ijcci

14-15 December | **2018**

INTERNATIONAL JOINT CONFERENCE
ON COMPUTATIONAL INTELLIGENCE 2018

Organizer

Daffodil International University

SAU SOUTH ASIAN UNIVERSITY

Technical Partner

Springer

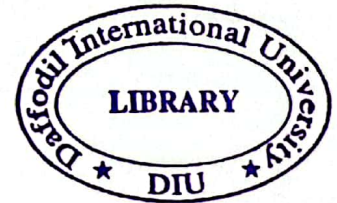**Knowledge Partner**

AMITY UNIVERSITY

MESSAGE

I am delighted to know that Daffodil International University, Jahangirnagar University and South Asian University are going to host the International Joint Conference on Computational Intelligence (IJCCI) 2018. On this auspicious occasion, I would like to extend my heartiest congratulations and felicitations to all concerned with the conference.

I believe that the event will provide an opportunity to the young talented researchers to compete for identifying and solving problems. Participants will gain knowledge through competition and implement it in real life world. Technological advancement is the most coveted aspect of our national development scheme. Such a conference is at the forefront of the technological revolution. I am confident that it will serve as a platform in bringing a good number of students of different institutions from home and abroad and the participants will be immensely benefited from the conference.

I wish IJCCI 2018 a grand success.

Professor Abdul Mannan
Chairman
University Grants Commission of Bangladesh

MESSAGE

I am honored to announce that this year Daffodil International University, Jahangirnagar University and South Asian University are jointly hosting the International Joint Conference on Computational Intelligence (IJCCI) 2018.

The IJCCI is a great platform for all researchers. This event will help to identify the brightest research talent in the country and provide them with a window of opportunity to prove their research skills in a competitive yet collaborative environment.

DIU has always been recognized for basic and advanced research for it's faculties and students. Besides, the authorities at DIU are always keen on hosting such excellent programs. So, I would like to welcome and offer my heartiest gratitude to guests, sponsors, media partners, members of DIU, participants, judges and fellow students on this wonderful program.
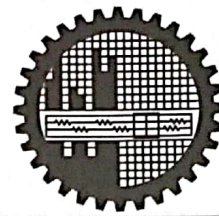
I wish all the very best to the participants and organizers for making this event a success.

Dr. Md. Sabur Khan
Chief Patron, IJCCI 2018 and
Chairman, Board of Trustees
Daffodil International University

MESSAGE

I am very happy to learn that the "International Joint Conference on Computational Intelligence (IJCCI) 2018" is being jointly organized by the Daffodil International University, Jahangirnagar University and South Asian University. It is well-recognized that IJCCI is a prestigious international event, where researchers of different Universities participate to share their knowledge.

Over the last few years of my association with similar conference I have been impressed not only by the gradual increase in the number of participants from all over the country and from abroad, but also the improvement in the skills of our participants, which is reflected in their excellent performance.

At university level, we strive to encourage efforts to enhance the knowledge and improve the skills of our researchers through personal development. My advice to all participants is to work in a team so that the combined knowledge and skill of its members may be fully harnessed; this would also help in developing the spirit of collaboration in real-life project as the graduates move to professional work environment.

Be strong, committed, reliable team players with a strong service ethic, as well as being a proactive, self-motivated worker. We hope IJCCI will be a gateway for our participants to achieve these goals.

I wish IJCCI 2018 a grand success.

Dr. M. Kaykobad
Professor
Bangladesh University of Engineering and Technology
And Fellow
Bangladesh Academy of Sciences

MESSAGE

It is my pleasure to write this message on the occasion of the International Joint Conference on Computational Intelligence (IJCCI 2018) to be held in Daffodil International University Dhaka, Bangladesh during 14-15 Dec.2018. The conference is jointly organized by Dept. of Computer Science and Engineering, Daffodil International University, Dhaka, Department of Mathematics, South Asian University, India and Department of Computer Science Jahangirnagar University Dhaka, Bangladesh. I am sure that this continuing activity gives a good opportunity for local and international researchers to convene, and share the most innovative findings in the field of computational intelligence. The theme of the conference highlights the significance of mathematical techniques of computation that can make sustainable development a reality.

I am confident that the conference will provide a platform for researchers experts in the respective fields and also an opportunity to the young researchers to present their research papers and valuable insights in the realm of computational intelligence. As you end this conference, let the seeds of knowledge and the cooperation among the participating Institutions continues to grow and succeed. I feel that the conference is a step towards realizing the vision of SAU, Knowledge without Borders.

I am very happy to know that a souvenir cum book of abstracts has been brought out on this occasion containing records of important talks and paper presentations. I warmly welcome one and all to this international conference that is the first of its kind organized jointly by Daffodil International University, Dhaka, SAU Delhi and Jaha ngirnagar University Dhaka. On this occasion, I congratulate the organizers of the conference and wish the conference to be successful and productive.

Dr. Kavita A Sharma
Patron, IJCCI 2018 and
President, South Asian University

MESSAGE

It is my pleasure to know that an International Joint Conference on Computational Intelligence (IJCCI 2018) is going to be organized by Daffodil International University, South Asian University, India and Jahangirnagar University. This Joint Conference is technically co-sponsored by Springer Nature and will be held on 14-15 December 2018 at Daffodil International University, Dhaka.

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. By virtue of this Joint Conference, the knowledge of computer science and technology shall be disseminated throughout the country as well as the globe. The goal of IJCCI 2018 is to discuss the state-of-the-art developments, research challenges and unsolved open problems in the field of Computational Intelligence to beginners as well as to professionals. It will also provide a platform for students, scientists and faculty members to involve, interact, present and get reflections on their research.

I believe that this International Joint Conference will bring together 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 Joint Conference will enlighten us in understanding new developments in these fields.

I extend my greetings and felicitations to the organizers for organizing this Joint Conference.

I wish IJCCI 2018 all success.

Professor Dr. Farzana Islam
Patron, IJCCI 2018 and
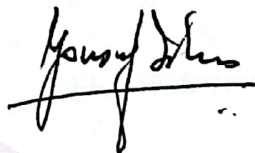Vice Chancellor, Jahangirnagar University

MESSAGE

On behalf of International Joint Conference on Computational Intelligence (IJCCI) 2018, I heartily welcome you all to the conference. I am pleased that the Department of Computer Science and Engineering of our university has received the privilege of organizing IJCCI 2018 jointly with Jahangirnagar University and South Asian University.

IJCCI provides a platform for researchers from all over the world to showcase their innovations, findings and advancing knowledge. Research is the key to innovation and creativity which ultimately can contribute to the progress of civilization. By participating in such a conference, the participant challenge themselves to utilize their best potential to develop their skills. Facing the challenge helps develop self-confidence. It may also help a participant to develop logical thinking skills to subsequently solve real life problems that he/she may come across in job situations.

I like to warmly welcome the participants, delegates, distinguished personalities in the field of IJCCI and respected guests in the DIU campus. I thank the faculty members, students and staff of the department of CSE for accepting the challenge of organizing an international level conference of utmost importance. I wish grand success of the conference.

Professor Yusuf Mahbubul Islam, PhD
Patron, IJCCI 2018 and
Vice Chancellor
Daffodil International University

MESSAGE

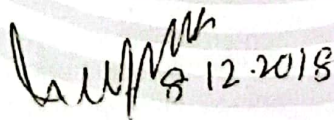Warm Welcome from International Joint Conference on Computational Intelligence (JCC) 2018!!!

I feel glad to mention that Daffodil International University (DIU), Jahangirnagar University and South Asian University are jointly hosting the first ever International Joint Conference on Computational Intelligence (IJCCI) 2018 going to be held on Friday-Saturday, December 14-15, 2018. Undoubtedly, it is really a timely event for the young researchers and also proving our active presence in the research sector.

DIU is the flagship of research-oriented University; innovation is in its focal point. We put effort in intellectual & academic initiatives to engage young academicians in creating knowledge base. Our challenge for the future is to build a strong base so that we can establish ourselves among the world's leading universities.

Implementations of ICT have become the driving force to push the country in becoming a more competitive society to keep pace with the present trend of the world. Many researches have proved that, the more a nation develops its ICT capacity, the more competitive the nation becomes.

DIU takes the pride both in the achievements of our researchers who entrust us with their contribution. We provide them the platform to prove their competency and opportunity to develop them. IJCCT 2018 is one of such platforms for the researchers.

I wish all the participants a grand success in the IJCCI 2018. I am sure it will be a memorable time and pleasant experience in DIU. Ue 12 Ww) S Dr. S.M. Mohbub'Ul Hoque Mojumder Pro-Vice Chancellor Daftodil International University

Dr.S.M. Mohbub Ul Hoque Mojumder
Pro-Vice Chancellor
Daffodil International University

MESSAGE

On behalf of the Technical Program Committee and Organizing Committee, I take the privilege to welcome you all at Daffodil International University on the occasion of International Joint Conference on Computational Intelligence (IJCCI 2018), which is jointly organized by Daffodil International University, South Asian University and Jahangirnagar University. In this conference researchers and practitioners can exchange their innovative ideas by means of keynotes, technical presentations and discussions. I also deeply appreciate the technical co-sponsorship of Springer Nature. This is the second in the series of conference on Computational Intelligence.

I am happy to note that the organizers have been successful in getting significant number of technical papers from distinguished participants from home and abroad to be presented and published in this conference proceedings. It is expected that this conference will generate new cooperation among the participants in their future research, academic and national development activities.

The organizing and Program Committee of IJCCI 2018 would like to thank all the authors for their submission of good number of papers. The technical committee worked hard to get these papers peer reviewed and selected the contributory papers for the presentation in the conference. I express my heartiest congratulation to the respected reviewers and the review committee members for their effort towards successful review of the papers in a short period of time.

We have received 182 papers from 496 authors. Among them, 459 are local authors and 37 are foreign authors (from 9 countries). 63 papers were finally accepted for presentation. The accepted and presented papers will be published by Springer Nature in its book series: Algorithms for Intelligent Systems (AIS). My sincere appreciation and gratitude go to all the people for their endeavor who have worked tirelessly to make this conference successful. The honorable Vice-Chancellors Prof. Dr. Yousuf Mahbubul Islam of Daffodil International University, Prof. Dr. Farzana Islam of Jahangirnagar University and Prof. Dr. Kabita A Sharma of South Asian University deserve my special gratitude for their permissions to organize this conference. I would also like to express my sincere appreciation to the General Chair Dr. Syed Akhter Hossain, who has worked very hard in making this event successful.

It is indeed undeniable that IJCCI 2018 is the result of sincere efforts by the members of the organizing committee, technical-program committee, faculty members, volunteers and all other who helped to make this program a success. The editorial board of this souvenir deserves special thanks for their outstanding efforts.

We hope that you will enjoy the conference through your active participation and plan to contribute to the future events of IJCCI as authors, speakers and volunteers. Wish you all the best during the conference and hope that you will have time during your visit to explore and enjoy our environment and culture.

Prof. Dr. Mohammad Shorif Uddin
General Chair & TPC IJCCI 2018 and
Professor, Department of CSE, JU

K Siddique-e Rabbani
Honorary Professor
Dept of Biomedical Physics & Technology
University of Dhaka, Dhaka, Bangladesh.
Email: rabbani@du.ac.bd

The importance of indigenous development of computer based technology in healthcare - seen through a chronicle of our own efforts

Abstract: Using computer as a tool for acquisition, analysis, display and storage of digital data for medical devices made a revolution in the health sector. This requires combined knowledge and expertise in electronics hardware, software and Biomedical topics. Realising this potential the author started working in this area as early as 1985. With the support of scientists at Sheffield University, UK under a British ODA programme, he learned the necessary techniques and made the first working prototype of a computer based electrophysiology device in 1988 that could acquire and store minute electrical signals from the brain (EEG), nerve (ENG), muscle (EMG) and the heart (ECG) and process these signals to produce desired outputs. On a historical perspective, this was the first computer based instrument made by anyone in Bangladesh. The computer chosen at that time was a BBC microcomputer, made in UK. The author also developed necessary software and started giving routine clinical service for nerve conduction measurement at the same time. This was again another first in Bangladesh; patients had to go abroad to get these tests done earlier. Since then, the author, in collaboration with talented students, developed interfaces for the popular IBM computer, taught the techniques to a host of young researchers and together they developed some more medical instruments, to which has been added microcontroller based devices in the recent times; these two being essentially the same in technology terms. The list of instruments developed includes, beyond the above mentioned ones, Bone resonance equipment, Dynamic Pedograph for foot pressure measurement, Focused Impedance Method (FIM - a new electrical impedance method innovated by the author's group), Pigeon Hole Imaging, Smart pressure alarm system for patients on wheelchair, cost effective Bionic hand prosthesis, ultrasound blind aid system, Syringe pump, etc. Such computerisation of devices reduces the demand on sophisticated hardware drastically, reducing cost and increasing reliability & longevity of the equipment. Furthermore this allows post processing of signals to provide significant improvement and automation in diagnosis and therapy, which includes artificial intelligence these days. The author's group developed an analysis of nerve conduction signals to propose a new parameter which they called 'Distribution of F-Latency (DFL)' which brings in a promise of much improved detection of peripheral neurological disorders, which may replace the use of expensive MRI in certain diagnosis and screening. They are also developing a method for non-invasive breast tumour characterization, for identifying malignant and benign tumours with the intention of replacing hazardous biopsy. This method involves sophisticated signal processing techniques applied to FIM measurements. More and more diagnostic and therapeutic devices are being planned and developed, extending the range. Recently the author's group developed appropriate technology for web based telemedicine which involves both software and integrated on-line diagnostic devices like stethoscope and ECG, making it a high-end system. They themselves deployed the system in Bangladesh villages under the banner, 'Dhaka University Telemedicine Programme' and are providing medical consultation to thousands of patients in villages where no qualified doctor is available. This work already brought in national and international awards and the group is now getting prepared to deliver the services to other low resource countries of the world.

Developing the technology from the very basics have allowed this group to acquire a command over computer interfacing techniques allowing them to extend the horizon of their activities over a vast range of modern technology, even beyond the medical arena. Observing the global disparity in technology, which has contributed to the unacceptable economic disparity, the group has decided against taking any patent on their innovations. Rather they will teach qualified scientists and engineers in other low resource countries when the technology matures through own dissemination programmes. The activities of the author's group has the promise of bringing in a silent revolution in the low resource countries of the world.

KEYNOTE SPEAKER

Dr. M. Sohel Rahman
Professor, Department of CSE
Bangladesh University of Engineering and Technology

Prediction based on biological sequences, where Machine Learning meets Life Sciences

Abstract

Due to the rapid development of fast sequencing technologies, we now have tremendous amount data on different biological sequences. For example, the number of sequence-known proteins has grown exponentially in recent years. On the contrary, the biochemical experiments to learn the attributes of proteins are expensive and time consuming. A large gap thus exists between the number of sequence-known proteins and that of attribute-known proteins. To catch up, researchers have started to rely on state of the art computational intelligence based methods (e.g., Machine Learning) to predict different attributes of proteins and other biological sequences.

In this talk, we will discuss Machine Learning based methods for a number of prediction tasks in the domain of life sciences. We will discuss predictors that have been developed based on a machine learning based framework where the features are extracted from the primary sequence only. Overall, our research empirically asserts the natural belief that the functional and structural information of a biological sequence are intrinsically encoded within its primary sequence. This assertion culminates in generalizing a framework for sequence based feature extraction and selection that can be applied to any prediction problem in life sciences.

Biography of Dr. M. Sohel Rahman:

Dr. M. Sohel Rahman is a Professor of the CSE department of BUET. He had worked as a Visiting Research Fellow of King's College London, UK during 2008-2011 and again as a Visiting Senior Research Fellow there during 2014-15. He is a Senior Member of both IEEE and ACM; member of American Mathematical Society (AMS) and London Mathematical Society (LMS). He is also a Peer-review Associate College Member of EPSRC, UK.
Dr. Rahman received different scholarships and fellowships including Commonwealth Scholarship, Commonwealth Fellowship, ACU Titular Fellowship, University College London-Big Data Institute visiting grant, London Mathematical Society Visiting Grant etc. He is also a recipient of the Bangladesh Academy of Sciences Gold Medal and UGC Award. He has led research and development projects funded by British Council, UGC-World Bank and BUET. He has so far published 80 peer-reviewed international journal papers. Among his notable results are the work on high dimensional Knapscak problems, sequence alignment problems, data structures and string combinatorics, sufficient conditions for Hamiltoninicity, Machine Learning based predictors in Bioinformatics, and metaheuristics solutions for hard problems.
He is an Academic Editor of PLOS One, Associate Editor of BMC Research Notes and had edited special issues as guest editors in Theoretical Computer Science, Journal of Graph Algorithms and Applications, Journal of Discrete Algorithms, Fundamenta Informaticae etc. He has also served as Program Committee members in a number of conference series' of international repute. Dr. Rahman regularly writes reviews at Mathematical Review and Computing Review.

Dr. Dewan Md. Farid
Associate Professor, Department of Computer Science & Engineering
United International University, Bangladesh
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Data Mining with Big Data: Challenges and Opportunities

Abstract

Knowledge mining from big data employing machine learning algorithms is a challenging task as real-world datasets are big, high dimensional, class-imbalanced, and noisy. Most of the existing machine learning algorithms is suitable for mining small datasets. Therefore, we need adaptive learning algorithms for dealing with big data. In this talk, I will focus on the several issues/ challenges of classifying/ mining big data using machine learning and data mining algorithms. In particular, I will discuss three works: (1) an adaptive rule-based classifier for mining big data, (2) hybrid decision tree and naïve Bayes classifier for multi-class classification of big data, and (3) ensemble learning for novel class detection and classification in big data. It is well known that rules are interesting way for representing data in a human interpretable way. The adaptive rule-based classifier combines the random subspace and boosting approaches with ensemble of trees to construct a set of classification rules from big data. Existing machine learning algorithms need to be updated frequently to adapt to the changes in big data. To address this issue, I will talk about an approach for classification and novel class detection using machine learning algorithms. Since the presence of noisy contradictory instances in big data may cause the machine learning algorithms suffer from overfitting and its accuracy may decrease. So, I will also discuss about the process of removing the noisy troublesome instances from big data and selecting an important subset of features in big data for building an optimal ensemble classifier.

General Terms: Machine Learning, Data Mining, Big Data.

Bio

Dr. Dewan Md. Farid is an Associate Professor, Department of Computer Science and Engineering, United International University, Bangladesh. He worked as a Postdoctoral Fellow at the following research groups: (1) Computational Modeling Lab (CoMo), Department of Computer Science, Vrije Universiteit Brussel, Belgium in 2015-2016, and (2) Computational Intelligence Group (CIG), Department of Computer Science and Digital Technology, University of Northumbria at Newcastle, UK in 2013. Dr. Farid was a Visiting Faculty at the Faculty of Engineering, University of Porto, Portugal in June 2016. He holds a PhD in Computer Science and Engineering from Jahangirnagar University, Bangladesh in 2012. Part of his PhD research has been done at ERIC Laboratory, University Lumière Lyon 2, France by Erasmus-Mundus ECW eLink PhD Exchange Program. He has published 71 peer-reviewed scientific articles, including 24 journal papers in the field of machine learning and data mining. Dr. Farid received United Group Research Award 2016 in the field of Science and Engineering. He received following Erasmus Mundus scholarships: (1) LEADERS (Leading mobility between Europe and Asia in Developing Engineering Education and Research) in 2015, (2) cLink (Centre of excellence for Learning, Innovation, Networking and Knowledge) in 2013, and (3) eLink (east west Link for Innovation, Networking and Knowledge exchange) in 2009. Dr. Farid also received Senior Fellowship I, and II award by National Science & Information and Communication Technology (NSICT), Ministry of Science & Information and Communication Technology, Government of Bangladesh respectively in 2008 and 2011. He is a member of IEEE.

INVITED TALK

Mahafuzur Rahman
Co-Founder and CTO
CodeMarshal IT Systems Ltd

Using AI to Build a Smart Education System

Abstract

The future of education is intrinsically linked with developments on new technologies and computing capacities of the new intelligent machines. Recent advancements in computational intelligence has created a great opportunity to overcome many challenges in teaching and learning. Also at CodeMarshal, everything we do is to make our education system smarter. So in this talk, I will discuss how we are using AI and Machine Learning technologies at CodeMarshal to overcome different challenges in teaching and learning. I will also discuss about how we plan to use these technologies to ultimately build a smart education system.

Bio

Mahafuzur Rahman is the Co-Founder and CTO at CodeMarshal IT Systems Ltd. He wants to transform online education by building his dream education system. At CodeMarshal he now sets the technical direction for the company. He leads it's advanced research, systems engineering and technology development. Prior to Code-Marshal, Mahafuzur led several web based systems for government and enterprises in Bangladesh. He is the chief architect of the National E-Learning Platform developed for Bangladesh Government. In 2014, he led the development of data analytics and marketing platform for GSK Bangladesh. In his early career, he worked for Playdom Inc and AfriGIS Bangladesh.

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Prof. Sazzad Hossain
Dr. Ezharul Islam
Dr. Muzahidul Islam

Dr. Shahidul Islam
Prof. Md. Imdadul Islam
Prof. Israt Jahan
Rafsan Jani
Mr. Syed Ahsanul Kabir
Prof. Md. Humayun Kabir
Dr. M. Shamim Kaiser
Dr. Saikat Kanjilal
Dr. Meenakshi Kaushal
Arshan Khan
Mohd Shoaib Khan
Risala Tasin Khan
Roksana Khanon
Dr. Golam Kibria
Dr. Nagesh Kumar
Dr. Sandeep Kumar
Dr. Shyam Lal
Dr. Mufti Mahmud
Dr. Nabeel Mahmud
Dr. S.M. Hasan Mahmud
Al Mamun
Dr. Neel Mani
Dr. Nafees Mansoor
Dr. Rashed Mazumder
Dr. Dewan Md. Farid
Dr. Sipon Miah
Prof. Md. Golam Moazzam
Prof. Mohammad Shorif Uddin
Dr. Sifat Momen
Dr. Oleg Monakhov
Hafsa Moontari
Dr. Philip Moore
Dr Mohammed Mostafizur Rahman
Dr. Muhammad Firoz Mridha
Dr. Pranab K Muhuri
Dr. Andres Muñoz
Dr. Atulya Nagar
Dr. Kazumi Nakamatsu
Dr. Rahul Nath
Dr Nayeem
Dr. Nafis Neehal
Dr. Sheak Noori
Dr. AK Ojha

Dr. Vijayalakshmi Pai
Dr. Ashok Pal
Dr. Gareth Peters
Abdullah Al Rahat
Prof. ASM Mostafizur Rahman
Dr Sazzadur Rahman
Dr. Mohammad Shahriar Rahman
Mostafizur Rahman
Prof. Md. Motiur Rahman
Prof. Mohammad Zahidur Rahman
Tanzila Rahman
Amit Rauniyar
Prof. Md. Abdur Razzaque
Prof. Liton Jude Rozario
Sanjit Saha
Dr. Farhana Sarker
Dr. Taniya Seth
Dr. Antesar Shabut
Dr. Munawara Shaik
Dr. Monir Sharker
Sabrina Sharmin
Dr. Amit K Shukla
Dr. KP Singh
Dr. Deepa Sinha
Dr. Rinki Solanki
Dr. PN Suganthan
Dr. Madeena Sultana
Dr. Farhan Suryan
Dr. KC Tan
Dr. Ghanshyam Singh Thakur
Dr. Manoj Thakur
Prof. Sajjad Waheed
Dr. Wahiduzzaman
Dr. Junzo Watada
Dr. Anupam Yadav
Dr. Neha Yadav
Dr. Abu Yousuf
Dr. Hasanuz Zaman
Nusrat Zenia
Sheikh Abujar
Dr. Muhammad Abulaish
Dr. Danish Lohani

PROGRAM SCHEDULE

Day 1: Friday 14 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka

Time	Session	Venue
03:00 – 03:30	Registration	Lobby, 71 milonayoton, Daffodil Tower
04:00-04:30	**Inauguration** 04:02 Daffodil Theme Song 04:05 Welcome address by Vice Chancellor, Daffodil International University 04:10 Address of IJCCI 2018 TPC Chair 04:15 Address by the Guest of Honor 04:20 Address by the Special Guest 04:30 Address by the Chief Guest	71 milonayoton, Daffodil Tower
04:45 – 05:15 Keynote Talk-1	**Topic: The importance of indigenous development of computer based technology in healthcare- seen through a chronicle of our own efforts** **Chair:** Prof Syed Akhter Hossain, General Chair, IJCCI 2018 **Speaker:** K Siddique-e Rabbani, Honorary Professor, Dept of Biomedical Physics & Technology, University of Dhaka, Dhaka, Bangladesh	71 milonayoton, Daffodil Tower
05:30	**Tea Break**	Banquet, Level 8, Daffodil Tower
06:00-07:30	**Networking and Conference Dinner**	Banquet, Level 8, Daffodil Tower

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka

Time	Session	Venue
09:00 – 09:40	**Registration**	Lobby, 71 milonayoton, Daffodil Tower
10:00 – 10:45 Keynote Talk-2	**Topic: Prediction based on biological sequences, where Machine Learning meets Life Sciences** **Chair:** Prof Mohammed Shorif Uddin, General and TPC Chair, IJCCI 2018 **Speaker:** Professor Sohel Rahman Department of Computer Science and Engineering Bangladesh University of Engineering and Technology (BUET)	71 milonayoton, Daffodil Tower
10:45	**Tea Break**	Banquet, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Technical Session A: Soft Computing and Optimization

Room# 803

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka		
Time	**Session**	**Venue**
11:15-12:25	**Chair: Prof Dr. Hasan Sarwar, United International University** **Co-Chair: Dr. S M Aminul Haque, Daffodil International University** **Papers** (25) A Fuzzy Based Study for Biomedical Imaging Applications Fahmida Ahmeda, Tausif Uddin Ahmed Chowdhuryb, and Md. Hasan Furhad, University of Chittagong, Data soft Systems Bangladesh, Bangladesh, University of New South Wales, UNSW, Australia (125) Automatic Skin Lesion Segmentation and Melanoma Detection: Transfer Learning approach with U-Net and DCNN-SVM Zabir Al Nazi and Tasnim Azad Abir Department of Electronics and Communication Engineering, Khulna University of Engineering and Technology, Khulna-9203, Bangladesh (155) Enhancing the Classification Performance of Lower Back Pain Symptoms Using Genetic Algorithm Based Feature Selection Abdullah Al Imran1, MdRifatul Islam Rifat2 and RafeedMohammad3 1, 3 American International University-Bangladesh, Kuratoli, Dhaka-1229, Bangladesh 2 Rajshahi University of Engineering & Technology, Kazla, Rajshahi-6204, Bangladesh (157) A CNN Based Classification Model for Recognizing Visual Bengali Font Md. Zahid Hasan1, Kh. Tanzila Rahman1, Rokeya Islam Riya1, K. M. ZubairHasan1, and Nusrat Zahan1 1 Department of CSE, Daffodil International University, Dhaka, Bangladesh (169) Olympic Sports Events Classification using Convolutional Neural Networks Shahana Shultana1, Md. Shakil Moharram1, Nafis Neehal1 1 Department of CSE, Daffodil International University, Dhaka, Bangladesh (195) Improved Time Complexity and Load Balance for DFS in Multiple NameNode Mohammad Nurul Islam1and Dr. Md. Nasim Akhtar2 1 Dhaka University of Engineering and Technology, Gazipur, Dhaka, Bangladesh 2 Dhaka University of Engineering and Technology, Gazipur, Dhaka, Bangladesh (204) An approach to aggregate intuitionistic fuzzy information with the help of linear operator Meenakshi Kaushal, MohdShoaib Khan, and Q. M. Danish Lohani Department of Mathematics, South Asian University, New Delhi, India	Room# 803, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka

Time	Session	Venue
11:15-12:25	**Chair: Prof Dr. Abdur Razzaque, University of Dhaka** **Co-Chair: Dr. Feroz Mridha, University of Asia Pacific** Papers (30) Can the Expansion of Prediction Errors beCounterbalanced in Reversible Data Hiding? Hussain Nyeem1and Sultan Abdul Hasib2 1,2Department of Electrical, Electronic and Communication Engineering Military Institute of Science and Technology (MIST), Mirpur Cantonment, Dhaka-1216 (48) A Dynamic Bandwidth Allocation Algorithm forGigabit Passive Optical Network for Reducing PacketDelay and Bit Error Rate Md. Hayder Ali1and Mohammad Hanif Ali 2 1 Department of Computer Science and Engineering, Jahangirnagar University 2 Department of Computer Science and Engineering, Jahangirnagar University (83) Fraud detection of Facebook business page based onsentiment analysis Samia Nasrin1, Priyanka Ghosh1, S. M. MazharulHoque Chowdhury1, Sheikh Abujar1,Syed Akhter Hossain11Department of Computer Science and Engineering, Daffodil International University, Dhaka, Bangladesh (115) Simulation and Comparison of RPL, 6LoWPAN andCoAP protocols using Cooja simulator Arif Mahmud1, Faria Hossain1, TasnimAra Choity1, Faija Juhin1 1Department of CSE, Daffodil International University, Dhaka, Bangladesh (167) Performance Analysis of SDN Based IntrusionDetection Model with Feature SelectionApproach Samrat Kumar Dey1, Md. Raihan Uddin2, and Md. Mahbubur Rahman3 1 Military Institute of Science and Technology, Dhaka-1216, Bangladesh 2 Daffodil International University, Dhaka-1207, Bangladesh (189) Vehicle Tracking Monitoring System forSecurity Purpose Based on Thermo ElectricGenerator (TEG) Md. Fahim Newaz1, Abu Tayab Noman1, Humayun Rashid1, NawsherAhmed1, Mohammad Emdadul Islam2, and SM Taslim Reza1 1 Department of Electrical Electronic Engineering, International Islamic UniversityChittagong, Kumira, Sitakunda, Chittagong, Bangladesh 2 Department of Electrical Electronic Engineering, University of Science andTechnology Chittagong, Khulshi, Chittagong, Bangladesh (194) A RSA based efficient dynamic secure algorithmfor ensuring data security Himadri Shekhar Mondal*, Md. Tariq Hasan, Md. Mahbub Hossain, Md. Mashrur Arifin and Rekha Saha Electronics and Communication Engineering Discipline, Khulna University, Khulna, Bangladesh	Room# 804, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Technical Session C: Bioinformatics

Time	Session	Venue
Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka		
11:15-12:25	**Chair: Prof Dr. Touhid Bhuiyan, Daffodil International University** **Co-Chair: Dr. Sheak Rashed Haider Noori, Daffodil International University** **Papers** (3) Factorial Analysis of Biological Datasets H M Shahriar Parvez[1], Saqib Hakak[1], Gulshan Amin Gilkar[2], and Mahmud AbdurRahman[3] 1 University of Malaya, Kuala Lumpur 50603, Malaysia 2 Shaqra University, Riyadh 11961, Saudi Arabia 3 University of Liberal Arts Bangladesh, Dhaka 1209, Bangladesh (69) A Network-based approach to Identify Molecular signatures and Comorbidities of Thyroid Cancer Md. Ali Hossain[1], Tania Akter Asa[2], Fazlul Huq[3], Julian M.W. Quinn[4], and Mohammad Ali Moni[4,5] 1 Dept. of Computer Science & Engineering, Manarat International University, Jahangirnagar University, Dhaka, Bangladesh 2 Dept. of Electrical and Electronics Engineering, Islamic University, Kushita 3 Biomedical Sciences, Faculty of Medicine and Health, The University of Sydney 4 Bone biology divisions, Garvan Institute of Medical Research, Sydney, Australia 5 Biomedical Sciences, Faculty of Medicine and Health, The University of Sydney (71) Genetic Effects of Welding Fumes to the Development of Cancer Diseases Humayan Kabir Rana[1], Mst. Rashida Akhtar[2], Pietro Lio'[3], Fazlul Huq[4], andMohammad Ali Moni[4] 1 Dept. of Computer Science and Engineering, Green University of Bangladesh 2 Dept. of Computer Science and Engineering, Varendra University, Bangladesh 3 Dept. of Computer Science and Technology, University of Cambridge, UK 4 School of Biomedical Science, Faculty of Medicine and Health, The University of Sydney, Australia (118) Algorithms for String Comparison in DNA Sequences Dhiman Goswami[1,2],Nishat Sultana[1,2], Warda Ruheen Bristi[1,2] 1 Department of Computer Science and Engineering, Daffodil InternationalUniversity, Dhaka-1207, Bangladesh 2 Department of Computer Science and Engineering, Bangladesh University of Engineering and Technology, Dhaka-1000, Bangladesh	Room# 807, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Technical Session C: Bioinformatics   **Room# 807**

Time	Session	Venue
11:15-12:25	(170) Type 2 Diabetics Treatment andMedication Detection withMachine Learning ClassifierAlgorithm Md. Kowsher1,FarhanaSharminTithi2*, Tapasy Rabeya2,Fahmida Afrin3 and Mohammad Nurul Huda 4 1Student,1Department of Applied Mathematics, Noakhali Science and Technology University, Noakhali, Bangladesh 2*, 3 Lecturer, Department of CSE, Daffodil International University Dhaka, Bangladesh 2 Research Associate, Department of CSE, Daffodil International University Dhaka, Bangladesh 4Professor & Director - MSCSE, united international university, United City, Madani Avenue, Badda, Dhaka 1212 (172) Find It: A Novel Way to Learn Through Play Md. Tashfiqul Bari, Tanvir Hassan, RaisaTabassum, Zubaida Ahmed and SwakkharShatabda Department of Computer Science and Engineering, United International University, Dhaka-1212, Bangladesh (185) Brain Machine Interface for DevelopingVirtual-Ball Movement Controlling Game Md. Ochiuddin Miah, Al Maruf Hassan, Khondaker Abdullah Al Mamun, and Dewan Md. Farid* Department of Computer Science & Engineering, United International University,United City, Madani Avenue, Badda, Dhaka-1212, Bangladesh	Room# 807, Level 8, Daffodil Tower

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka

Invited Talk-1, Room# 71 Milonayoton

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka

Time	Session	Venue
02:00-02:30	Title: Data Mining with Big Data: Challenges and Opportunities Chair: Prof Dr. Abdur Razzak, University of Dhaka Speaker: Dr. Dewan Md. Farid Associate Professor Department of Computer Science & Engineering United International University, Bangladesh	71 milonayoton, Daffodil Tower

PROGRAM SCHEDULE

Technical Session D: Biomedical System   **Room# 803**

Time	Session	Venue
02:45- 03:45	Chair: Prof Md Mostofa Akbar, Bangladesh University of Engineering and Technology Co-Chair: Dr. Swakkhar Shatabda, United International University Papers (7) Classification of Motor Imagery Events from Prefrontal Hemodynamics for BCI Application Md. Asadur Rahman1, Md. Mahmudul Haque2, Anika Anjum3, Md. Nurunnabi Mollah4, and Mohiuddin Ahmad5 1,2,3Department of Biomedical Engineering, Khulna University of Engineering & Technology (KUET), Khulna-9203, Bangladesh. 4,5Department of Electrical and Electronic Engineering, Khulna University of Engineering & Technology (KUET), Khulna-9203, Bangladesh (12) Diabetic Retinopathy Detection Using PCA-SIFT and Weighted Decision Tree Fatema T Johora1, Md. MahbubOr Rashid1, Mohammad A Yousuf1, Tumpa Rani Saha2and Bulbul Ahmed2 1 Institute of Information Technology, Jahangirnagar University, Savar,Dhaka 2 Department of Computer Science and Engineering, Dhaka University of Engineering and Technology, Gazipur,Dhaka (54) Feature Selection and Biomedical Signal Classification Using Minimum Redundancy Maximum Relevance and Artificial NeuralNetwork Md Masud Rana and Kawsar Ahmed (60) Modelling Photon Propagation through Human Breast with Tumor in Diffuse Optical Tomography Shisir Mia1, Md. Mijanur Rahman1 and Mohammad Motiur Rahman2 1 Dept. of Computer Science & Engineering, Uttara University, Dhaka, Bangladesh 2 Dept. of Computer Science and Engineering, MawlanaBhashani Science and Technology University, Santosh, Tangail-1902, Bangladesh (70) Alcoholic Brain State Identification from brain signals using Support Vector Machine based Algorithm Siuly Siuly1, Enamul Kabir2, Hua Wang1, Frank Whittaker1, Hongbo Kuang3 1Institute for Sustainable Industries &Liveable Cities, VU Research, Victoria University, Victoria University, Melbourne, Australia 2School of Agricultural, Computational and Environmental Sciences, University of Southern Queensland, Toowoomba, QLD, Australia (128) A Non-Invasive Heart Rate Estimation Approach from Photoplethysmography Monira Islam, Trisa Biswas, Abdul MunemSaad, Chowdhury AzimulHaqueand Md. Salah Uddin Yusuf Department of Electricaland Electronic Engineering, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh (151) D-CARE: A Non-invasive Glucose Measuring Technique for Monitoring Diabetes Patients Md Mahbub Alam1, Swapnil Saha1, Proshib Saha1, Fernaz Narin Nur1, Nazmun Nessa Moon1, Asif Karim2, Sami Azam2 1 Department of Computer Science and Engineering, Daffodil International University, Bangladesh 2 College of Engineering, IT and Environment, Charles Darwin University, NT, Australia (171) Initial Point Prediction based Parametric Active Contour Model for Left Ventricle Segmentation of CMRI Images Md. Al Noman1, A. B. M. Aowlad Hossain2, and Md. Asadur Rahman3 1,3Department of Biomedical Engineering, Khulna University of Engineering & Technology (KUET), Khulna-9203, Bangladesh 2Department of Electronics and Communication Engineering, Khulna University of Engineering & Technology (KUET), Khulna-9203, Bangladesh	Room# 803, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka

Time	Session	Venue
02:45-03:45	**Chair: Prof Dr. Rezaul Karim, Daffodil International University** **Co-Chair: Dr. Md. Ezharul Islam, Janagirnagar University** **Papers** (15) GIS-based Surface Water Changing Analysis in Rajshahi City Corporation Area Using Ensemble Classifier Mahbina Akter Mim1, K. M. Shawkat Zamil2 1 Department of Computer Science and Engineering, Rajshahi University of Engineering & Technology, Rajshahi, Bangladesh 2 Department of Computer Science and Engineering, Rajshahi University of Engineering & Technology, Rajshahi, Bangladesh (56) An Identity Based Encryption Scheme for Data Security in Fog Computing Nishat Farjana, Shanto Roy, Md. Julkar Nayeen Mahi, and Md Whaiduzzaman Institute of Information Technology, Jahangirnagar University, Savar, Dhaka-1342 (135) Issues of Internet of Things (IoT) and an Intrusion Detection System for IoT Using Machine Learning Paradigm M. F. Mridha1, Md. Abdul Hamid, Member, IEEE1 and Md. Asaduzzaman1 1Department of CSE, University of Asia Pacific, Dhaka (184) Classification by Clustering (CbC): An Approach of Classifying Big Data based on Similarities Sakib Shahriar Khan, Shakim Ahamed, Miftahul Jannat, Swakkhar Shatabda, and Dewan Md. Farid, United International University, Dhaka (199) Range based Location Estimation of Machines in M2MCommunications over Cellular Networks Sree Krishna Das1 and Ratna Mudi2 1Department of Electrical, Electronic and Communication Engineering, Military Institute of Science and Technology (MIST), Mirpur Cantonment, Dhaka-1216 2Department of Computer Science and Engineering, World University of Bangladesh (WUB), Dhanmondi, Dhaka-1205 (201) Developing a Technique for Overcoming the Searching Limitations of Documents Md. Muntasir Shahriar1, Mohammad Shamsul Arefin1, M. Ali Akber Dewan2 1Department of Computer Science and Engineering, Chittagong University of Engineering and Technology, Chittagong, Bangladesh 2School of Computing and Information Systems, Athabasca University Edmonon, Alberta, Canada	Room# 804, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka

Time	Session	Venue
02:45-03:45	**Chair: Prof Dr. Imdadul Islam, Jahangirnagar University** **Co-Chair: Dr. Md. Dewan Farid, United International University** **Papers** (45) Computer-aided Speckle Noise Analysis in Ultrasound Images through Fusion of Convolutional Neural Network and Wavelet Transform with Linear Discriminate Analysis Rafid Mostafiz, Md Mezbahul Islam, Mohammad Motiur Rahman Department of Computer Science and Engineering, Mawlana Bhashani Science and Technology University (80) A Comparative Overview of Classification Algorithm for Bangla Handwritten Digit Recognition MdNazmul Hoq1, 2, Mohammad Mohaiminul Islam1, NadiraAnjum Nipa1, Md. Mostofa Akbar2 1Daffodil International University, Dhaka, Bangladesh 2 Bangladesh University of Engineering and Technology, Dhaka, Bangladesh (124) A Computational Approach to Author Identification from Bengali Song Lyrics Nazmun Nisat Ontika1, Md. Fasihul Kabir2, Ashraful Islam3,4, Eshtiak Ahmed3,4, and Mohammad Nurul Huda5 1 Department of Computer Science and Engineering, Notre Dame University Bangladesh, Dhaka-1000, Bangladesh 2Cefalo Bangladesh Ltd., Dhaka-1209, Bangladesh 3 Department of Computer Science and Engineering, Daffodil International University, Dhaka-1209, Bangladesh 4 Department of Computer Science and Engineering, Bangladesh University of Engineering and Technology, Dhaka-1000, Bangladesh 5 Department of Computer Science and Engineering, United International University, Dhaka-1212, Bangladesh (144) A Comparative Study of Classifiers in the Context of Papaya Disease Recognition Md. Tarek Habib1, 2, Anup Majumder2, RabindraNath Nandi3, Farruk Ahmed4, Mohammad Shorif Uddin1 1Department of Computer Science and Engineering, Jahangirnagar University, Dhaka, Bangladesh 2Department of Computer Science and Engineering, Daffodil International University, Dhaka, Bangladesh 3Department of Computer Science and Engineering, Khulna University of Engineering and Technology, Khulna, Bangladesh 4Department of Computer Science and Engineering, Independent University, Bangladesh, Dhaka (173) Bangla Handwritten Digit Recognition and Generation Md. Fahim Sikder (183) A Novel Approach for Tomato Diseases Classification Based on Deep Convolutional Neural Networks Md. Ferdouse Ahmed Foysal, Mohammad Shakirul Islam, Sheikh Abujar, Syed Akhter Hossain Department of Computer Science and Engineering, Da_odil International University, Dhaka, Bangladesh (192) Improved Subspace Detection based on Minimum Noise Fraction and Mutual Information for Hyperspectral Image Classification Md. Rashedul Islam, Md. Ali Hossain and Boshir Ahmed Computer Science & Engineering, Rajshahi University of Engineering & Technology, Rajshahi, Bangladesh	Room# 807, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Time	Session	Venue
Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka		
03:50	Tea Break	Room# 803, Level 8, Daffodil Tower

Technical Session G: Intelligent Systems   Room# 803

Time	Session	Venue
Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka		
04:00-05:10	**Chair: Dr. Nova Ahmed, North South University** **Co-Chair: Dr. Bilkis Jamal Ferdousi, University of Asia Pacific** **Papers** (28) Mining Periodic Patterns and Accuracy Calculation for Activity Monitoring Using RF Tag Arrays Md. Amirul Islam1 and Uzzal Kumar Acharjee2 Dept. of Computer Science and Engineering, Jagannath University, Bangladesh (32) Routing Protocol Selection for Intelligent Transport System (ITS) of VANET in High Mobility Areas of Bangladesh Mohammad KamrulHasan[1], OrvilaSarker[2] 1,2Comilla University, Cumilla-3506, Bangladesh (36) An Intelligent Children Healthcare System for Children by Using Ensemble Technique Nishargo Nigar1, Linkon Chowdhury2 1 Department of Computer Science and Engineering, East Delta University, Chittagong, Bangladesh 2 School of Science, Engineering and Technology, East Delta University, Chittagong, Bangladesh (114) A Day-Ahead Power Demand Prediction for Distribution-Side Peak Load Management Khizir Mahmud, WeilunPeng, SayidulMorsalin, Jayashri Ravishankar School of Electrical Engineering and Telecommunications University of New South Wales, NSW 2052, Australia (175) Portable Mini Weather Station for Agricultural Sector of Rural Area in Bangladesh Nazib Ahmad1*, ThajidIbnaRouf Uday1*, Md. Toriqul Islam1, RayhanPatoary2*, MdMostasim Billah2*, Nuhash Ahmed2 and FarhanaSharmin Tithi3 (198) Development of an Expert System Oriented Service Support Help Desk Management System Abrar Hasin Kamal1, Mohammad Obaidullah Tusher1, ShadmanFahim Ahmad1, Nusrat Jahan Farin2 and Nafees Mansoor1 1 University of Liberal Arts Bangladesh (ULAB), Dhaka, Bangladesh 2 Stamford University Bangladesh, Dhaka, Bangladesh (202) An Intelligent Technique for Stock Market Prediction Mohammad Mekayel Anik1, Mohammad Shamsul Arefin1, M. Ali Akber Dewan2 1Department of Computer Science and Engineering, Chittagong University of Engineering and Technology, Chittagong, Bangladesh 2School of Computing and Information Systems, Athabasca University Edmonton, Canada	Room# 803, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Time	Session	Venue
	Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka	
04:00-05:10	**Chair: Prof Dr. Ismail Jabiullah, Daffodil International University** **Co-Chair: Dr. Shahriar Rahman, University of Liberal Arts Bangladesh** **Papers** (31)Drowsiness Detection Using Eye-Blink Pattern and Mean Eye Landmarks' Distance Abdullah Arafat Miah1, Mohiuddin Ahmad2, and KhatunaZannat Mim3 1,2,3Department of Electrical & Electronic Engineering, 1,2,3Khulna University of Engineering & Technology, Khulna 9200, Bangladesh (39) Microprocessor Based Smart Blind Glass System for Visually Impaired People Tobibul Islam1, Mohiuddin Ahmad2, and AkashShingha Bappy3 1, Department of Biomedical Engineering, 2, Department of Electrical & Electronic Engineering, 3 Department of Department of Electronics & Communication Engineering, 1,2,3 Khulna University of Engineering & Technology, Khulna 9200, Bangladesh (40) A Study on Monitoring Coastal Areas for having a better Underwater Surveillance perspective Md Hasan Furhad1*, Mohiuddin Ahmed1, and Abu S.S.M. Barkat Ullah1 1 Centre for Cyber Security and Games, Canberra Institute of Technology, Canberra, Australia. (42) Ethanol Detection through Photonic Crystal Fiber Etu Podder, Md. Bellal Hossain, Abdullah Al-Mamun Bulbul and Himadri Shekhar Mondal (104) A Framework for Detecting Driver Drowsiness basedon Eye Blinking Rate and Hand Gripping Pressure Md. Ashfakur Rahman Arju1, Naib Hossain Khan1, KaziEkramul Hoque1, Arif Rizvi Jisan2, Saifuddin M. Tareque2, MdZahid Hasan1, 1 Dept. of CSE, Daffodil International University, Dhaka, Bangladesh 2 Dept. of CSE, Chittagong University of Engineering and Technology, Chittagong, Bangladesh (122) A new Approach for Efficient Face Detection using BPV Algorithm Based on Mathematical Modeling 1Tangina Sultana, 2Md. Delowar Hossain, 1Niamul HasanZead, 1Nur AlamSarker and 1Jannatul Fardoush 1Dept. of Electronics and Communication Engineering and 2Dept. of Computer Science and Engineering, Hajee Mohammad Danesh Science and Technology University, Bangladesh (197) Real-Time Crowd Detection to Prevent Stampede Sabrina Haque, Muhammad Sheikh Sadi, Md. Erfanul Haque Rafi, Md. Milon Islam, and Md. Kamrul Hasan Department of Computer Science and Engineering, Khulna University of Engineering & Technology, Khulna-9203, Bangladesh	Room# 804, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Time	Session	Venue
04:00-05:10	**Chair: Prof. Dr. Nurul Huda, United International University** **Co-Chair: Dr. Nabeel Mahmud, North South University** **Papers** (24) Leveraging Machine Learning Approach toSetup Software De_nedNetwork(SDN) Controller Rules During DDoS Attack Sajib Sen1, KishorDatta Gupta1, and MdManjurul Ahsan2 1Department of Computer Science, University of Memphis,Memphis, TN 38152, USA, 2Department of Industrial Engineering, Lamar University,Beaumont,Texas 77710, USA (27) Meta Classifier Based Ensemble Learning For Sentiment Classification Naznin Sultana and Mohammad Mohaiminul Islam Department of CSE, Daffodil International University, Dhaka, Bangladesh (79) A Machine Learning Approach to Detect DiabeticRetinopathy using Convolutional Neural Network Muhammad MahirHasan Chowdhury1, NishatTasnim Ahmed Meem2 and Mari-um-E-Jannat3 Department of Computer Science & Engineering, Shahjalal University of Science and Technology, Kumargaon, Sylhet-3114, Bangladesh, (137) A Collaborative Platform to Collect Data for Developing Machine Translation System Md. Arid Hasan1, Firoj Alam2, and Sheak Rashed Haider Noori1 1 Daffodil International University, Dhaka, Bangladesh (148) A Hierarchical Learning Model for Claim Validation Amar Debnath, Redoan Rahman, Md Monjul Islam, and Md Abdur Razzaque Green Networking Research Group, Department of Computer Science and Engineering, University of Dhaka, Bangladesh (168) Query Oriented Active Community Search Badhan Chandra Das, MdShoaib Ahmed, and MdMus_que Anwar Computer Science and Engineering Department Jahangirnagar University, Savar, Bangladesh (179) Appliance of Agile Methodology at Software Industry in Developing Countries: Perspective in Bangladesh Abdus Sattar, Arif Mahmud, Sheak Rashed Haider Noori Daffodil International University, 102, Shukrabad, Mirpur Road, Dhanmondi, Dhaka 1207	Room# 807, Level 8, Daffodil Tower

PROGRAM SCHEDULE

Invited Talk-2, Room# 71 Milonayoton

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka		
Time	Session	Venue
05:10-05:40	Title: Using AI to Build a Smart Education System Chair: Dr. Md. Musfique Anwar, Jahangirnagar University Speaker: Mahfuzur Rahman Masum Chief Technology Officer CodeMarshal	71 milonayoton, Daffodil Tower

Closing Ceremony

Day 2: Saturday 15 December, 2018 @ 71 Milonayoton, Daffodil Tower, Sobhanbug, Dhaka		
Time	Session	Venue
05:40-06:10	**Closing** 05:40 Welcome by Organizing Chair 05:45 Felicitations of Session Chairs 05:55 Sharing of Expressions 06:00 Address of Chief Guest 06:10 Vote of Thanks	71 milonayoton, Daffodil Tower

TABLE OF CONTENT

25. A Fuzzy Based Study for Biomedical Imaging Applications

Fahmida Ahmeda, Tausif Uddin Ahmed Chowdhuryb, and Md. Hasan Furhadc
aUniversity of Chittagong, bData soft Systems Bangladesh, Bangladesh, cUniversity of
New South Wales, UNSW, Australia
*sarzana.cse.cu14@gmail.com

Abstract. Recent advancement in biomedical image processing area have been augmented by big data research and machine learning techniques. It is observed that image segmentation is contributing significantly in this domain. In this study, an efficient method for segmenting magnetic resonance (MR) images is proposed. The strategy for the method developed here is as follows. First, the MR images are pre-processed through a vector median filter to mitigate the noise inherent in images. Next, Otsu thresholding is implemented for initial image segmentation which detects the homogenous regions of the MR image. Finally, a modified suppression factor based suppressed fuzzy c-means is implemented for segmentation. For computational evaluation the metrics such as signal-to-noise ratio (SNR), mean square error (MSE), and the peak-signal- to-noise ratio (PSNR) are considered in this study. The proposed method shows better results over other algorithms by considering the above metrics.

Keywords: Machine learning, Image segmentation, Fuzzy c-means.

125. Automatic Skin Lesion Segmentation and Melanoma Detection: Transfer Learning approach with U-Net and DCNN-SVM

Zabir Al Nazi1 and Tasnim Azad Abir2
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Abstract. Industrial pollution resulting in ozone layer depletion has influenced increased UV radiation in recent years which is a major environmental risk fac-tor for invasive skin cancer Melanoma and other keratinocyte cancers. The incidence of deaths from Melanoma has risen worldwide in past two decades. Deep learning has been employed successfully for dermatologic diagnosis. In this work, we present a deep learning based scheme to automatically segment skin lesions and detect melanoma from dermoscopy images. U-Net was used for segmenting out the lesion from surrounding skin. The limitation of utilizing deep neural networks with limited medical data was solved with data augmentation and transfer learning. In our experiments, U-Net was used with spatial dropout to solve the problem of overfitting and different augmentation effects were applied on the training images to increase data samples. The model was evaluated on two different datasets. It achieved a mean dice score of 0.87 and a mean jaccard index of 0.80 on ISIC 2018 dataset. The trained model was as-sessed on PH2 dataset where it achieved a mean dice score of 0.93 and a mean jaccard index of 0.87 with transfer learning. For classification of malignant melanoma, a DCNN-SVM model was used where we compared state of the art deep nets as feature extractors to find the applicability of transfer learning in dermatologic diagnosis domain. Our best model achieved a mean accuracy of 92% on PH2 dataset. The findings of this study is expected to be useful in cancer diagnosis research.

Keywords: Dermoscopy image, Skin cancer, Segmentation, Deep learning, Augmentation, Melanoma classification, Transfer learning.

155. Enhancing the Classification Performance of Lower Back Pain Symptoms Using Genetic Algorithm Based Feature Selection

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Abstract. Lower Back Pain (LBP) is one of the leading causes of disability around the world that affects several important parts of the human body such as the muscles, nerves, and bones of the back. The early diagnosis and proper treatment can only prevent acute LBP from infecting into chronic LBP. The aim of this study is to enhance the classification performance of LBP by identifying the most relevant feature subset from a broader feature space of an LBP dataset. To serve the aim, we have proposed a Genetic Algorithm (GA) based feature selection approach that has been proved to significantly improve the classification performance of LBP. For the purpose of classification, we have used seven different classification algorithms namely Logistic Regression, Ridge Regression, Gaussian Naive Bayes, Random Forest, Decision Tree, K-Nearest Neighbors (KNN) and Support Vector Machine (SVM). After applying our proposed GA based feature selection approach along with the base classifiers, we have obtained a significant average increment in accuracy, precision, recall, f1-score and AUC score by 3.1%, 0.64%, 4.37%, 2.64%, and 3.83% respectively. The K-Nearest Neighbors outperforms the other models with the highest accuracy (=85.2%), precision (=89.9%) and f1 score (=88.9%).

Keywords: Genetic Algorithm, Feature Selection, LBP, Classification, KNN, SVM, Random Forest, Regression, AUC.

157. A CNN Based Classification Model for Recognizing Visual Bengali Font

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Abstract. Automatic font recognition or similar font suggestions from an image or picture are the core design works for many designers. This paper proposes a framework based on Convolutional Neural Network (CNNs) to the widely neglected problem of bangla font recognition by the vision community. First of all, we build up the available large-scale dataset consisting of both labeled synthetic data by Adobe and partly labeled real-world data. Next to CNN is trained to classify images into predefined font classes. Global average pooling layer is proposed instead of fully connected layers over feature maps in the classification layer to correspondence between feature maps and output. Thus the feature maps can be easily interpreted as font categories confidence maps. We show that our method achieves state-of-the-art performance on a challenging dataset of 10 selected bangla computer fonts with 96% line level accuracy. Large-scale experiments show that our approach is exceptionally viable on our synthetic test images and achieves promising results on real world test images.

Keywords: Bangla Visual Font Identification · Convolutional Neural Networks · Deep Learning · Bangla Font Recognition

169. Olympic Sports Events Classification using Convolutional Neural Networks

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Abstract. Analysis of different sports data to get valuable insight has become immensely important nowadays. Profuse application of Artificial Intelligence in different sectors has become a very popular trend as well. However, the application of AI in sports analytics is still a new research domain left for exploration. With a view to applying AI in sports analytics, we have deployed Inception V3 and MobileNet which are Google's most popular Convolutional Neural Networks to successfully recognize 5 different sports events from a huge image dataset of these events. Both of the models have achieved a very high performance in terms of accuracy, precision, recall, and f-measure while applied to the target dataset for successful classification.

Keywords: Sports Analytics, Convolutional Neural Network, Inception V3, MobileNet.

195. Improved Time Complexity and Load Balance for DFS in Multiple NameNode

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Abstract. Apache Hadoop is a software framework provided by the open source community. This is helpful in storing and processing of data-sets of large scale on clusters of commodity hardware. HDFS (Hadoop Distributed File System) is a primary distributed storage used by the Hadoop applications. An HDFS cluster primarily consists of a NameNode and the DataNode. The NameNode manages the file system metadata and DataNodes use to store the actual data. Hadoop is a scalable, fault tolerant and very simple to expand. NameNode often becomes bottleneck, especially when handling large numberof small files. To maximize efficiency NameNode stores the entire metadata of HDFS in the main memory. With too many small files, NameNode can be run out of memory. In this paper we present a solution used by multiple NameNode. Our solution has major advantages than existing one: we implement a system for load balancing, NameNode bottleneck problem solution and time requirements are reduced average in read and write.

Keywords: Hadoop, HDFS, ID Space, Load balancing, Metadata

204. An approach to aggregate intuitionistic fuzzy information with the help of linear operator

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Abstract. In real world scenario, the information about the process is incomplete and imprecise. The Atanassov Intuitionistic Fuzzy Set (AIFS) is a powerful and a flexible tool to handle such uncertainty in a system efficiently. The first two components of AIFS, namely, membership part and non-membership part, model the behavior of the features/criteria which describe the process. So corresponding to each feature, selection of linear/nonlinear function as per requirement of the process is made. The third component of AIFS, called hesitancy part which describes the uncertainty in the system. In this paper, we define a new linear aggregation operator for AIFS known as, Intuitionistic Fuzzy Linear Aggregation Operator (IFLWA). Further, a numerical example is given to demonstrate the procedure of implementing IFLWA in Technique for order preference by similarity to ideal solution (TOPSIS) for solving supply chain management problem. The results derived through IFLWA shows that it has the capability to handle TOPSIS method in an efficient manner.

Keywords: Linear aggregation operator, Intuitionistic fuzzy set, Supplier chain selection management, TOPSIS

30. Can the Expansion of Prediction Errors be Counterbalanced in Reversible Data Hiding?

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Abstract. Recent pixel value ordering (PVO) based development of reversible data hiding (RDH) schemes highly relies on an effective prediction error expansion (PEE). A prediction error is usually expanded either by embedding a bit in it or by shifting it by a 'suitable' value. With PVO, this expansion is made directional, i.e. left-ward, right-ward or both centering a reference pixel. This PVO property leads us to investigate that once a set of original pixels are expanded upon their predicted errors in one level of embedding, can that expansion be counterbalanced in an additional level of embedding? In this paper, we attempt to address this question in developing a new RDH scheme with PVO and classic PEE. An input image is partitioned into a set of non-overlapping blocks of size 1×3. Data-bits are embedded into the blocks in two phases of embedding. Our early results have demonstrated that the counterbalance of expanded errors is possible to offer better embedding rate-distortion performance than the original baseline scheme. Future endeavor on generalizing the proposed scheme and its information theoretic analysis may create a new avenue in data hiding research.

Keywords: Pixel value ordering (PVO) · Reversible embedding · Data hiding · Digital watermarking · Prediction error expansion (PEE)..

48. A Dynamic Bandwidth Allocation Algorithm for Gigabit Passive Optical Network for Reducing Packet Delay and Bit Error Rate

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Abstract. PON system especially Gigabit Passive Optical Network (GPON) is becoming popular and its performance improvement is very much important. Reducing packet delay and Bit Error Rate (BER), can improve the performance of GPON system. A Dynamic Bandwidth Allocation is proposed for performance improvement for GPON System. Proposed DBA meets technical requirements of optical network for high bandwidth, low delay and low packet loss. Using high order moving traffic prediction model, proposed DBA scheme predicts the amount of high priority traffic arriving during the waiting period and analyses the packet delay and bit error rate, as a basis for bandwidth allocation, delay and bit error rate, ensure the performance of high priority services. The simulation results will demonstration that the proposed DBA algorithm has good performances with reducing the packet delay and bit error rate.

Keywords: FTTH, DBA, GPON, BER, OLT.

83. Fraud detection of Facebook business page based on sentiment analysis

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Abstract. Growing technological development making our daily purchases totally online based. People are no more interested to visit shops and waste time to buy things. Moreover they prefer online shopping. Because it saves time and have almost everything people need in daily basis. Therefore many tool and techniques have been developed to prevent fraud for ecommerce sites and more are under development. Being a social networking website Facebook is also acting as an online market place for many people. This research proposes a method to prevent fraud and identify fraud business pages. Because now a days a lot of frauds are happening through many Facebook business pages and it is important to identify fraud pages.

Keywords: Business; Data analysis; Facebook; Fraud; Lexicon; Bag of Words; Online marketing; Pages; Preprocessing.

115. Simulation and Comparison of RPL, 6LoWPAN and CoAP protocols using Cooja simulator

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Abstract. The amount of connected entities has already gone beyond the total amount of human being few years ago and it is predicted to reach 50 billion by the end of 2025. As more and more devices are being introduced in our regular life, has created immense pressure on communication in terms routing. Therefore, the necessities of application specific communication protocols have risen up and will continue too in future days to come. This paper is mainly focused on a comparative analysis on the three protocols 6LoWPAN, RPL and CoAP and finding out the best protocols among them for the communication between IoT nodes. The performance of these protocols have been compared depending on different criteria like total packets, received packets, number of nodes, simulation time and number of IoT nodes on cooja platform. According to the result, packet transfer rate of CoAP is fair but slow. On the contrary, RPL packet loss rate is high but demonstrated a fast communication, however, most importantly, 6LoWPAN performed better than RPL and CoAP in our simulations.

Keywords: CoAP, Cooja, IoT, RPL, 6LoWPAN

167. Performance Analysis of SDN Based Intrusion Detection Model with Feature Selection Approach

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Abstract. Generally there are two types of approaches available for the detection of networks attacks namely signature based and anomaly based. In this work, we will analyze the performance of anomaly based detection model in SDN with the help of some common machine learning algorithm and feature selection mechanism. We construct a mechanism of machine learning model for an intrusion detection system and train the model with the NSL-KDD Data set using feature selection technique. In order to enhance the performance of the classifier, some feature selection methods have been applied as a prepossessing of the data set. We have used five feature selection methods, namely Info Gain, Gain Ratio, CFS Subset Evaluator, Symmetric Uncertainty, and Chi-square test. A full data set of 41 features and a reduced data set after applying feature selection method has experimented. A data set with feature selection ensures the highest accuracy with Random Forest classifier using Gain Ratio feature selection Evaluator.

Keywords: SDN· Machine learning · NSL-KDD · Feature selection

189. Vehicle Tracking Monitoring System for Security Purpose Based on Thermo Electric Generator (TEG)

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Abstract. Vehicle following device is a settled innovation in this advanced period of the technology which is utilized by armada framework and proprietor of a vehicle everywhere throughout the world. It is an extremely protected and dependable innovation. In this paper, a self-powered system is intended to track and screen any vehicle by utilizing Global Positioning System (GPS) and Global System for Mobile Communication (GSM). This device is fully powered by the waste heat of an automobile and that harvesting job is done by Thermo Electric Generator (TEG). A lot of systems designed to achieve the goal for vehicle tracking and monitoring. As it needs a continuous operation, a huge amount of power consumed to operate the device. This research will mitigate the cost of such a system by using power generated from wasted heat. PIC16F876A used as the processor with TEG, GPS and GSM module, Display, Heat Sensor, Crystal oscillator, Switching Transistor and Voltage regulator. The location of the vehicle can be detected by GPS module and the user will get continuous notification of vehicles location by GSM module. This research will help vehicles owner to monitor his vehicle properly.

*Keywords: Microcontroller · Vehicle Tracking · Vehicle Monitoring ·TEG · Self-Powered · Green Energy·
Energy Harvesting.*

194. A RSA based efficient dynamic secure algorithm for ensuring data security

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Abstract. The development of technology has become faster and more people are engaging with technology for various purpose. As a result, usage of data is increasing with the rapid growth of technology. Now a day's ensuring data security has become a major challenging factor for the service providers. Various techniques are implementing to increase performance and security for data communication. In this paper, a method is proposed using Ron Rivest, Shamir and Adleman (RSA) algorithm and Diffie-Hellman (DH) algorithm. RSA algorithm is used for encryption and decryption purpose. DH is used for exchanging generated keys. Also a password protection mechanism is applied in the proposed algorithm. The interesting part in password system is that, for every decryption password there will be a decrypted text. The system won't tell you that you have entered wrong password. Decrypted correct text will appear only if anyone enter the correct password which was used during encryption. The proposed algorithm is simulated and the results are presented which represent the evaluation of algorithm within a secure and efficient way for ensuring secure data communication.

Key words: Data security, RSA algorithm, DH algorithm.

3. Factorial Analysis of Biological Datasets

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Abstract. The retrieval of biological data is quite trending nowadays as a significant amount of research is being carried out in this area. There are numerous algorithms being proposed for analyzing biological data based on pattern matching based approach. Several new pattern matching based algorithms ranging from brute force approach to most recent algorithms are being developed. As it is well understood that for retrieval of data, the retrieval algorithm must be fast in terms of execution, very less attention has been paid towards the factors which might affect execution time of an algorithm. Factors like pattern length, type of datasets, input size and other related factors can affect the execution of an algorithm, but how much is really unknown and unaddressed. Hence, this paper has addressed this problem by utilizing factorial design 2k. The factorial technique is designed and implemented in such a way, which will give new insight to researchers while proposing or developing algorithms for retrieving biological data. The study shows for the algorithm to be efficient, the main motivating factor is pattern length. Pattern length is having a 38.5% effect on the execution time of an algorithm followed by the type of dataset with the impact of 18%.

Keywords: biological data, DNA analysis, exact pattern matching, factorial design, factorial technique, pattern matching.

69. A Network-based approach to Identify Molecular signatures and Comorbidities of Thyroid Cancer

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Abstract. The molecular mechanisms driving thyroid cancer (TC) development and progression are poorly understood, but identifying molecular pathways and hub genes abnormally active in TC tissues may highlight some of the key pathogenic processes involved. We therefore analysed TC tissue transcript tome profiles to identify such pathways which were then functionally characterized. Thus, we studied microarray gene expression dataset to identify the differentially expressed genes (DEGs) in TC compared to normal thyroid tissues. By using topological and neighbourhood based benchmark methods, we built comorbidity relationship networks to clarify how TC molecular pathways related to those of other diseases considering our identified significant DEGs of TC and assessed their functions using Online Mendelian Inheritance in Man (OMIM) databases, protein-protein interaction (PPI) networks. TC tissues showed dysregulation in expression of 598 genes, of which 133 had increased and 465 had decreased expression. From the analysis of the comorbidity network (gene-disease associations network; GDN), we identified 24 genes previously shown to be strongly associated with cancer, 24 genes associated with neurological disorders and 14 genes associated with cardiovascular disease. PPI network were built around the identified 79 unique genes in GDN of TC to identify the shared proteins group of different diseases. From the analysis of PPI network, we identified 10 significant hub genes namely EGFR, KIT, IRS1, KDR, BUB1B, CDH1, BUB1, TEK, TPM2 and NR4A2 based on the degree and betweenness centrality. Moreover, transcription factors (TFs) that may influence the observed TC gene expression were identified.Thus, our study identified DEGs, molecular pathways, hub genes, TFs and miRNAs of TC, as well as comorbidities with other diseases. The TC-associated genes thus identified comprised candidates for further studies to identify new TC biomarkers and pathological processes that underlie TC.

Keywords: thyroid cancer · comorbidity · molecular pathways· PPI · reporter TFs · reporter miRNAs.

71. Genetic Effects of Welding Fumes to the Development of Cancer Diseases

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Abstract. Welding exposes a lot of gases, fumes and radiant energy that may be potentially hazardous for unsafe welders health. Welding fumes (WFs) are an intricate composition of metallic oxides, fluorides and silicates that may result in various health effects. If a welder inhales such fumes in large quantities over a long period, there is a risk of several cancer diseases (CDs) development. We developed quantitative frameworks to recognize the genetic effects of WFs on the development of CDs. We analyzed Gene Expression microarray data from WFs exposed tissues and CDs including Colorectal Cancer (CC), Prostate Cancer (PC), Lung Cancer (LC) and Gastric Cancer (GC) datasets. We constructed disease association networks and identified dysregulated pathways, ontological pathways and protein-protein interaction sub-network using neighborhood-based benchmarking and multilayer network topology. We observed that WFs shares a vast number of deferentially expressed genes 36, 13, 25 and 17 with CC, PC, LC and GC respectively. Deferentially expressed genes along with disease association networks, pathways, ontological analysis and protein-protein interaction sub-network insured that WFs are responsible for the development of CC, PC, LC and GC cancer diseases. Our developed network-based approach to analysis and investigate the genetic effects of welding fumes on CC, PC, LC and GC could be helpful to understand the causal influences of WF exposure for the development of the CDs.

Keywords: Welding fumes · Cancer Diseases · Colorectal Cancer · Prostate Cancer · Lung Cancer · Gastric Cancer.

118. Algorithms for String Comparison in DNA Sequences

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Abstract. String comparison algorithms are the pathway to determine various characteristics of genomes, DNA or protein sequences. In this article 3 (three) different existing algorithms are described with some additional features which provides better performance in terms of different performance measures. At first, a dynamic programming algorithm for small k-mer is described which is based on the existing hash table SSAHA method to search large DNA database that gives better run time for small k-mer. Then a genome alignment algorithm is described that will find out MUMs (Maximal Unique Match) where Burrows Wheeler Transform matrix and an additional data structure FM (Ferragina and Manzini) index are used instead of suffix tree. Last of all, an improved version of existing Sibelia tool's algorithm is proposed to find out synteny blocks from microbial genome where existing algorithm determines only the loops greater than the size of bulges whereas the proposed algorithm determines loops of all sizes.

Keywords: Bio-Informatics, DNA Sequence, String Comparison, Maximal Unique Match, Microbial Genome, DeBruijn Graph, Hash Table for DNA Database

170. Type 2 Diabetics Treatment and Medication Detection with Machine Learning Classifier Algorithm

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Abstract. In this Scientific Research, we examined Type 2 Diabetics Treatment and Medication Detection using Classifier Algorithm. various complications are occurred whom dragonize with Type-2 diabetes. when patients are diagnosed with diabetic nephropathy; their renal functions have already been significantly damaged. Therefore, at early treatment stage, curable diagnosis tool is efficient. we developed a decision tree-based model with genetic and clinical features in a, Fasting, 2 hours after glucose load, BMI, Duration(years), Age, gender-specific, blood pressure use as classifications for the treatment of type 2 diabetic patients. Medical treatment prevents some of its devastating complications but does not usually restore normoglycemia or remove all the adverse consequences. The tool here is to give correct report to justify the right medications for a patient. Medical data were obtained from a Noakhali Medical College associated observation of 666 type-2 diabetic patients. Using a five-fold cross validation approach, the performance of using clinical features alone in various 7 classifiers Logistic Regression, Linear Discriminant Analysis, k-nearest neighbors, Decision Tree, Naive byes, support vector machine, Random forest classifier was compared with that of utilizing a combination of attributes. In this paper, the tools support to change Lifestyle and right medications for treatment which reduced the probability of type 2 diabetes in persons.

Keywords: *Type 2 Diabetics Treatment, Machine Learning Classifier algorithm, Random forest classifier, Decision Tree, K-NN, Statistics.*

172. Find It: A Novel Way to Learn Through Play

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Abstract. Autism Spectrum Disorder (ASD) is the area where many researches enduring like Magnetic Resonance Imaging (MRI), called diffusion tensor imaging, Early Start Denver Model (ESDM) to provide an easier life for the people diagnosed. After years and years of combined funding sources from public and private funding, these researches show great promises in recent years. In this paper, we present 'FindIt' a novel game. Our research shows a way how children with Down Syndrome Autism can learn through game therapy such as letter recognition & memory challenge by making perfect pair match like Mahjong games and reflection by popping the right balloons within limited time. These game therapies have shown an immense number of improvements among those children as the digital interactive media was more comfort zone to the subject. Here we also introduced virtual agents with the help of Unity ML & AR technology to help them improve in social interaction.

185. Brain Machine Interface for Developing Virtual-Ball Movement Controlling Game

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Abstract. Intelligent Systems for bio-signals processing and modelling are a method for creating signals to measure the brain activities to perform task by an external device. Brain Machine Interface (BMI) that is also known as Brain Computer Interface (BCI), Neural Control Interface (NCI), Mind Machine Interface (MMI), and Direct Neural Interface (DNI) is a direct communication pathway between brain and machine. Recently, computational modelling researchers are applying BMI techniques to explore advance knowledge for discovering biological fundamental problems. In this paper, we have explored BMI techniques and developed a system that can distinguish human thoughts. Initially, we have obtained the brain signals and ex-tracted features from these signals to build training and test data. We have designed binary-class and three-class classifiers by employing OneR, naïve Bayes (NB) classifier, decision tree (DT) induction, Random Forest, and Bagging classifiers. Random Forest achieved 93.16% and 62.84% accuracy for binary-class and three-class classification. On the contrary, decision tree (C4.5) classifier achieved 90.89 % and 65.66% accuracy for binary-class and three-class classification. Then we have considered overall performance and applied decision tree classifier for developing an interactive game that can operate through brain machine interface without physical interaction with the computer.

Key words: Brain Machine Interface, Brain Computer Interface, Human Machine Interface, Electroencephalogram, Classification

7. Classification of Motor Imagery Events from Prefrontal Hemodynamics for BCI Application

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Abstract. This work reports the potentiality of the motor imagery movement classification from prefrontal hemodynamics for the brain-computer interface (BCI) applications. Although movement-related activation correlates with the central lobe, this area of a paralyzed patient is often found obsolete. Therefore, to design a BCI system for paralyzed persons, the central lobe hemodynamics cannot be considered. To overcome this problem, this work proposed an alternative approach. This research work experimentally investigates the potentiality of classifying the motor planning (imagery) activities from the prefrontal hemodynamics. The functional changes of prefrontal hemodynamics for imagery hand movements are measured by functional near-infrared spectroscopy (fNIRS) from several subjects. The fNIRS signals of imagery hand movements are classified by k-nearest neighbor and artificial neural network algorithms. The classification accuracies were checked with the subject dependent and independent approach. Our results demonstrate that the prefrontal hemodynamics could serve as the potential biomarker for the effective BCI system.

Keywords: Functional near-infrared spectroscopy (fNIRS), imagery movement, prefrontal cortex, brain-computer interface, ANN, and kNN.

12. Diabetic Retinopathy Detection Using PCA-SIFT and Weighted Decision Tree

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Abstract — Diabetic Retinopathy is an important problem in the whole world and because of this disease a lot of people are losing their vision. Many processes are available to detect diabetic retinopathy and manual screening is one of those. This work proposes a method consists of three steps, namely image preprocessing, Principal Component Analysis – Scale Invariant Feature Transform (PCA-SIFT) based feature extraction and then classification. After separating noisy dataset by applying adaptive noise detector, PCA-SIFT is used for feature extraction. These features are then fed into the classifiers. Naive Bayes classifier is used for noise free data and for the rest (noisy) data, prior and posterior probability based weighted decision tree is applied for classification. Thus we have achieved superior result even for the noisy dataset which increases the efficiency of the system.

Keywords- DR:(Diabetic Retinopathy), PCA: (Principal Component Analysis), SIFT: (Scale Invariant Feature Transform), HT: (Hough Transform), DoG: (Difference of Gaussian).

54. Feature Selection and Biomedical Signal Classification Using Minimum Redundancy Maximum Relevance and Artificial Neural Network

Md Masud Rana and Kawsar Ahmed

Abstract: Cancer is the unrestrained growth of irregular cells in the body and is a foremost death reason over the world. Recently, a number of studies are going on cancer classification from gene expression data. In contrast to the traditional method, this paper proposes a minimum redundancy maximum relevance (mRMR)-artificial neural network (ANN) method to classify cancer. For this classification, the first step is to select prognostic genes. These tiny subset genes provide better classification accuracy. We proposed mRMR approach for picking more informative genes from microarray data sets. After selection of genes, the artificial neural network (ANN) are used for training and cancer classification. The proposed mRMR based ANN approach has been verified on a suite of benchmark data sets of various cancers. Numerical results show that proposed method is outperformed compared with the existing methods.

60. Modelling Photon Propagation through Human Breast with Tumor in Diffuse Optical Tomography

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Abstract. Diffuse optical tomography (DOT) plays important roles in different anomaly detection and analysis in human breast and brain. In this paper, we de-velop a model for NIR photon propagation through human breast with tumor based on the well-known mathematical approach, namely, Radiative Transfer Equation (RTE) with diffusion approximation. The resulted equation is trans-formed into Helmholtz equation in order to compute distribution of photon den-sity numerically. The photon propagation model is simulated through the appli-cation of finite element method (FEM) in COMSOL Multiphysics framework. Close observations of the photon density distribution clearly reveal that photon density distribution within and around tumor affected area has different signature compared to other areas of human breast. Thus our modelling technique demon-strates an effective way of finding the location of tumor in human breast based on the photon density distribution signature of tumor. Simulation result shows the efficacy of the technique.

Keywords: Diffuse Optical Tomography, Radiative Transfer Equation, Diffu-sion Equation, Helmholtz Equation.

70. Alcoholic Brain State Identification from brain signals using Support Vector Machine based Algorithm

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Abstract. The paper aimed to present a method for the identification of alcoholic brain state using optimum allocation (OA) based support vector machine (SVM). The OA scheme determines the representative data from single time-window of Electroencephalogram (EEG) signals (called brain signal). Several statistical features have been extracted from each time-window of EEG signals and then these features are used to SVM classifier to identify the alcoholic brain state. The experimental results achieved by using benchmark database bespeak that the proposed method with SVM classifier (polynomial kernel) accomplishes higher classification accuracy and low false alarm rate than the other kernel functions. Thus, the proposed OA scheme can be used to classify the alcoholic state from EEG signals.

Keywords: EEG, optimum allocation, feature extraction, SVM, classification.

128. A Non-Invasive Heart Rate Estimation Approach from Photoplethysmography

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Abstract. Heart rate is a major internal psychological parameter that defines the function of human body along with its response. In conventional heart rate measurement, electrodes and chest straps are attached to the patient's body, but this system is a bit uncomfortable. So, in this paper a non-invasive heart rate measurement technique is proposed from Photoplethysmography (PPG signal). PPG signal will be extracted from the facial video in realistic frame that involves three approaches, firstly when the face is in at standstill, secondly when human face is motion and finally at real time scenario. Region of interest is selected according to their skin color variation in response with the heart rate. This color variation is implemented on the RGB color space and PPG signal is obtained. Independent component analysis (ICA) and Fast Fourier Transform are applied on this signal and heart rate is estimated from FFT. This method is also compared with the conventional heart rate measurement technique with ECG signal. Among the three conditions, the results are more accurate for motionless face video. For real time heart rate measurement, a Graphical User Interface (GUI) is designed in this work which will play a significant role at instant critical condition in remote areas.

Keywords: PPG, ECG, Region of Interest, FFT, GUI, Heart Rate.

151. D-CARE: A Non-invasive Glucose Measuring Technique for Monitoring Diabetes Patients

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Abstract. In the context of 21st century, Diabetes is one of the most lethal diseases from which millions of people of different age levels are suffering. It is imperative for a diabetes patient to maintain the blood glucose level all the time as there is no stable solution for this disease. However, the infants and the elderly, suffering from diabetes might not have the notion of maintaining the level of sugar in their blood. So constant monitoring of the patient has become the most feasible 'solution'. But the traditional method for measuring blood glucose level is not a viable option for constant blood glucose monitoring. Even if this invasive method is more accurate, it is painful and also there is a risk of infection, although minimal. That is why the non-invasive method seems to be a reasonable option for ongoing monitoring of blood glucose. For constant remote collection and monitoring of the data obtained from the diabetes patient, an IoT based non-invasive monitoring system has been proposed in this research that can be a great aid besides the invasive method for constant monitoring purposes.

Keywords: Noninvasive glucose measure, near infrared, photodiode, GSM module, microcontroller (Arduino UNO).

Session D

171. Initial Point Prediction based Parametric Active Contour Model for Left Ventricle Segmentation of CMRI Images

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Abstract. This research work proposes an automatic segmentation approach of the left ventricle (LV) from cardiac magnetic resonance image (CMRI). Although the parametric active contour model (PACM) can be used to segment the LV of CMRI image, it requires the initial contour. This is a manual and time-consuming approach and the accuracy is subjective. The main contribution of this proposal is to introduce an artificial neural network based regression model to predict the initial contour to detect the LV area of a CMRI image. With the automatic predicted contour points by the proposed method, a number of CMRI images are segmented by PACM to get the LV area. The results demonstrate that the proposed automatic segmentation procedure can segment the LV area with negligible deviation with less required time. In addition, this research work also customizes the finely fitted parametric values of the PACM for the CMRI images.

Keywords: Cardiac magnetic resonance imaging (CMRI), Left ventricle segmentation, Parametric active contour model (PACM), Initial point prediction and Artificial neural network (ANN)

Session E   Cloud Computing, IoT, Bigdata and Mobile Computing

15. GIS-based Surface Water Changing Analysis in Rajshahi City Corporation Area Using Ensemble Classifier

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Abstract. Water is one of the largely used elements of this nature. Water is available in different forms like surface water and groundwater. The amount of surface water in the study area is not constant because the study area is situated in the north of Bangladesh. In some year this region faces flood and some year faces heavy droughts. Many ponds, canals and a large portion of the river are filled by dumping wastages and for construction purposes. Many industries and factories discharge wastewater containing harmful substances directly into the aquatic environment and there is no preliminary purification carried out. In this way, the water resources are becoming unsuitable for subsequent use, especially for drinking water supply. It makes the amount of fresh water scarcer. Heavy rainfall causes flood and river erosion changes the direction of river flow. This change is found by the Geological Information System (GIS). The Landsat images are collected from the United States Geological Survey (USGS). In this research, the Landsat 4-5 Thematic Mapper and Landsat 8 Operational Land Imager are used. ArcGIS is used to extract the features from the images. Finally, ensemble classification i.e., Random forest algorithm is used to make the prediction. The accuracy measured about 92%. Also, in this study, precision, recall, and f1-scores calculated to justify the prediction accuracy.

Keywords: Machine Learning, GIS, Remote Sensing, Data Mining, Maximum Likelihood Classification, Random Forest Algorithm.

56. An Identity Based Encryption Scheme for Data Security in Fog Computing

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Abstract. Fog computing provides better integration facilities between cloud computing and internet of things with real time interactions. It delivers faster computing functionalities sitting close to user applications and has local storage options. Despite this potentials in fogging, maintaining secure data communication is still a challenging issue and needs further development. In this paper, we have presented an Identity Based Encryption(IBE) scheme that ensures secure data transmission to authorized users. To provide data security, we have proposed a four-level Hierarchical Identity Based Architecture for Fog Computing(HIBAF). In addition, we have evaluated our scheme to analyze the performance in terms of user load, memory utilization, response time and delay time over di_erent sizes of datasets. Finally, we have compared our results with other cryptography systems to _gure out the e_ectiveness of our scheme and found overall 30% e_cient.

Keywords: Data Security in Fog _ Identity Based Encryption _ Hierarchical Identity Based Architecture for Fog Computing _ Secure Communication.

135. Issues of Internet of Things (IoT) and an Intrusion Detection System for IoT Using Machine Learning Paradigm

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Abstract. Internet of Things (IoT), Internet of Everything or Internet of Intelligent Things are few of the buzzwords that we hear almost every day in the Information Technology sector. The whole world is entering a new era where everything will be communicating with each other by means of IoT. IoT aims to bring everything under a single communication infrastructure, giving us the power to control anything from anywhere. Powerful data analytic tools are being deployed to collect and analyze data from those connected devices to make a drastic change in our daily life. Researchers around the globe has made a projection that the quantity of associated IoT gadgets will be just about 100 billion and the financial impact will be about $11 trillion before the finish of 2025. However, there are a significant number of challenges that has already grabbed the attention besides few other emerging challenges. As the number of IoT devices increases, new security and privacy challenges will be introduced. In this paper, we have discussed various issues of IoT ecosystem. Then, we have built an IoT smart-home and developed an adaptive intrusion detection system. The system employs Machine Learning strategies and is capable of detecting simple form of Denial of Service attacks. We have applied proposed method on our IoT test bed with commercially available IoT devices and we have shown that the proposed method is successful in identifying network scanning probing.

Keywords: Internet of Things, Security, Botnets, Intrusion Detection System, Machine Learning, Wireless Sensor Network.

Cloud Computing, IoT, Bigdata and Mobile Computing

184. Classification by Clustering (CbC): An Approach of Classifying Big Data based on Similarities

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Abstract Data classification in supervised learning is the process of classifying data for data mining task that helps to analyse data for decision making. The objective of a classification model is to correctly predict the categorical class labels of known/ unknown instances. In machine learning for data mining applications, the classification models are trained based on labelled training datasets. In this paper, we have investigated if we can build a classification model based on the similarities of the instances instead of class labels of instances. Data labelling is always very costly and time consuming process, and it's become very difficult task if the data is big data. The proposed approach clusters the big data and builds the classifier based on the clusters without considering the class labels, which basically improve the performance of the classifier. However, we can relate the clusters with class labels. We have collected 10 big data from the UC Irvine machine learning repository for experimental analysis and applied three popular decision tree induction algorithms: ID3 (Iterative Dichotomiser 3), C4.5 (extension of ID3 algorithm), and CART (Classification & Regression Tree) for classifier construction.

Key words: Classification, Clustering, Classifier, Decision Tree, Similarity-based Clustering

199. Range based Location Estimation of Machines in M2M Communications over Cellular Networks

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Abstract. Machine to machine (M2M) communications is a promising technology to enhance both spectral efficiency and energy efficiency in cellular networks. To achieve those benefits, localization of unknown machine in M2M communications are crucial for several perspectives, such as power control to mitigate interference, improve energy efficiency and reduce traffic bur den on the base stations (BSs). In this paper, we propose time of arrival (TOA) and time difference of arrival (TDOA) based localization techniques for M2M communications over cellular networks. The algorithm estimates the location of unknown machine using TOA and TDOA from the location information of anchor machines. Weighted least square (WLS) and maximum likelihood (ML) based localization algorithms are espoused for the proposed localization techniques. Extensive simulations are carried out for evaluating the localization performance of the proposed techniques. Besides, simulation results show that the TDOA localization technique provides higher localization accuracy.

Keywords: Machine to Machine (M2M) communications, TOA, TDOA, Unknown Machine, RMSE.

201. Developing a Technique for Overcoming the Searching Limitations of Documents

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Abstract. Searching in documents plays a vital role in our daily life. We use different kinds of documents for different purposes. Automatic searching of information in these documents is very important for us as it reduces our valuable time to find out necessary information from documents. Although there are many techniques for searching documents are available at present days, there are many limitations in these searching techniques. The existing systems are unable to perform group search operation, search with spelling mistakes in input and search with missing words in input query. Considering this fact, in this paper, we propose a technique that can overcome above limitations while searching in documents. We consider our system for both Bangla and English documents. For reducing the search time, in our system, we store the search information and search results in the database so that if anyone searches for the same information in same document again, our system can provide the results directly from the database without searching the document again. Our system can also perform search operation in multiple documents at the same time. We have compared our system's output with manually calculated output and found that our system can produce satisfactory results.

| Session F | Speech, Image and Natural Language Processing |

45. Computer-aided Speckle Noise Analysis in Ultrasound Images through Fusion of Convolutional Neural Network and Wavelet Transform with Linear Discriminate Analysis

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Abstract. This paper presents a computer-aided system for speckle noise analysis in ultrasound images. The proposed system uses the combination of convolutional neural network (CNN) features and wavelet features to detect speckle noise in ultrasound images. The wavelet features are based on the covariance of the second-order statistical measures over the wavelet transform. Evaluations on standard databases show that the proposed system gaining accuracy of 98.30%, sensitivity 98.79%, and specificity of 98.52%. This approach is sup-ported by a linear discriminate analysis (LDA) for characterization of object regions from noise regions. It produces a strong speckle reduction and edge preservation due to noise free feature extraction scheme. The Experimental result is compared with several other existing speckle reduction methods and it outperforms the state-of-the-art methods on the basis of contrast resolution and MSE.

Keywords: Ultrasound Imaging, Convolutional Neural Network (CNN), Wave-let features, Speckle noise, LDA.

80. A Comparative Overview of Classification Algorithm for Bangla Handwritten Digit Recognition

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Abstract. Bangla handwritten digit recognition (BHDR) is a well-known problem in the digitization of Bangla language and Bengali script. A lot of work has been done on BHDR and very good accuracy has been achieved. This success can be extended to handwritten Bangla character (vowel, consonant) recognition which will result in automatic understanding of Bangla handwritings. But the main difficulty is faced when it comes to choose an appropriate classification algorithm to recognize the character of Bengali handwritten script. In this paper, a comparative overview of classification algorithms for BHDR has been provided which will make it easy to decide an appropriate classification algorithm. Here we have shown a broad comparison of eight (08) different classification algorithms using CMATERdb 3.1.1 Bangla Handwritten Numeral datasets. Different evaluation metrics have been used to justify the comparative analysis. Artificial Neural Network (ANN) performed best whereas Logistic Regression performed well compared to others in terms of the sensitivity, specificity and error rate. This comparative overview will help scientist especially new researcher to give a quick start with Bangla handwritten character recognition and digitalization.

Keywords: Bangla Handwritten Digit Recognition (BHDR), Digit Recognition, Pattern Recognition

124. A Computational Approach to Author Identification from Bengali Song Lyrics

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Abstract. Music is one of the truest forms of art. People listen to music both as a form of entertainment and means of relaxation. Every country or region in the world has its own form and style of music. Bangladesh is no exception as it has a great history of music with a great tradition of song writings over centuries. Although songs are very popular among the enthusiasts, authors of them get little recognition. As a result, author identification from songs, more specifically from lyrics is an important and realistic possibility. Authorship attribution is one of the ways of identifying the author from a linguistic corpus. This paper demonstrates a guideline to identify the author of a Bengali song from the lyrics of that song using machine learning. It presents the first work on machine learning based computational approach for author attribution from the lyrics of Bengali songs. Six methods of machine learning are used for the author identification and high accuracy have been achieved from these methods while applied to the data sets D2A, D4A, and D7A, built from Bengali song lyrics. It is observed that the Naive Bayes (NB) classifier provides higher accuracy in comparison with the other methods as it shows 93.9%, 85%, and 86.7% of accuracy while considering the stop words for our three data sets respectively.

Keywords: Author Identification Bengali Song Lyrics Machine Learning Bengali Lyricist.

144. A Comparative Study of Classifiers in the Context of Papaya Disease Recognition

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Abstract. Nowadays machine learning techniques have been effectively being applied on a wide area of applications. Although a large number of state-of-the-art classification algorithms have been applied in different applications, they are infrequently tested in the same classification problem domain. In this paper, nine (9) prominent classification algorithms are compared in index of six (6) performance metrics in a computer vision context. Machine vision based papaya disease recognition can help to build an online agro-medical expert system that recognizes the defects of a fruit by diseases from an image that is taken using mobile or another handheld device in order to distantly help both beginner and professional growers in the agriculture-based country like Bangladesh. In this context, since a classifier is required, the merits of prominent classification algorithms need to be thoroughly assessed. So, we compare the performances of SVM, C4.5, naïve Bayes, logistic regression, kNN, random forest, back propagation neural network, counter propagation neural network and RIPPER classifiers. SVM outperforms all other classifiers achieving more than 95% accuracy, whereas kNN performs worst showing 71.11% accuracy.

Keywords: Papaya Disease, Machine Vision, k-means Clustering, Classification, Performance Matrix.

173. Bangla Handwritten Digit Recognition and Generation

Md. Fahim Sikder

Abstract: Handwritten digit or numeral recognition is one of the classical issues in the area of pattern recognition and has seen tremendous advancement because of the recent wide availability of computing resources. Plentiful works have already done on English, Arabic, Chinese, Japanese handwritten script. Some work on Bangla also have been done but there is space for development. From that angle, in this paper, an architecture has been implemented which achieved the validation accuracy of 99.44% on BHAND dataset and outperforms Alexnet and Inception V3 architecture.

Beside digit recognition, digit generation is another field which has recently caught the attention of the researchers though not many works have been done in this field especially on Bangla. In this paper, a Semi-Supervised Generative Adversarial Network or SGAN has been applied to generate Bangla handwritten numerals and it successfully generated Bangla digits.

183. A Novel Approach for Tomato Diseases Classification Based on Deep Convolutional Neural Networks

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Abstract. Neural Networks have achieved a significant result in every arena of information technology, where it has been used to solve any major problem. As a consequence, upward inclination of development has been observed in those industries. Nowadays, because of using NN, challenges became easier than before to deal with. The agriculture industry is one of the important and largest industries, where technology can make a major contribution by solving their certain problems. Implementation of artificial intelligence can make this industry more successful and faster growing. Since the very beginning, Plant diseases are one of the major factors behind low-quality products. So, through identifying those diseases earlier, can make a great contribution to this agro-industry. Therefore, in this work, a definite detection of tomato diseases has been presented. Several existing and proposed method of identifying disease through analyzing tomato leaves has been discussed. We have proposed a 15 layered Deep Convolutional Neural Network. Basically, this research will state a basic approach for tomato disease classification. This will be able to classify five different tomato diseases, the proposed model has achieved fairly high accuracy with low cross-entropy rate. Several simulation results have been measured and discussed.

Keywords: Tomato Diseases Classification, Convolutional neural networks, Deep learning, Image recognition.

192. Improved Subspace Detection based on Minimum Noise Fraction and Mutual Information for Hyperspectral Image Classification

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Abstract. Finding an informative subspace of the original in hyperspectral im-ages has become very essential due to its comprehensive applications in ground object recognition. Information extraction from hyperspectral images is a challenging work on account of its high correlation among the image bands in both the spatial and spectral redundancy. A feature reduction approach combining both the feature extraction and feature selection is proposed in this paper. A combination of Minimum Noise Fraction (MNF) and Mutual Information (MI) is pro-posed to select the subspace of the original data cube with regard to achieve improved classification accuracy. In the proposed method, feature ranking is improved by scaling the mutual information to a specific range in order to avoid redundant features. The proposed technique (MNF-nMI) is tested on two hyper-spectral images captured by NASA AVIRIS sensor and HYDICE sensor. The experimental results typically indicate the noticeable improvement pertaining to classification accuracy. The proposed technique shows the classification accuracy of 96.8% and 99.3% on AVIRIS and HYDICE hyperspectral data respectively which is greater than the conventional methods studied.

Keywords: Feature extraction, subspace identification, minimum noise fraction, mutual information, AVIRIS, HYDICE, hyperspectral images classification.

28. Mining Periodic Patterns and Accuracy Calculation for Activity Monitoring Using RF Tag Arrays

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Abstract. Periodic activity monitoring, a pivotal intention in various applications, is consistently exorbitant guided using cameras. Monitoring an enormous field successfully by investigating pictures from various cameras dependably remains a testing issue. In this paper, we propose and effective and proficient algorithm for retrieving periodic movement pat-terns from the frequent region and accuracy calculation, where RF tag arrays and data mining systems play out a sensitive role. The RFID has drawn agent eagerness late years for its negligible exertion, general openness and area identifying convenience. Another ideal position of RFID is that it doesn't require facilitate contact or recognizable pathway monitoring of objects. The practicality and the efficiencies of this proposal will be verified by our experimental utilizing both synthetic datasets and real RFID datasets.

keywords: RFID, Mining, Periodic Activity, Trajectory.

32. Routing Protocol Selection for Intelligent Transport System (ITS) of VANET in High Mobility Areas of Bangladesh

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Abstract. The ultimate objectives of VANETs is to provide safer and Intelligent Transportation System (ITS) where drivers can communicate each other's in higher mobility for secure travel. In the case of the vehicular communication in Bangladesh, no ITS of VANET is practically developed so far. To implement VANET for Bangladesh, the selection of the protocols and path routing are the most common strategies that are to be focused while designing VANETs. This paper illustrates the evaluation of four routing protocols: AODV, AOMDV, OLSR and DSDV which are applied on open street map in New Paltan area in Dhaka city, Bangladesh. Our simulations are enacted using SUMO (for vehicular movement) simulators and NS2 (for network traffic) with two ray ground propagation model and scenarios configured to mirror the conditions of real-world. The simulations are made on the basis of various parameters such as Packet Delivery Ratio (PDR), end to end average delay, jitter and throughput. The simulation outcomes show that OLSR gain higher PDR assimilating to AODV, AOMDV and DSDV under low network load. PDR is also quite consistent with high network load. In terms of delay, DSDV provides lower end to end delay as compared to other routing protocols in lower and higher network load. The OLSR protocol gains maximum average throughput in low network load but AODV outperforms OLSR and DSDV in higher congestion area. If routing overhead is the major choice then OLSR is the best fitted protocol be-cause it provides lower overhead in both low and high mobility situation.

Keywords: VANET, ITS, AODV, AOMDV, OLSR, DSDV.

36. An Intelligent Children Healthcare System for Children by Using Ensemble Technique

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Abstract. Health is one of the most essential aspects of human life, as a sound health is the source of all contentment. Childhood obesity and malnutrition are one of the major healthcare problems regarding children. Such crisis can cause several diseases and death in the long run. We have strongly felt the need of an infallible system to safeguard our children users. To establish our idea, we proposed a framework by implementing the notion of Internet of Things (IoT) where a child's mental and physical health state can be tracked and necessary steps can be taken with the help of parents and health tutors. In our system, we set up a communication medium among children, health tutors and parents. Various features like activity tracking, geolocation and fitness programs are installed within the system. After recording the data from our child users, we compared our data with Bagging and AdaBoost algorithms.

Keywords: Internet of Things, Children Healthcare, Ensemble techniques

114. A Day-Ahead Power Demand Prediction for Distribution-Side Peak Load Management

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Abstract. In this paper, a day-ahead load management system is proposed using the household power demand and photovoltaic (PV) power generation prediction. The prediction is made using an artificial neural network. A power demand management algorithm is developed to process these predicted values considering the boundary conditions of battery storage to flatten the peaks in a load curve. The proposed system is tested in a real power distribution network under realistic load pattern, and power demand and PV power generation uncertainties. The study found that strategic use of battery energy storage and PV, and a time-ahead prediction of power demand can substantially reduce the peaks and improve the load factor.

Keywords: Artificial Neural Networks, Day-Ahead Energy Management, De-mand Prediction, Load Management, Peak Demand Management.

175. Portable Mini Weather Station for Agricultural Sector of Rural Area in Bangladesh

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Abstract. This Scientific research paper represents a cost-effective portable Mini Weather Station which is design to measure and display different weather parameters for rural communities. In the market, available weather stations size is non-portable and costly, which is non-affordable for developing countries. The goal of the project is to introduce an economic system that insures portability, scalability, flexibility, combo features and user-friendly operations. In this project, we use the Arduino Uno R3 microcontroller to control the system and connect with various sensors to read analog data from various weather variables. The developed system that gives us valuable information about air temperature and air humidity using sensor DHT11 sensor, UV Index and UV-A Lamp Monitoring using UV-B sensor, between 30,000 and 110,000 Pascal air pressure and with I2C interface using Barometric Pressure BMP085, combustible gas sensing with high sensitivity LPG detecting threatening gas using MQ2 Gas Sensor, measuring soil moisture using moisture sensor, operating -55°C to +125°C with accuracy of ±0.5°C of soil using DS1820 sensor, using HC-05 Bluetooth Module to transfer data with Serial Port Protocol with 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. The weather station device doesn't need any internet access except own generate Bluetooth network which is very compatible as user-friendly for Bangladesh and development country, specifically at rural area. Considering various seasonal weather in Bangladesh, we design mini weather station that accurately measure all parameters from local weather status and also make sure agricultural prospects and efficient food productivity in Bangladesh.

Key words: Mini weather station, Rural Area, Arduino Uno R3 microcontroller, HC-05 Bluetooth Module, Mobile application, sensors.

198. Development of an Expert System Oriented Service Support Help Desk Management System

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Abstract: With the recent advancements of artificial intelligence, automation has been making its way into various systems that previously could only be operated by humans. Hence, these systems are getting more autonomous and taking the control off from the human operators gradually. On the other hand, service cen-ters are found to be subunits of almost all companies. However, a process at such service centers becomes slower and inefficient once the center is completely operated by humans. On the contrary, considering the functionalities of the center, complete automation is not either effective in certain centers. This triggers the necessity of a semi-automated center where a framework for such service center is proposed in this paper. While analyzing, it has been observed that the performance of the existing system is heavily hampered due to the absence of dynamicity. Therefore, the proposed framework attempts to make the center dynamic by introducing certain automated behaviors. The proposed system dis-cussed in this paper comprises of all features in that are present in the current system but in an automated way. Furthermore, the proposed system extends the functionalities of a service center that could not be achieved by humans only. The proposed system also incorporates AI to a part of it making it semi-AI driven. A further description is also given in this paper of what needs to be done in order to accomplish a completely AI-driven system.

Keywords: Expert System Automation, Service Support Center, Artificial Intelligence, Semi-AI Model, Call Support Framework

202. An Intelligent Technique for Stock Market Prediction

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Abstract. Economy of a country greatly depends on the stock market sector. People may gain profit by proper investments in stock markets or may lose their entire life savings by wrong investments. Previously, the world has witnessed many stock markets disaster, crippling economic condition of an entire nation.
Bangladesh also faced similar situation in the near past. This can be avoided if the market can be predicted in advance. By this prediction, a broker may be able to find some irregularities which may alert them in advance. Also, the stock market prediction can be a useful tool to the market regulatory committee.
This prediction may help them to take necessary steps to avoid potentially harmful transactions. In this paper, we propose a model for stock market prediction based on large amount of historical data and machine learning approach. For the experimental purpose, we have collected data from two of the Bangladeshi stock exchanges: Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). To perform this task, we have applied web crawling to crawl data from source web sites and applied data parsing to get desired data for training our system. Finally, liner regression approach of machine learning was used to get the prediction for individual stock securities.

31. Drowsiness Detection Using Eye-Blink Pattern and Mean Eye Landmarks' Distance

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Abstract. Road accidents have become a common phenomenon in this modern era. Reasons for road accidents are many. Driver drowsiness can be considered one of the major reasons. It creates a distraction which may lead to a road accident. For reducing the frequency of road accidents, effective steps should be taken to reduce driver drowsiness. Here we have brought a noble automatic method to detect the drowsy driver from real-time video monitoring. This proposed approach is a combination of image processing techniques and machine learning algorithms. The algorithm mainly analyses the eye blink pattern and mean eye landmarks' distance of the drivers. The frequency of eye blink becomes low if drowsiness occurs. The mean eye landmarks' distance is used to differentiate between the open eye and closed eye. In order to spot the sleepiness of the driver, firstly the face and then the eye of the driver are correctly detected. From the detected eye the facial landmarks' position around the eyes is determined and from the eye landmarks' position, the mean eye landmarks' distance and thus the eye state is determined. If the eye is closed, then the duration of time for the closed state is considered to determine the drowsiness condition. .If the duration is high, for giving warning to the driver an alarming system is attached.

39. Microprocessor Based Smart Blind Glass System for Visually Impaired People

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Abstract. This implement oriented research work presents an innovative microprocessor-based smart blind glass for the completely blind people. The blind individuals face wide difficulties while communicating with their surroundings. As a result, they always depend on other people. Sometimes, they fall into a lot of problems when walking down the road. They cannot predict the distances of any obstacle, vehicle, manhole, etc. in front of them. This results them a sorrowful daily life. The considerations of the aforesaid misery conditions of the blind people become the motivation of this work to develop a smart blind-glass system to lessen the confinements of the blind people. The proposed and implemented microprocessor-based smart glass system helps them to see the world indirectly by providing the voice information through an earphone. This system offers the blind people an improved freedom to move both in an indoor and outdoor environment. This module has been trained with a number of common objects around us so that it can detect, recognize, and send a voice message to the blind people. The proposed prototype system has been utilized Raspberry pi 3 (model B) and it is coded by python language with libraries of TensorFlow for appropriate functioning. This work clarifies how the proposed system helps the blinds to "see the world" as a good guiding friend. Our proposed system is good, reliable, highly efficient, and user-friendly.

Keywords: Smart blind glass, microprocessor-based system, obstacle detection, blind people, Raspberry Pi, TensorFlow

40. A Study on Monitoring Coastal Areas for having a better Underwater Surveillance perspective

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Abstract. Surveillance systems for coastal areas especially monitoring ecosystems are becoming more important these days. It is becoming a necessary requirement for coastal areas to protect from various threats such as, illegal smuggling, immigration, underwater cyber threats, illegal trafficking and especially preserving the marine habitats. Also, it is very important to identify and separate the marine habitats from the submerged objects for security reasons. Detecting different marine habitats such as fish objects plays a significant role in this area, as it helps to differentiate between habitats (fish) and other objects that are threats to us. In this paper, we propose an approach to detect fish objects which will provide a better solution in advance to different security solutions in underwater surveillance applications. However, detecting fish objects is not an easy task, as there are many challenges to overcome, and underwater turbulence is one of the biggest factors that hinders this process. Thus, we take this issue into account and resolve this problem through patch-wise deconvolution to restore the image prior to object detection. Next, a saliency-based approach is considered for object detection. The problem is analyzed with a recently developed method and considering a real-world dataset. Computational results show significant improvement over the considered method.

Keywords: Under water surveillance, Information security, Image restoration, Under water turbulence, Object detection, Saliency approach.

42. Ethanol Detection through Photonic Crystal Fiber

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Abstract : This article presents a photonic crystal fiber (PCF) sensor model with enlarged sensing performance for ethanol detection. Comsol Multiphysics (Version-5.2) is used to simulate the sensor model and MATLAB is used to plot expected sensing profiles. The proposed sensor model provides the sensitivity of around 54% at wavelength of 1.6 m. The sensor model also shows zero confinement loss till 1.6 mm and after that around 0.65 * 10-7 dB/m confinement loss is observed at wavelength 1.8 mm. Effective area is also investigated in this work and it is obtained around 19 mm2 at wavelength 1.6 mm. The proposed model is very simple and hopefully, possible to fabricate by using existing fabrication model.

Key words: Relative Sensitivity, Effective Area, Confinement Loss.

104. A Framework for Detecting Driver Drowsiness based on Eye Blinking Rate and Hand Gripping Pressure

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Abstract. The drowsiness detection system is a non-evasive system which uses vision-based concepts. In this work, we present a method based on image processing technique for detecting driver drowsiness bye considering eye blink rate and pressure sensor value from hand gloves. We applied Haar Cascade Classifier and Viola-Jones algorithm to detect face and eyes. A camera is focused on the face of the subject from an adequate distance. The system first detects the driver's face. Then it confirms the region of interest: eye. It then starts counting the blinking of the eye and hand grip pressure from the gloves. If the blinking rate is higher than the normal rate for a given period of time and the hand pressure value is lower than the threshold, the system confirms that the driver's condition is drowsy. It then gives a warning signal to the driver. If the system can't measure any blink for a fixed period of time and hand pressure value is extremely lower than the threshold, proposed system confirms that the driver is sleepy. It then either slows down to the point of stopping the vehicle or gives a strong alarm to wake up the driver. Experimental evaluation is done with 5 mock-drivers of different age group in total of more than 4 hours of recording time. Result shows that system is performing as expected to detect driver drowsiness. Eye blinking rate together with hand grip pressure gives a better performing system making it an excellent candidate for future exploration in the field of automotive.

Keywords: computer vision, driver drowsiness, non-evasive system, automotive field, serial communication, force sensitive sensor.

122. A new Approach for Efficient Face Detection using BPV Algorithm Based on Mathematical Modeling

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Abstract. In this paper several face detection algorithms are compared on the basis of mathematical analysis to find out the most efficient algorithm. At first the mathematical model of different face detection algorithms (Camshift, Ada-Boost, LBP and Viola Jones algorithms) are analyzed and compared to find out the most efficient one. Mathematical results show that Viola Jones performs best result to detect the face. But in case of Viola Jones, integral image integrates the non-face region pixels with face region pixels as a result, the pixel value redundancy is occurred which degrades its efficiency. To overcome this problem, a new face detection algorithm is proposed in this paper which is named as Break Point Value (BPV) algorithm. The mathematical model of our proposed method is derived where integral images are compared with Local Binary Pattern (LBP) and the compared value is suggested as test value. If the test value is less than or equal to the BPV then the region is a face region and if it is not, the region is a non-face region. Since there is a comparison between integral image value and LBP value of the same pixel region the redundant values are reduced. Further-more, the use of BPV helps to find out more relevant frames. Thus the proposed method is more efficient face detection process as compared to the previous processes in the field of face detection system.

Keywords: AdaBoost, BPV, Camshift, Face detection, Haar Features, LBP, Vi-ola Jones.

197. Real-Time Crowd Detection to Prevent Stampede

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Abstract. With the expanding population and several problems arising due to crowded situations, the necessity of crowd detection is also at a raise. It includes assessing the number of individuals in the group and in addition the appropriation of the crowd density in different regions of the group. Estimation of such crowd density can be done from the image of the crowded scene. This paper proposes real-time approaches to solving problems related to dense crowds. It uses static images captured from a crowded area and attempts to estimate the crowd density of the area by applying two different techniques. The proposed techniques for estimating crowd are via image processing and another one is using Convolutional Neural Network. In image processing technique, erosion is used to count head regions from the images. Images considered here are grayscale images. In CNN approach, deep learning technique is used to estimate the crowd density. A network of Raspberry Pi is used in order to perform the crowd detection as well as circulating the crowd condition to responsible authorities. At that point, the authorities might be alarmed about the likelihood of a stampede and can find a way to keep away from it.

Keywords: Crowd Detection, Erosion, Convolution Neural Network (CNN), Deep and Shallow Network.

24. Leveraging Machine Learning Approach to Setup Software De_ned Network(SDN) Controller Rules During DDoS Attack

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Abstract. A machine learning based Distributed Denial of Service (DDoS) attack detection system, implemented in a virtual SDN environment testbed, has been presented in this paper. This system identifies whether any incoming tra_c in a network is a DDoS type or not. To implement this approach, we applied AdaBoosting with decision stump as a weak classifier to train our model on a private network dataset in SDN environment. Our model showed up to 93% detection accuracy with a low false-positive rate. We have also tested and compared our model's accuracy with different machine learning algorithms and presented the result.

Keywords: Software De_ned Network _ Machine Learning _ Network Intrusion Detection System _ Distributed Denial of Service

27. Meta Classifier Based Ensemble Learning For Sentiment Classification

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Abstract. In the era of digital explosion, a huge amount of data is generated every second from different sources which requires rigorous analysis for decision making and knowledge gathering. Recently one such challenging issue that found to be interesting to many researchers is sentiment classification through opinion mining. From the latest research on sentiment analysis, it has been also observed that ensemble based supervised machine learning algorithms outperform individual classifiers. Ensemble methods are meta-algorithms that combine several machine learning algorithms into one predictive model and thereby decreases variance & bias and improve classifiers prediction capability. In this paper, we have evaluated the performance of ensemble methods in conjunction with Meta algorithm on two different datasets. Majority voting algorithm has also been employed for prediction decision of sentiment classification for our model. The experimental result shows that Meta classifier based ensemble approach outperform individual classifier in some cases.

Keywords: Ensemble learning, Meta-classifier, Sentiment analysis, Machine learning.

79. A Machine Learning Approach to Detect Diabetic Retinopathy using Convolutional Neural Network

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Abstract. In this paper, we present a machine learning approach to detect diabetic retinopathy from retinal images which is one of the most common diseases among diabetic patient. In our experiment, Inception v3 is used as the machine learning approach. Inception is a convolutional neural network classifier by Google. The dataset is collected from Kaggle which contains images of five categories. We used a pre-trained model of the classifier which is trained on 1000 classes. We proposed three characterizations of the problem. Our classifier worked better on the first two characterizations than the third one.

Keywords: Diabetic Retinopathy, DR, Machine Learning, Convolutional Neural Network, Fundus Photograph, Inception v3, Non proliferative DR, Proliferative DR.

137. A Collaborative Platform to Collect Data for Developing Machine Translation System

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Abstract. The emergence of neural machine translation techniques has opened up a new era for developing translation systems. However, it requires a very large amount of parallel corpus, which is scarce for many under-resourced languages, e.g., Bangla. In order to develop a corpus, currently, there is a lack of publicly available collaborative system. In this paper, we report an online collaborative system for the development of the parallel corpus. The system is developed for supporting any language, however, we only evaluated for developing Bangla- English parallel corpus. In a task completion evaluation experiment, the system outperforms the widely used offline system i.e., OmegaT.

Keywords: Machine Translation, Collaborative Platform.

148. A Hierarchical Learning Model for Claim Validation

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Abstract. Due to the proliferation of social media platforms, people increasingly depend on these platforms to consume news content. Con- sequently, propagandists utilize these platforms to easily spread fake or distorted contents. Hence, the fake news detection has been a crucial but difficult task so far, due to the lack of compre- hensive labeled datasets and the diverse linguistics cues in the fake news statements. However, recently to aid the designing of a computational model for validating the news contents, a few labeled benchmark datasets have been introduced in the literature, such as LIAR dataset. In this work, we augment the LIAR dataset's claim statements and the speakers' profile features with the evidence retrieved from the Politifact. We utilize this aug- mented dataset to design a transfer learning based claim verification model, TLCV: Trans- fer Learning based Claim Validation. Moreover, in TLCV we design an evidence retrieval module to extract appropriate evidence. We embed these feature groups by leveraging the pre-trained ELMo model, which enables TLCV model to cap- ture the deep contextual feature representation. We have designed a hierarchical Convolutional Neural Network to create a composite feature representation. In the performance analysis, it is shown that our proposed claim verification approach, TLCV, outperforms the baseline approach by 8.81% on LIAR dataset.

Keywords: Deep learning, Convolutional Neural Network, Fake News, Transfer Learning, Document Classi_cation

168. Query Oriented Active Community Search

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Abstract. Online social network (OSN) is now one of the emergent platforms to make social connections and share individual's ideas, feelings, opinions etc. Community detection in OSN is a hot research topics. Most of the existing research works on _nding local community mainly concentrate on properties or attributes of the so- cial network users or rely on the network topology. However, not enough attention is paid to the users' interests or activeness on di_erent attributes which play a key role for forming an online community. As a result, the re- sulting communities may have users with diverse interests as well as di_erent degrees of activeness on di_erent attributes. In this work, our aim is to detect attribute oriented active community search in OSN, that is, for a given input query consisting a query node (user) and a set of attributes, we want to _nd densely-connected community in which community members are actively participate with respect to the given query attributes. We propose a novel attribute relevance activeness score function for the candidate community members to search the desired active community. We conduct extensive experiments on two real data sets to demonstrate the e_ectiveness of our proposed method and also report some interesting observations.

Keywords: Online social network, Active Community, Activeness Score

179. Appliance of Agile Methodology at Software Industry in Developing Countries: Perspective in Bangladesh

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Abstract. To choose of an appropriate methodology for the software development is one of the primary concerns for those countries where ICT industry will play leading role in near future. Agile methodology has already received enough interest in developed nations. However, deficiencies of experimental studies have been observed in developing countries. These issues are required to be addresses properly since developing nations are currently playing the lead role in software outsourcing and will also continue. Our idea is to consider this agile methodology as one of the services and receive maximum benefits out of it through lessening the challenges and making it popular in software industry. Based on survey, Scrum (58%), XP (24%) and DSDM (18%) are found to be the most accepted software projects development methodology in Bangladesh. It can also be stated that the agile method can be considered as the most admired design model and its popularity can be enhanced by 81% through merging with ICTization framework. The results achieved from this paper are anticipated to notify the software developers on the utilization and practice of software development model from the context of Bangladesh.

Keywords: Agile Method, developing nations, ICTization framework, software firms, survey.

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