countries. We have analyzed the practical problems of collecting and integrating healthcare data in Bangladesh to build up its National Health Data Warehouse (NHDW). We have also provided some important recommendations to boost the integration process and also to support record linkage.

Paper ID: 184
A Prospective Model of Bangladesh Electricity Market

S. M. G. Mostafa[1], Jai Govind Singh[2], H. Masrur[3] and Md. Shahid Ullah[4]
[1-3] Energy Filed of Study, SERD, Asian Institute of Technology, Pathumthani-12120, Thailand
[4] Department of Electrical and Electronic Engineering, International Islamic University Chittagong (IIUC) Chittagong-4203, Bangladesh
[1]mostafa.93eee@gmail.com, [2]jgsingh@ait.ac.th and [4]shahideee04@gmail.com

Abstract: The traditional vertically integrated utility company combines the generation, transmission, distribution and customer service in a seamless operation that makes no detailed distinctions about the costs of each of these four activity levels. The target of deregulation of electricity market is to create an open access to assure perfect competition among purchasers and sellers and establish a reliable, secure and affordable electrical power system. So electric markets around the globe are undertaking unique changes related to deregulation to improve the efficiency of electricity power markets. Independent System Operator (ISO) and Power Exchange (PX) play very crucial role on unbundled power market. The integrated single buyer electricity market model of Bangladesh has very limited access of retail competition that lead to monopoly business of electricity. In this paper we propose a structure for the vertically unbundled electricity market of Bangladesh on the basis of existing electricity market around the world.

ISBN : 978-984-34-1383-3

Paper ID: 190

Design & Implementation of an UAV (Drone) with Flight Data Record

Tuton Chandra Mallick[1] , Mohammad Ariful Islam Bhuyan[2] and Mohammed Saifuddin Munna[3]
[1-3]Department of Electrical and Electronic Engineering, Premier University, Chittagong
Chittagong- 4203, Bangladesh.
[1]tuton.soc@gmail.com , [2]arif.ajtfs@yahoo.com and [3]munna.puc@gmail.com

Abstract: This paper proposed the development of an autonomous unmanned aerial vehicle (UAV) which is controlled by wireless technology through graphical user interface (GUI). This proposed design capable to fly autonomously and also capable to track pre loaded mission automatically. Proposed mathematical model and artificial algorithm control technique by which quad rotor can capable to fly autonomously, trajectory tracking, graceful motion and accurate altitude hold performance. In this system author used IMU 9DOF (3-axis accelerometer, 3-axis gyroscope & 3-axis magnetometer) which ensure it smooth movement, graceful motion and trajectory tracing. GPS system and barometric sensor make it more efficient in autonomous mode. Several PID loops designed to get better stability and performance in different mode. All signals are processed by a powerful high speed controller board which makes it more efficient and effective. This work aimed to design a quad copter that will try stable its position according to preferred altitude. Also here stability check has been done with pitch and roll. All data and result discussed at the end of paper.

Paper ID: 191

Performance Measurement of Different Backoff Algorithms in IEEE 802.15.4

Md. Mohibur Rahaman[1], Kazi Ashrafuzzaman[2], Mohammad Sanaullah Chowdhury[3] and Mohammad Osiur Rahman[4]
[1-4]Department of Computer Science & Engineering, University of Chittagong,
Chittagong-4331, Bangladesh.
[1]mohib.csecu@yahoo.com , [2]ashraf@cu.ac.bd , [3]sana1691@gmail.com and [4]osiur_rahman@yahoo.com

Abstract: The Low Rate Wireless Personal Area network (LR-WPAN), that is IEEE 802.15.4 is extensively used for many areas of applications. The Slotted CSMA/CA mechanism is used by the standard in its contention access period (CAP) in beacon enabled mode. The protocol supported a binary exponential backoff (BEB) algorithm. In this paper ,we investigate the saturation throughput, mean frame service time or delay and energy of this standard using the existing BEB algorithm and compares it with three other backoff schemes-exponential increase exponential decrease (EIED), exponential increase linear decrease (EILD), and exponential increase multiplicative decrease (EIMD) algorithm. From simulation results ,it is obtained that EIED, EILD,EIMD performs better than BEB for higher loads that is EIED,EILD,EIMD has better throughput, less delay ,using minimal power. The EIED propagates the highest throughput, less delay and minimal energy used among all of these schemes.

ISBN : 978-984-34-1383-3

Paper ID:-199

A Compact Triangular Shaped Microstrip Patch Antenna with Triangular Slotted Ground for UWB Application

M. A. Ullah[1], F. B. Ashraf[2], S. Kibria[3] , M. T. Islam[4] ,T. Alam[5] and M. S. Alam[6]
[1-4]Dept. Of Electrical, Electronic and Systems Engineering,
Universiti Kebangsaan Malaysia (UKM), Malaysia
[5-6]Dept. of CSE, International Islamic University Chittagong (IIUC). Bangladesh
tariqul@ukm.edu.my

Abstract: This paper is aimed to present a very small sized patch antenna for UWB applications. The antenna used microstrip feed-line. This antenna is very small in dimension. The total size of the antenna is 20×18mm2. Triangular slots in the partial ground plane, are used to get a better bandwidth. The antenna has VSWR<2 over the bandwidth. The whole designing and simulation process of the antenna is done by CST Microwave Studio software.

Paper ID:-203

Rotation Invariant Power Line Insulator Detection Using Local Directional Pattern and Support Vector Machine

Taskeed Jabid[1] and Md. Zia Uddin[2]
[1]Department of Computer Science and Engineering, Sogang University
Seoul, Republic of Korea
[2]Department of Computer Education, Sungkyunkwan University
Seoul, Republic of Korea
[1]taskeed@ewubd.edu and [2]ziauddin@skku.edu

Abstract: Detecting and localizing insulator plays a vital role in any power line monitoring system. In this work, we present a novel method for rotation invariant insulator detection. Rotation invariance is achieved by an efficient approach for estimating rotation angle of all insulator of an image. Sliding window based local directional pattern (LDP) feature is extracted from the image and support vector machine is used for classing each of those sliding window. We demonstrate our approach on an evaluation set of 325 real-world insulator images captured from a moving vehicle and evaluate our results with respect to a manually created ground-truth. The performance of our insulator detector is comparable to other state-of-the-art detectors.

Paper ID:-211

Occlusion Handling and Human Detection Based on Histogram of Oriented Gradients for Automatic Video Surveillance

Shayhan Ameen Chowdhury[1], Mir Md. Saki Kowsar[2] ,Kaushik Deb[3] and Mohammed Nasir Uddin[4],
[1-3] Dept. of Computer Science and Engineering, Chittagong University of Engineering & Technology (CUET),
Chittagong-4349, Bangladesh
[4]Dept. of Computer Science and Engineering, Jagannath University, Dhaka-1100, Bangladesh
[1]shayhan@yahoo.com, [2]sakikowsar@cuet.ac.bd, [3]debkaushik99@cuet.ac.bd and [4]nasir@cse.jnu.ac.bd.

Abstract: Human detection in a video surveillance system has vast application areas including suspicious event detection and human activity recognition. In the current environment of our society suspicious event

ISBN : 978-984-34-1383-3

detection is a burning issue. For that reason, this paper proposes a framework for detecting humans in different appearances and poses by generating a human feature vector. Initially, every pixel of a frame is represented as an incorporation of several Gaussians and use a probabilistic method to refurbish the representation. These Gaussian representations are then estimated to classify the background pixels from foreground pixels. Shadow regions are eliminated from foreground by utilizing a Hue-Intensity disparity value between background and current frame. Then morphological operation is used to remove discontinuities in the foreground extracted from the shadow elimination process. Partial occlusion handling is utilizedby colorcorrelogramto label objects within a group. After that, the framework generates ROIs by determining which of the foregrounds represent human by considering conditions related to human body. Finally, Histogram of Oriented Gradients (HOG)feature is extracted from ROI for classification. Various videos containing moving humans are utilized to evaluate the proposed framework and presented outcomes demonstrate the adequacy.

Paper ID:-212

Grid-voltage Synchronization Algorithm for Grid Tied Renewable Energy Sources During Adverse Grid Fault Condition

Khaled Syfullah Fuad[1], Eklas Hossain[2] and Md Rahmat Ullah Chowdhury[3]

[1]Department of Computer Science & Engineering, Britannia University, Bangladesh

[2]Department of Electrical Engineering & Renewable Energy, Oregon Institute of Technology, USA

[3]Department of Electrical & Electronic Engineering, International Islamic University Chittagong, Bangladesh

Abstract: Grid-voltage synchronization algorithm performs the main role during unbalanced and distorted grid fault condition to measure the positive- and negative-sequence values of grid voltage at the point of common coupling for grid-tied renewable energy sources. Power control during severe grid conditions mostly depends on these measured values. Three-phase synchronous reference frame phase-locked loop (SRF-PLL) is the most conversant methods for grid-voltage synchronization. Decoupled Double Synchronous Reference Frame PLL (DDSRFPLL) is one of the most advanced synchronization algorithm. In this paper, calculation for power control during unbalanced grid condition are given for active and reactive power and performance of DDSRF-PLL is evaluated under adverse grid fault conditions.

Paper ID:-219

Experimental Verification of Regenerative Braking Characteristics by Applying Different Motor Armature Voltage

S.M. Baque Billah[1], Dr. Kazi Khairul Islam[2] and Shahadat Hossain[3]

[1-2]Department of Electrical and Electronic Engineering, Islamic University of Technology (IUT) Gazipur, Bangladesh

[3]Department of Electrical and Electronic Engineering, University of Science and Technology Chittagong Chittagong, Bangladesh

[1]baque.ustc06@gmail.com, [2]kkislam@iut-dhaka.edu and [3]shahadat_iut@yahoo.com

Abstract: Simpler design of control system is the key advantage of DC motor. In recent decade ,however use of dc motor in battery-operated electric vehicles (BEV) are declined spectacularly .Without significant improvement of efficiency of such system the use of dc motor in BEV will be objectionable. Regenerative braking is the possible way to improve the efficiency. In this paper a novel regenerative braking mechanism

ISBN : 978-984-34-1383-3

for electric vehicles based on DC motor is proposed. The performance of the proposed braking system has been evaluated experimentally for different motor armature voltage. For this a prototype model of BEV has been used. Simulation results show that the proposed regenerative braking technique is feasible and effective. Also this research provides a new possibility of cost effective equipments and simplest system for regenerative braking to improve the drive distance of electric vehicles.

Paper ID:-224

Manipulation of Structural, Electrical and Magnetic Properties on Zinc Substitution in Cobalt Zinc Nanoferrite

S. Nasrin[1] , M. Moazzam Hossen[2], F.-U.-Z. Chowdhury[3] and S. Manjura Hoque[4]

[1]Department of Physics, University of Chittagong , Chittagong 4331, Bangladesh

[2]Department of Computer Science & Engineering , International Islamic University Chittagong Chittagong 4203, Bangladesh.

[3]Department of Physics, Chittagong University of Engineering & Technology Chittagong 4349, Bangladesh,

[4]Materials Science Division ,Atomic Energy Centre, Dhaka 1000, Bangladesh

[1]shamima_phys@yahoo.com, [2]mhossen65@yahoo.com, [3]faruque_chow@yahoo.com, [4]manjura_hoque@yahoo.com

Abstract: Using wet chemical co-precipitation method cobalt-zinc nanoparticles (Co1-xZnxFe2O4, with x =0.2, 0.4, 0.6 and 0.8) were synthesized and sintered at 1200 °C. X-ray diffraction pattern of all the samples confirmed the single phase spinel formation. The scanning electron microscopy (SEM) was utilized for surface morphology study of samples. Impedance spectroscopy and initial permeability studies for all compositions have been performed in the frequency range 1 kHz to 120 MHz. We observed that the initial permeability remains more or less stable up to certain higher frequency range. The DC electrical resistivity demonstrates a definite break that has been explained in the light of conduction mechanism.

Paper ID:-228

HSV and Template Matching Based Bengali Road Sign Recognition Technique

Mohsina Binte Asad[1], Fatema Jannat Sharna[2], Nashid Alam[3] and M. Jahirul Islam[4]

[1,2]Sylhet Engineering College

[3]Sylhet Agricultural University

[4]ShahjalalUniversity of Science and Technology

[1]mohsina.asad@gmail.com, [2]sharnasec@gmail.com, [3]annanya_cse@yahoo.co.uk and [4]jahir75bd@gmail.com

Abstract: Road sign recognition plays a vital role for easy, safe and convenient driving.In this paper, a road sign detection system is developed to automatically recognize bengali road signs.The proposed method is based on HSV transformation along with a template matchingtechnique to detect and recognize circular, triangular, rectangular and octagonal signs and covers all existing bengali road signs.The localization phase requires 2.846 seconds for color information processing and recognition phase requires five to six seconds in average.Thesystem is consist of two stages: sign localization and recognition. Inlocalization stage, the sign is labeled based on its color informationOriginal image is converted into HSV image. After applying proper thresholding value, the HSV image is converted into binary image.Then hole filling operation is

ISBN : 978-984-34-1383-3

used.After that the biggest blobs are detected.and then the sign is cropped out by calculating both maximum and minimum values of rows and columns of the matrix containing labels for the connected components in binary image.In recognition step, the sign is recognized using Template Matching. which is done by creating a small template from cropped image.do a pixel by pixel matching of template with every possible pixel of main image using a similarity matric normalized cross correlation to find the pixel giving maximum match.The whole system was tested over 31 unique signs collected from SylhetMetropolitan City. The system is able to recognize 25 unique signs showing 83.33% accuracy in recognition step.

Paper ID:-236

Analytical Study of High Efficient Cu(In,Ga)Se2 Solar Cell with In2S3 Buffer Layer

Mohammad Sijanur Rahaman Robin[1], Khurshedul Islam Meheraj[2] and MD. Shakowat Zaman Sarker[3],

[1-2]Electrical and Electronic Engineering, International Islamic University Chittagong, Chittagong-4314, Bangladesh

[3]Electrical and Electronic Engineering, Uttara University, Dhaka-1230, Bangladesh

[1]sijan.robin24@gmail.com

Abstract: This paper represents a lucid numerical analysis of thin film Cu(In,Ga)Se2 (CIGS) solar cell with In2S3 (Indium Sulphide) buffer layer by using SCAPS-1D. The effect of band gap, concentration and thickness of both Cu(In,Ga)Se2 absorber layer and In2S3 buffer layer are investigated in this simulation. This study is focused to analyze electrical performances of In2S3 buffer layer based Cu(In,Ga)Se2 solar cell for a better substitute of toxic CdS buffer layer. The optimum thickness has found 40 nm for In2S3 buffer layer and 3000 nm for Cu(In,Ga)Se2 absorber layer. In addition, the optimum band gap of CIGS and In2S3 layer has attained 1.10 eV and 2.6 eV subsequently and 25.03% efficiency has achieved along with 0.75 V open circuit voltage (Voc), 39.435 mA/cm2 short circuit current density (Jsc) and 84.62% Fill Factor (FF).

Paper ID:-254

Segmentation Analysis on Magnetic Resonance Imaging (MRI) with Different Clustering Techniques:Wavelet and BEMD

Lamia Iqbal Dolon[1], Aditi Ghosh[2], Touhidul Alam[3], Mohammed Shamsul Alam[4], Md. Khaliluzzaman[5], Ahmed Imteaj[6] and Mohammad Mahadi Hassan[7]

[1-7]Dept. of Computer Science and Engineering, International Islamic University Chittagong, Chittagong - 4203, Bangladesh

[1]lamiaiq04@yahoo.com, [2]aditighosh510@gmail.com, [3]touhid13@gmail.com, [4]alam_cse@yahoo.com, [5]khalil_021@yahoo.co.in, [6]imtu_1992@yahoo.com, [7]mahadi_cse@yahoo.com

Abstract: Tumor creates as a lopsided mass of tissues that can be condensed or liquid-filled. It can grow in any part of body. A tumor sometimes can cause to cancer as it will grow in deadly form or sometimes it doesn't mean to be like cancer or like so serious condition. Tumors have lots of names and their name have been categorized by their various shapes and their containing material. This paper is based on the previous works of image segmentation analysis with different techniques like wavelet process and bidimensional empirical mode decomposition (BEMD). For the brain tumor treatment, tumor detection is very important and so for tissue extraction. The artificial brain images have been used for this experiment. By that, the segmentation of noisy MR images has done almost perfectly. As for MR image segmentation for better treatment purpose the previous works on MR segmentation should be acknowledged. By that the most

ISBN : 978-984-34-1383-3

useful algorithm like the previous FCM algorithm can be found and more specific way of noisy image segmentation can also be detect. Gradually from that the new techniques or ways will be explored in future work. By comparing the techniques, a better method can be establish of image segmentation.

Paper ID:-256

Variation of Structural and Mechanical Properties as 20 wt% ZrO2 Added to Al2O3 for Biomedical Application

Moazzam Hossen[1], Shamima Nasrin[2], Dr. Faruque-Uz-Zaman Chowdhury[3] and A. K. M. Abdul Hakim[4]

[1]International Islamic University Chittagong, Chittagong, Bangladesh
[2]University of Chittagong, Chittagong, Bangladesh
[3]Chittagong University of Engineering & Technology (CUET), Chittagong-4349, Bangladesh.
[4]Bangladesh University of Engineering & Technology, Dhaka 1000, Bangladesh
[1]mhossen65@yahoo.com, [2]shamima_phys@yahoo.com, [3]faruque_chow@yahoo.com and [4]hakim.akm@gmail.com

Abstract: Employing slurry method, 20 wt % of ZrO2 has been prepared by mixing high purity nanocrystalline α-alumina powder and sintered at 1600°C for two hours. XRD pattern confirmed the existence of m and t phase of 20 wt % of ZrO2 compared to pure alumina. The theoretical and bulk density increases with the doping of zirconia, whereas porosity decreases with the same change of zirconia. By using SEM, the surface morphology of the samples has been studied. The effect of zirconia content on hardness and elastic modulus were investigated. Maximum hardness and elastic modulus has been observed for pure alumina. Moreover, flexural strength shown increasing trend with the increase of zirconia content. An alternative design of Al2O3-ZrO2 composites can be employed for improved structural and mechanical properties for biomedical application rather than using pure alumina at 1600°C.

Paper ID:-261

Solar Energy as an Alternative of IPS in Bangladesh

Anis Haque
Department of Electrical and Computer Engineering
University of Calgary, Calgary, Canada

Abstract—The use of IPS in Bangladesh is rapidly increasing because of the shortfall in electricity generation. The entire energy loss by an estimated total number of IPS units would be as high as 46 GWh/year. This paper has proposed an alternative solar system to make it sustainable and cost effective. It compares a stand-alone rooftop solar system and a 100 kWp centrally managed grid-connected system in Chittagong. The technical details of the grid-connected system has been discussed. It also provides a comparison with the same system installed in Berlin, Germany.

ISBN : 978-984-34-1383-3

Paper ID:-266

Design and Simulation of Piezoelectric Cantilever Beam Based on Mechanical Vibration for Energy Harvesting Application

Md. Naim Uddin[1], Md. Shabiul Islam[2], Sawal H. Md. Ali[3], M.S. Bhuyan[4] and Jahariah Sampe[5]
[1]Institute of Microengineering & Nanoelectronics (IMEN), UKM, Bangi, Selangor, Malaysia
[2]Multimedia University, 63100 Cyberjaya, Malaysia
[3]Department of Electrical, Electronic and Systems Engineering, UKM Bangi, Selangor, Malaysia
[4]Department of Computer Science and Engineering, Stamford University Bangladesh, Dhaka, Bangladesh
[1]mohammednaimuddin@siswa.ukm.edu.my, [2]shabiul@ukm.edu.my, jahariah@ukm.edu.my,
[3]sawal@ukm.edu.my and [4]shakir_dhaka@stamforduniversity.edu.bd

Abstract: This paper presents design and simulation of a piezoelectric cantilever beam for energy harvesting using mechanical ambient vibration. Ambient vibration energy used by the developed piezoelectric cantilever beam can be converted into electrical energy using piezoelectric effect as a piezoelectric energy harvester. The piezoelectric cantilever beam was consisted of copper substrate, two piezoelectric layers, and a base. The two piezoelectric layers were placed at the top and bottom faces of the copper substrate. The 3D design of the beam was performed by using SolidWorks. The simulation of the piezoelectric harvester was performed by COMSOL Multiphysics where Finite Element Method (FEM) was used. During the analysis, mechanical and electrical properties of the energy harvester were analysed. In the mechanical properties analysis, maximum vertical displacement of 70.9 μm and maximum stress of 7.96×105 N/m2 were obtained at resonant frequency of 345.75 Hz. A maximum output power of 14.85 μw and voltage of 595.5 mV was obtained from the harvester at 12.6 kΩ under the acceleration of 1 g (g = 9.81 m/s2) at resonant frequency of 345.75 Hz. This energy harvester can be used for numerous purpose in the field of sensors and wireless sensor networks.

Paper ID:-267

A Comprehensive Study and Performance Based Evaluation on Routing Protocols of WiMAX

Farzana Shabnam[1], Aparna Saha[2], Rifat Binte Sobhan[3] and Tanmoy Debnath[4]
[1-4] Department of Electrical & Electronic Engineering, BRAC University
Dhaka, Bangladesh
[1]fshabnam@bracu.ac.bd, [2]aparnasaha31@gmail.com, [3]rifatbintesobhan@gmail.com and
[4]meghbaloktanmoy@gmail.com

Abstract: Worldwide Interoperability for Microwave Access (WiMAX) technology is a subdivision of the vast field of wireless communications, which breaks the restrictions of DSL, cable-modem or T1 infrastructure based wire line of our broadband Internet connections [1]. Wireless networking has become an important area of research in academic and industry. The four high-speed intensive applications such as high-speed data, video, voice and streaming media are being served properly by the WiMAX network, which overcomes the term digital divide. It has a number of spearhead applications with at-home and dynamic internet accessibility along with large geographical coverage and relatively low expense to pursuit. Routing overhead, unidirectional link support, delay, throughput, QoS support and multicast are the analysable terms by whom we can define the WiMAX protocols. To attain best use of this technology selection of suitable protocol is very important. In our paper, most imperative protocols of 802.16 WiMAX network

ISBN : 978-984-34-1383-3

called AODV, DSDV and OLSR is ventilated as well as further criticized in accordance with their performance on WiMAX where AODV is a reactive (on demand) protocol and both DSDV and OLSR are proactive.

Paper ID:-278

Modeling of Highly Efficient Molybdenum Telluride Solar Cells with Zinc Telluride as a Novel BSF

Mrinmoy Dey[1], Maitry Dey[2], M.A. Matin[3] and Nowshad Amin[4]
[1,3]Chittagong University of Engineering and Technology, Chittagong, Bangladesh
[2]Premier University, Chittagong, Bangladesh
[4]Universiti Kebangsaan Malaysia, Malaysia

Abstract: For high efficiency and better thermal stability, Molybdenum telluride (MoTe2) is considered as potential solar cell. AMPS (Analysis of Microelectronic and Photonic Structures) simulator is used to investigate the cell performance parameters for ultra-thin MoTe2PV cell. In this research work, it has been explored that the cell conversion efficiency of MoTe2 PV cell is improved with the insertion of Zinc Telluride (ZnTe) as back surface field (BSF) above the back contact metal. The highest conversion efficiency of 25.29% was found for ZnTe BSF with only 0.7 μm of absorber layer whereas it was 17.06% for no BSF with 1 μm thickness of absorber layer. The thermal stability of MoTe2 PV cell with ZnTe BSF showed better stability.

ISBN : 978-984-34-1383-3

Abstract of Papers

Track-02

(Pharmaceutical Sciences)

Paper ID-16

In vitro, in Vivo and in Silico Drug-drug Interaction Study between Vildagliptin and Bisoprolol Fumarate.

Kazi Ashfak Ahmed Chowdhury[1], Mohammad Shah Hafez Kabir[2], Mohammed Munawar Hossain[3], Tanvir Ahmad Chowdhury[4] and Nishan Chakrabarty[5]

[1-5]Department of Pharmacy, International Islamic University Chittagong, Chittagong-4203, Bangladesh

[1]ashfak4u_ctg@yahoo.com, [2]mohammadshahhafezkabir@yahoo.com, [3]munawarhossainiiuc@yahoo.com, [4]tanvirpharma31@gmail.com and [5]nishaniiuc@gmail.com

Abstract: Aim of the present study to evaluate the in vitro, in vivo and in silico drug-drug interaction between Vildagliptin and Bisoprolol fumarate.

Interaction between Vildagliptin and Bisoprolol fumarate has been studied in a system of water at a fixed 370C at pH 1.0, 3.0 and 6.8 by using spectral observation, Job's method of continuous variation, Ardon's method. In silico complexation was measured by NMR prediction and DDI-CPI analysis.

From spectrophotometric study, Vildagliptin and Bisoprolol fumarate give different spectra when Vildagliptin mixed with Bisoprolol fumarate in 1:1 mixture, intensity of spectra of Vildagliptin transform surprisingly due to interaction. The jobs plot was attained by plotting absorbance difference (D) against the mole fraction of the each drug at pH 1, 3, and 6.8. Vildagliptin moderate for 1:1 mixture with Bisoprolol fumarate and slightly lower spectra indicate the formation of 1:1 mixture of Vildagliptin with Bisoprolol fumarate. The value of stability constant for the drug-drug system at pH 1.0, 3.0 and 6.8 are 1.875 0.7778 and 1.2000 respectively. From the IR report it also proved that Vildagliptin and Bisoprolol fumarate produced interaction. In this OGTT test at 1:1, 1:2 and 2:1 complex blood glucose level decrease compared to Vildagliptin. Because when drug-drug interaction happened, then drug cannot exhibit its main activity. That's why in this test complex showed different activity. In in silico methods, results showed that the drugs interact with each other. So, a careful concern is desired during simultaneous administration of Vildagliptin with Bisoprolol fumarate.

Paper ID-22

Alkaline Serine Protease Production from Bacterial Isolates by Using Organic Municipal Solid Wastes

Al Hakim[1],Farhana Rumzum Bhuiyan[2],Asif Iqbal[3],Yeasmin Akter[4], Jahed Ahmed[5],Mahmudul Hasan[6],Kamrul Islam[7] and Abul Kalam Azad[8]

[1-8] Department of Genetic Engineering and Biotechnology, Shahjalal University of Science and Technology, , Bangladesh

[1]hakim@student.sust.edu, [2]farhana_rumjhum@yahoo.com, [3]masif.chaperon@gmail.com, [4]yeasminakter65@gmail.com, [5]jahedahmed@student.sust.edu, [6]hasan_sust@yahoo.com, [7]kamrul-gen@sust.edu and [8]dakazad-btc@sust.edu

Abstract: Municipal solid wastes (MSW) management in Bangladesh simply involves collection and dumping of wastes in open field resulting environmental pollution, climate change and public health hazards. Almost 75% constituent of the MSW is organic materials which can be used as raw materials for production of different types of industrially important enzymes. We have isolated and screened proteolytic bacteria from MSW and identified two bacterial isolates as Microbacterium hatanonis and Exiguobacterium indicum based on 16S rDNA sequences. Maximum level of protease production was achieved from M. hatanonis (86.25 U/ml) and E. indicum (155.6 U/ml) after 24 h of fermentation in a basal medium. The

ISBN : 978-984-34-1383-3

protease productions by M. hatanonis was optimized in shake flask and bioreactor by using different concentrations of organic MSW as the sole source of carbon and nitrogen under optimized temperature, pH and agitation. In comparison with the shake flask, protease production was scaled-up 2-fold in the bioreactor with reduction of fermentation period. The partial purification of protease followed by ammonium sulfate fractionation and anion exchange chromatography, resulted in a final 64.46-fold purified protease with a specific activity of 36446 U/mg protein and a typical yield of 6.4%. Optimum protease activities were found at 40 °C and pH 9.0. Protease from the M. hatanonis 60°C. The effects of protease inhibitors tested revealed that the protease of M. hatanonis was serine and cysteine type. The protease activity of partially purified protease from M. hatanonis was stimulated by K+ but severely inhibited by Zn2+, Hg2+, Co2+ and Fe3+. The purified protease from M. hatanonis was excellent in dehairing, recovery of silver from x-ray photographic films and raw protein degradation.

Paper ID-25

In Vitro Reconstitution of Mutant Catalytic Domains of Enterococcus Hirae V-ATPase

Md Jahangir Alam[1] and Ichiro Yamato[2]

[1]Department of Genetic Engineering and Biotechnology, Shahjalal University of Science and Technology, Bangladesh
[2]Department of Biological Science and Technology, Tokyo University of Science, Japan
[1]jalambioru@yahoo.com

Abstract: Vacuolar ATPase (V-ATPase) of Enterococcus hirae is composed of a soluble functional domain V1 and an integral membrane domain Vo , where V1 and Vo domains are connected by a central stalk and two peripheral stalks. We identified 120 interacting residues of A3B3 heterohexamer with D-subunit in DF heterodimer in the crystal structures of A3B3 and A3B3DF. In this study, we constructed two mutant forms of A-subunit of E. hirae V-ATPase, viz. A¬¬R475A and ALV476-7AA. Mutant A¬¬R475A and ALV476-7AA proteins were successfully expressed as His-tagged soluble proteins in Escherichia coli BL21 (DE3) cells without IPTG induction at 30°C for 12 hours incubation and afterward, purified by gelfiltration chromatography. After removing His-tag by the treatment of His-TEV protease, mutant proteins were purified and reconstituted mutant A3B3 heterohexamers. Both mutant heterohexamers formed catalytic domain (V1 moiety- AR475A3B3DF and ALV476-7AA3B3DF complex, respectively) with DF heterodimer independent of nucleotides.

Paper ID-28

Phytochemical and Biological Investigation on Artocarpus Chaplasha Roxb.

Sanjida Sharmin[1], Fakir Shahidullah Tareq[2], Choudhury Mahmood Hasan[3] and Monira Ahsan[4]

[1]International Islamic University Chittagong,Bangladesh
[2-4]University of Dhaka, Bangladesh
[1]sharmin.shanjida@gmail.com, [2]messages-noreply@linkedin.com, [3]cmhasan@gmail.com and
[4]ahsanm80@yahoo.com

Abstract: Mixture of two compounds cycloartenyl acetate (1) and lupeol acetate (2) were isolated from the methanolic extract of the stem bark of Artocarpus chaplasha Roxb.(Family: Moraceae).The crude methanol extract as well as its petroleum ether, carbon tetrachloride; chloroform and aqueous soluble fractions were studied for antioxidant, antimicrobial and cytotoxic activities. Among the different fractions tested for antioxidant activity, the aqueous soluble partitionate was the most potent as compared to tertbutyl-1-hydroxytoluene Antimicrobial screening of the different extractives was conducted by the disc diffusion

ISBN : 978-984-34-1383-3

method and the chloroform soluble fraction as well as carbon tetrachloride soluble fractions of methanolic extract exhibited moderate antimicrobial activity with zone of inhibition ranging from 8-12 mm. In brine shrimp lethality bioassay, the carbon tetrachloride soluble materials demonstrated the highest toxicity.

Paper ID-30

Evaluation of in Vitro anti-inflammatory activity of Leea rubra by Membrane Stabilization Assay and Against the Denaturation of Protein

Afrina Azad[1], Shahnaj Parvin[2] and Ekramul Islam[3]
[1]International Islamic University Chittagong,Bangladesh
[2,3]University of Rajshahi,Bangladesh
[1]afrina.ru.pharm@gmail.com, [2]shahnaj_parvin@ru.ac.bd and [3]and ekrams74@yahoo.com.au

Abstract: To evaluate the in vitro anti-inflammatory effect of n-hexane and methanolic extract of Leea rubra by membrane stabilization assay and against the denaturation of protein. Methods: The extract at different concentrations was incubated with red blood cell and egg albumin in controlled experimental conditions and subjected to determination of absorbance to assess the anti-inflammatory property. Aspirin was used as the reference drug. Results: The present findings exhibited a concentration dependent anti-inflammatory activity and inhibition of protein (albumin) denaturation by the Leea rubra methanolic extract. Conclusions: From the present study it can be concluded that Leea rubra possessed marked in vitro anti-inflammatory effect against the membrane stabilization assay and denaturation of protein.

Paper ID-41

Antimicrobial Activities of Isolated Probiotics and Their Metabolites against Some Pathogenic Microorganisms

Mohammed Abu Sayeed[1], Altaf Hossen[2] and Md. Jakaria[3]
[1-3]Department of Pharmacy, International Islamic University Chittagong ,Bangladesh
[1]ssmas2003@yahoo.com, [2]altaf.hossen14@yahoo.com and [3]pharmajakaria@rocketmail.com

Abstract: The study was aimed to finding the antimicrobial activities among probiotics isolated from different yoghurts and their metabolites against some common bacterial pathogens. The Nutient agar media overlay method (Disc diffusion Method) was used for determination of the presence of antibacterial effects among the isolated probiotics. Probiotics produced potential antibacterial activities against several pathogenic bacteria and fungi. The maximum antibacterial property (13.5 mm of zone of inhibition) of bacterial strain found against Salmonella paratyphi. Conversely, bacterial metabolites produced maximum effect (10.3 mm of zone of inhibition) against Staphylococcos aureaus. The antibacterial effect is one of the most important criteria for probiotics selection, and the verified antibacterial activities of the probiotics supports the development of these functional foods as a key to the enhancement of health in the consuming public.

ISBN : 978-984-34-1383-3

Paper ID-287

Labisia Pumila Regulates the Expressions of Bone-Related Genes and ProInflammatory Cytokines in Postmenopausal Osteoporosis Rat Models

Nadia Mohd Effendy[1] and Ahmad Nazrun Shuid[2]
[1-2]Universiti Sains Islam Malaysia, Malaysia
[1]nadiaeffendy@yahoo.com and [2]anazrun@ppukm.edu.my

Abstract: Labisia pumila var. alata (LP) has shown potential as an antiosteoporotic agent in recent years. The crude extract of LP was reported to reverse trabecular microarchitecture changes induced by ovariectomy. The mechanism is still unclear but it may be elucidated by examining the bone molecular pathways. This study aimed to evaluate the bone-related genes and pro-inflammatory cytokines expressions to provide a mechanistic overview on how the different LP extracts could prevent degenerative bone changes. Methods: Forty-eight female Sprague-Dawley rats were randomly divided into shamoperated (Sham), ovariectomized control (OVX), ovariectomized and given oestrogen at 64.5μg/kg (ERT), ovariectomized and given LP aqueous extract at 100 mg/kg (LP aq), ovariectomized and given LP methanol extract at 100 mg/kg (LPmet) and ovariectomized and given LP ethanol extract at 100 mg/kg (LPet) All treatments were given daily via oral gavages for nine weeks. Rats were then euthanized and femora dissected out for genes and cytokines expressions analysis. Results: Among the extracts, LPaq was found to produce the highest expressions of OPG, osteocalcin, osterix, osteonectin and ALP. LP aq was also shown to down-regulate the expressions of RANKL, MMP9, M-CSF as well as cytokine IL-21β. Conclusion: Aqueous extract is the best extract of LP which may exert anti-osteoporosis activity by regulating the bone-related genes and cytokines expressions.

Paper ID-289

Future Drug Delivery Technologies: Bench top to Industry

Md Jasim Uddin[1], Ayesha Amin Nipa[2], Irin Sultana[3], M. Mohi Uddin Chowdhury[4] and Dennis Douroumis[5]
[1-4]Southern University Bangladesh, Chittagong, Bangladesh
[5]University of Greenwich, Medway Campus, United Kingdom
[1]dr.jasim@southern.edu.bd

Abstract: Transmucosal oral drug delivery is introduced as a route to advanced drug delivery technology always facilitate to improve patient compliance particularly for mucosal drug delivery. The studies aim to develop transmucosal drug delivery systems for transporting hydrophilic drug, flucoxacillin sodium, across the mucosal route. Transmucosal oral film consisting of a bio-adhesive polymer and plasticizer, were evaluated by physicochemical characteristics such as measurement of weight, length & width, hardness, thickness, surface pH, moisture content & uptake, swelling study, folding resilience, hydration & entrapment efficiency and in vitro drug release studies. Concentration of polymer and plasticizer were influenced on the development, evaluation and release rate of flucoxacillin sodium from the oral film. These studies demonstrate that mucosal drug delivery has potential route of drug delivery in comparison to conventional systems.

ISBN : 978-984-34-1383-3

Conference Committee
ICISET 2016

Advisory Committee

Chair
Professor Dr. A. K. M. Azharul Islam
Vice Chancellor
International Islamic University Chittagong, Bangladesh

Members
Local Advisory Committee
(in no particular order)
Professor Dr. Abu Bakr Rafique, Chairman, Center for Research & Publication, International Islamic University Chittagong
Professor Dr. Abdur Rashid, Pharmaceutical Chemistry, University of Dhaka
Professor Dr. Chowdhury Mahmud Hasan, Vice Chancellor, Manarat International University
Professor Dr. Chowdhury Mofizur Rahman, Pro Vice Chancellor, United International University
Professor Dr. Ekramul Hamid, CSE, University of Rajshahi
Professor Dr. M. Abul Hashem,APEE, University of Rajshahi
Professor Dr. M. Lutfor Rahman, Former Vice Chancellor, DaffodilInternational University
Professor Dr. M. Mamnunul Keramat, Former Vice Chancellor, University of Rajshahi
Professor Dr. M. Rezwan Khan, Vice Chancellor, United International University
Professor Dr. Md. Abdus Samad, Former Vice Chancellor, Prime University
Professor Dr. Md. Nurul Mustafa, Vice Chancellor, Southern University
Professor Dr. Md. Quamrul Ahsan, EEE, Bangladesh University of Engineering and Technology
Professor Dr. Md. Rezaul Huque Khan, APECE, University of Chittagong, Former Dean, FSE, International Islamic University Chittagong
Professor Mohammad Ali, Former Vice Chancellor, International Islamic University Chittagong
Professor Dr. Mohammad Rafiqul Alam, Vice Chancellor, Chittagong University of Engineering and Technology
Professor Dr. Nurul Islam, Former Dean, FSE, International Islamic University Chittagong
Dr. Md. Atiqur Rahman Ahad, EEE, University of Dhaka

International Advisory Committee
(in no particular order)
Dr. A B M Shawkat Ali, University of Fiji, Fiji
Dr. Anis Haque, P. Eng., University of Calgary, Canada
Dr. Atsushi Sugiyama, Toho University, Japan
Dr. Christopher Bailey, University of Greenwich, UK
Dr. Debzani Deb, Winston-Salem State University, USA
Dr. Jahangir Hossain, Griffith University, Australia
Dr. Manzur Murshed, Federation University Australia
Dr. Marta Molinas, Norwegian University of Science and Technology
Dr. Maruf Ahmed, University of Wolverhampton, UK
Dr. Masud H Chowdhury, University of Missouri – Kansas City, USA
Dr. Md. Anisul Karim, CELLOS Software, Melbourne, Australia
Dr. Md. Mijanur Rahman, Universiti Malaysia Perlis, Malaysia
Dr. Md. Zia Uddin, Sungkyunkwan University (SKKU), South Korea
Dr. M. Julius Hossain, European Molecular Biology Laboratory
Dr. M. Nasir Uddin, Lakehead University, Canada

ISBN : 978-984-34-1383-3

Dr. Dato' Musa Ahmad, Universiti Sains Islam Malaysia
Dr. Muztaba Fuad, Winston-Salem State University, USA
Dr. Nowshad Amin, Universiti Kebangsaan Malaysia, Malaysia
Dr. S. M. Kamruzzaman, King Saud University, Saudi Arabia
Dr. Tariqul Islam, Universiti Kebangsaan Malaysia, Malaysia

Technical Program Committee

Chair

Dr. M. Kaykobad,
Professor, Dept. of CSE
Bangladesh University of Engineering & Technology

Co-Chairs

Dr. Md. Shahadat Hossain, University of Chittagong
Dr. Mahmud Abdul Matin Bhuiyan, Chittagong University of Engineering & Technology
Dr. Saiful Islam, University of Dhaka

Members

(in no particular order)
Dr. A K M Abdul Hakim, Bangladesh University of Engineering and Technology
Dr. Abdur Rahim, Boxhill Institute, Australia
Dr. Abu Bakar Md. Ismail, University of Rajshahi
Dr. Abul Hasnat, University of Dhaka
Dr. Al-Sakib Khan Pathan, Southeast University
Dr. Asaduzzaman, Chittagong University of Engineering and Technology
Dr. Aslam Hossain, University of Dhaka
Dr. Aziz Abdur Rahman, University of Rajshahi
Dr. Jia Uddin, BRAC University
Dr. Kaushik Deb, Chittagong University of Engineering and Technology
Dr. Khademul Islam Mollah, University of Rajshahi
Dr. M. Ariful Islam Nahid, University of Rajshahi
Dr. M. M. A. Hashem, KUET
Dr. M. Shamim Kaiser, Jahangirnagar University
Dr. Mamun-ur-Rashid Khandker, University of Rajshahi
Dr. Md. Abdur Rahman, American international University of Bangladesh
Dr. Md. Abdur Razzaque, University of Dhaka
Dr. Md. Ekramul Hamid, University of Rajshahi
Dr. Md. Faruk Hossain, Rajshahi University of Engineering and Technology
Dr. Md. Hijbul Alam, Korea University, South Korea
Dr. Md. Osiur Rahman, University of Chittagong
Dr. Md. Rezaul Islam, University of Rajshahi
Dr. Md. Robiul Islam, Queensland Brain Institute, University of Queensland, Australia
Dr. Md. Ruhul Amin, Islamic University of Technology
Dr. Md. Saifuddin Khalid, Aalborg University, Denmark
Dr. Md. Saiful Islam, IICT, Bangladesh University of Engineering and Technology
Dr. Md. Samsuzzaman, Patuakhali Science and Technology University
Dr. Md. Shafiqul Islam, Bangladesh University of Engineering and Technology
Dr. Md. Shafiul Alam, Ahsanullah University of Science and Technology

ISBN : 978-984-34-1383-3

Dr. Md. Shamsul Arefin, Chittagong University of Engineering and Technology
Dr. Md. Zakirul Alam Bhuiyan, Fordham University, USA
Dr. Mohammad Abdul Goffar Khan, Rajshahi University of Engineering and Technology
Dr. Mohammad Ahsanul Haque, Aalborg University, Denmark
Dr. Mohammad Reza Selim, Shahjalal University of Science and Technology
Dr. Mohammad Shorif Uddin, Jahangirnagar University
Dr. Mohammed Jahirul Islam, Shahjalal University of Science and Technology
Dr. Mohammed Moshiul Hoque, Chittagong University of Engineering and Technology
Dr. Muhammad Abul Hasan, BRAC University
Dr. Muhammad Quamruzzaman, Chittagong University of Engineering and Technology
Dr. Muhammad Sanaullah Chowdhury, University of Chittagong
Dr. Muhammad Shahidur Rahman, Shahjalal University of Science and Technology
Dr. Rashed Mustafa, University of Chittagong
Dr. Rezaul Azim, University of Chittagong
Dr. Shaikh Anowarul Fattah, Bangladesh University of Engineering and Technology
Dr. Sohel Rana, Jahangirnagar University
Dr. Syed Murtuza Baker, University of Manchester, UK
Dr. Taskeed Jabid, Sogang University, South Korea

Organizing Committee

Chair
Prof. Dr. Md. Delawer Hossain
Pro Vice-Chancellor
International Islamic University Chittagong

Co-Chair
Mr. Mohammed Shamsul Alam,
Associate Professor
Dept. of Computer Science & Engineering, IIUC

Member Secretary
Mr. Tanveer Ahsan
Associate Professor
Dept. of Computer Science & Engineering, IIUC

Members
Prof. Dr. Kazi Deen Mohammad, Vice Chairman, BOT
Prof. Ahsanullah, Chairman, Finance Committee
Prof. Dr. Nazmul Hoque Nadwi, Dean FSIS
Prof. Dr. Abdul Hamid Chowdhury, Dean, FBS
Prof. Dr. Gias Uddin Hafiz, QSIS
Prof. Dr. Farid A. Sobhani, DBA
Prof. Dr. Mir Ezharul Hossain, Pharmacy
Prof. Dr. Md. Monirul Islam, Dean, FSE
Prof. Dr. Md. Shafi Uddin, DIS & Proctor, IIUC
Dr. Mohammad Aktaruzzaman Khan, Director (In-charge), CRP
Mr. Md. Mahadi Hassan, Associate Professor and Head, CSE
Mr. Muhammad Athar Uddin, Associate Professor and Head, EEE
Engr. Abdul Gafur, Assistant Professor and Head, ETE

ISBN : 978-984-34-1383-3

Mr. Md. Masudur Rahman, Assistant Professor & Head, Pharmacy
Mr. A. N. M. Rezaul Karim, Associate Professor, CSE
Mst. Shahnaj Parvin, Assiociate Professor, CSE
Mr. Md. Ismail, Assistant Professor, EEE
Mr. Md. Jaynul Abden, Assistant Professor, EEE
Mr. S. M. Taslim Reza, Assistant Professor, EEE
Engr. Md. Razu Ahmed, Associate Professor, ETE
Engr. Mojaharul Islam, Assistant Professor, ETE
Dr. Md. Aktar Sayeed, Associate Professor, Pharmacy
Mr. Md. Abu Sayeed, Associate Professor, Pharmacy
Mr. Mohammad Emdad Hossain, Associate Professor, DBA
Prof. Dr. Yeasir Arafat, BUET, IEEE BDS Representative
Chowdhury Akram Hossain, AIUB, IEEE BDS Representative

Sub-Committees of ICISET 2016

Paper Sub-Committee

Convener
Mr. Tanveer Ahsan,
Associate Professor
Dept. of Computer Science & Engineering, IIUC

Member Secretary
Mr. Md. Touhidul Alam,
Assistant Professor
Dept. of Computer Science & Engineering, IIUC

Members
Mr. Shahidul Islam Khan, Associate Professor, CSE
Mr. Abdullahil Kafi, Assistant Professor, CSE
Mr. Md. Khaliluzzaman, Assistant Professor, CSE
Md. Adil Mahmud Roman, Lecturer, CSE
Mr. Muhammad Athar Uddin, Associate Professor & Head, EEE
Mr. Md. Ismail Hossain, Assistant Professor, EEE
Mr. S. M. Taslim Reza, Assistant Professor, EEE
Mr. Md. Ahsanul Hoque, Assistant Professor, EEE
Mr. Mojaharul Islam, Assistant Professor, ETE
Mr. Md. Tahidul Islam, Assistant Professor, ETE
Mr. Abu Zafar Md. Imran, Assistant Lecturer, ETE
Mr. Mohammed Aktar Sayeed, Associate Professor, Pharmacy
Mr. Md. Mominur Rahman, Assistant Professor, Pharmacy
Mr. Md. Rafikul Islam, Assistant Professor, Pharmacy

Publication Sub-Committee

Convener
Mr. A. N. M. Rezaul Karim,
Associate Professor
Dept. of Computer Science & Engineering, IIUC

ISBN : 978-984-34-1383-3

Member Secretary
Mr. Muhammed Jamshed Alam Patwary
Assistant Professor
Dept. of Computer Science & Engineering, IIUC

Members
Mr. Engg. Razu Ahmed, Associate Professor, ETE
Mst. Shahnaj Parvin, Associate Professor, CSE
Mr. Md. Rabiul Islam, Assistant Professor, Pharmacy
Mr. Muhammad Azizul Hoque, Assistant Professor, ELL
Mr. Risul Islam Rasel, Lecturer, CSE
Ms. Shamima Akter, Lecturer, CSE
Ms. Sanjida Sharmin, Lecturer, CSE
Mr. Eftekhar Alam, Lecturer, EEE
Mr. Ahmed Imteaj, Assistant Lecturer, CSE

Press & Media Sub-Committee

Convener
Mr. Md. Masudur Rahman,
Assistant Professor and Head
Dept. of Pharmacy, IIUC

Member Secretary
Mr. Mostaque Khandokar
Assistant Director
Public Relations, IIUC

Members
Mr. Md. Mominur Rahman, Assistant Professor, Pharmacy
Mr. Md. Rafikul Islam, Assistant Professor, Pharmacy

Accommodation Sub-Committee

Convener
Mr. Mohammad Abu Sayeed
Associate Professor
Dept. of Pharmacy, IIUC

Member Secretary
Mr. Md. Borhan Uddin
Assistant Professor
Dept. of Computer Science & Engineering, IIUC

Members
Mr. Md. Nazmus Sakib, Lecturer, EEE
Mr. Md. Sekendar Ali, Assistant Professor, Pharmacy

Transport Sub-Committee

Convener
Mr. Mojaharul Islam

ISBN : 978-984-34-1383-3

Assistant Professor
Dept. of Electronic & Telecommunications Engineering, IIUC

Member Secretary
Mr. Sayed Allamah Iqbal
Assistant Professor
Dept. of Electrical & Electronic Engineering, IIUC

Members
Mr. Muhammad Mostafa Amir Faisal, Assistant Professor, ETE
Mr. Mohammad Mohiuddin Hossain, Director, PPD
Mr. Mohammad Faisal, Additional Director, LMD

Entertainment Sub-Committee

Convener
Prof. Dr. Md. Shafi Uddin
Dept. of Qur'anic Science & Islamic Studies, IIUC

Member Secretary
Mr. Md. Nazmus Sakib
Dept. of Electrical & Electronic Engineering, IIUC

Members
Prof. Dr. Md. Monirul Islam, CSE
Mr. Md. Nurunnabi, CENURC
Mr. Habib Ullah, Lecturer, DBA
Mr. Abu Zafar Md. Imran, Assistant Lecturer, ETE

Conference Webpage Sub-Committee

Convener
Mr. Md. Shamsul Alam
Associate Professor
Dept. of Computer Science & Engineering, IIUC

Member Secretary
Mr. Md. Shayhan Amin Chy
Lecturer
Dept. of Computer Science & Engineering, IIUC

Members
Mr. Md. Khaliluzzaman, Assistant Professor, CSE
Mr. Md. Mahi Uddin, ITD
Mr. Mohammad Aminul Islam, Assistant Director, CRP

Protocol and Reception Sub-Committee

Convener
Prof. Dr. Gias Uddin Hafiz
Faculty of Shariah & Islamic Studies, FSIS

Member Secretary
Dr. Mohammed Aktar Sayeed

ISBN : 978-984-34-1383-3

Associate Professor
Dept. of Pharmacy, IIUC

Members
Prof. Dr. Md. Monirul Islam, CSE
Mr. Razu Ahmed, Associate Professor, ETE
Mr. Sayed Allamah Iqbal, Assistant Professor, EEE
Mr. Abdul Gafur, Lecturer, SHIS
Mr. Mohammad Solaiman Miah
Mr. Mahfuzur Rahman, SDSWD

Invitation Sub-Committee

Convener
Prof. Dr. Md. Monirul Islam
Dean
Faculty of Science & Engineering, IIUC

Member Secretary
Dr. Md. Akter Sayeed
Associate Professor
Dept. of Pharmacy, IIUC

Members
Mr. Razu Ahmed, Associate Professor, ETE
S. M. Taslim Reza, Assistant Professor, EEE
Md. Arif Hasnayeen, Assistant Professor, CSE

Decoration & Projection Sub-Committee

Convener
Mr. Muhammad Athar Uddin
Associate Professor & Head
Dept. of Electrical & Electronic Engineering, IIUC

Member Secretary
Mr. Md. Ahsanul Hoque
Assistant Professor
Dept. of Electrical & Electronic Engineering, IIUC

Members
Mr. Abdullahil Kafi, Assistant Professor, CSE
Mr. Md. Abdul Kader, Assistant Professor, EEE
Mr. Akramul Haque, Sub-Asst. System Support Engineer, ITD
Mr. A.H.M. Kamruzzaman, Administrative Officer, LMD

Security & Discipline Sub-Committee

Convener
Dr. Md. Akter Sayeed
Associate Professor
Dept. of Pharmacy, IIUC

ISBN : 978-984-34-1383-3

Member Secretary
Mr. Zahid Hossain Bhuiyan
Assistant Professor
Dept. of Business Administration, IIUC

Members
Mrs. Najneen Jahan Chowdhury, Associate Professor, DBA
Mr. Habib Ullah, Lecturer, DBA
Mr. Mohammad Aman Ullah, Deputy Director, Register Office

Partnership Sub-Committee

Convener
Prof. Dr. F. A. Sobhani,
Dept. of Business Administration, IIUC

Member Secretary
Mr. Tanveer Ahsan
Associate Professor
Dept. of Computer Science & Engineering, IIUC

Members
Prof. Dr. Monirul Islam, CSE
Mr. Md. Shamsul Alam, Associate professor, CSE
Dr. Mohammad Aktaruzzaman Khan, Director (In-charge), CRP

Sponsorship Collection Sub-Committee

Convener
Prof. Dr. Kazi Deen Mohammad
Vice Chairman
Board of Trustees, IIUC

Member Secretary
Mr. AZM Obaidullah
Director
Students Affairs Division, IIUC

Members
Prof. Dr. Gias Uddin Hafiz, QSIS
Mr. Md. Mominur Rahman, Assistant Professor, Pharmacy
Mr. Ahmed Shan-A-Alahi, Lecturer, CSE
Engr. Faisal Ahamed, Network Administrator, ITD
Mr. Mohammad Faisal, Additional Director, LMD

Announcement Sub-Committee

Convener
Mst. Shahnaj Parvin
Associate Professor
Dept. of Computer Science & Engineering, IIUC

Member Secretary
Mr. Muhammad Mamunur Rashid

ISBN : 978-984-34-1383-3

Additional Director
Students Affairs Divisions, IIUC

Members
Professor Dr. B. M. Mofizur Rahman Al-Azhari, CENURC
Mr. Mohammad Emdad Hossain, Associate Professor, DBA
Mr. Chowdhury Golam Mowla, Additional Director, STAD

Accounts & Finance Sub-Committee

Convener
Professor Ahsanullah
Chairman, Finance Committee, IIUC

Member Secretary
Mr. Siddique Ahmed
Assistant Professor
Dept. of Computer Science & Engineering, IIUC

Members
Mr. Tawfiqur Rahman, Director (in-charge), ACFD

Registration Desk Sub-Committee

Convener
Engr. Abdul Gafur
Assistant Professor and Head
Dept. of Electronic & Telecommunications Engineering, IIUC

Member Secretary
Mr. Tahidul Islam
Assistant Professor
Dept. of Electronic & Telecommunications Engineering, IIUC

Members
Mr. Md. Moazzam Hossain, Assistant Professor, CSE
Mr. Afif Ahmad Munrat, Lecturer, ETE
Mr. Md. Salah Uddin, CoE
Mr. Mohammad Aminul Islam, Assistant Director, CRP

Cultural Sub-Committee

Convener
Mr. Mohammad Emdad Hossain
Associate Professor
Dept. of Business Administration, IIUC

Member Secretary
Mr. Chowdhury Golam Mawla
Additional Director
Students Affairs Division, IIUC

ISBN : 978-984-34-1383-3

Members
Mr. Muhammad Athar Uddin, Associate Professor and Head, EEE
Mr. Md. Mominur Rahman, Assistant Professor, Pharmacy
Mr. Gulam Sawarar Chuwdhury, Lecturer, CSE

Conference Kit and Crest Sub-Committee

Convener
Mr. Mohammad Mahadi Hassan
Associate Professor and Head
Dept. of Computer Science & Engineering, IIUC

Member Secretary
Mr. Md. Moazzam Hossain
Assistant Professor
Dept. of Computer Science & Engineering, IIUC

Members
Mr. Md. Mahiuddin, Assistant Professor, CSE
Mr. Md. Khaliluzzaman, Assistant Professor, CSE
Mr. Md. Shayhan Amin Chy, Lecturer, CSE

IEEE IIUC Section Activity Sub-Committee

Convener
Muhammad Athar Uddin, Associate Professor and Head, EEE

Member Secretary
Meah Imtiaz Zulkarnain, Lecturer, EEE

Members
Mr. Mojaharul Islam, Assistant Professor, ETE
Md. Ahsanul Hoque, Assistant Professor, EEE
Md. Abdul Kader, Assistant Professor, EEE
Touhidul Alam, Assistant Professor, CSE
Md. Khaliluzzaman, Assistant Professor, CSE
Md. Tahidul Islam, Assistant Professor, ETE
Mohammed JashimUddin, Assistant Professor, ETE

ISBN : 978-984-34-1383-3

Author Index

ISBN : 978-984-34-1383-3

ISBN : 978-984-34-1383-3

ISBN : 978-984-34-1383-3

ISBN : 978-984-34-1383-3

Kashem Noor Foundation
KNF

Wishing all the Success of ICISET 2016, IIUC

OUR ACTIVITIES

KNF COMMITTED TO THE ISSUES OF EDUCATION, TRAINING AND EMPLOYMENT OPPORTUNITIES FOR DISADVANTAGED PEOPLE BY:

- **Building & Helping Moshjid and Madrasha.**
- **Caring Orphans.**
- **Free Health Care & Treatment.**
- **Shelter & Food Facility for Old People.**
- **Arranging Various Awareness Program.**
- **Free Education.**
- **Social Development.**

Courtesy:

Hassan Mahmood Chowdhury

Chairman, Kashem Noor Foundation

And

President, Chandgaon Abasik Elaka Kollyan Samiti