

# **2010 13th International Conference on Computer and Information Technology**

**(ICCIT 2010)**

**23 – 25 December 2010  
Dhaka, Bangladesh**



**IEEE Catalog Number: CFP1017D-PRT  
ISBN: 978-1-4244-8496-6**

## Table of Contents

---

<b>Algorithms</b>	<b>Page #</b>
A Novel Two-Tier Multiple Sequence Alignment Algorithm <i>Md. Sowgat Ibne Mahmud, Md. Akhter Hosen, Md. Saroer-E-Azam, M. A. Mottalib, Hawlader Abdullah Al-Mamun</i>	1
A Low Cost Realization of Quantum Double Qutrit Multiplier using Ion-trap Scheme <i>Faisal Mohsin</i>	7
An Approximation Algorithm For Bounded Degree Closest Phylogenetic 2nd Root Problem <i>Md. Ahsanur Rahman, Md. Rafiqul Islam</i>	10
An Efficient Seeded Tree Alignment Algorithm For Finding The Similarity Score of Two RNA Secondary Structures <i>Mohammad Shamsur Rahman, Dr. Abul Kashem Mia</i>	15
Quantum Evolutionary Algorithm Based on Particle Swarm Theory in Multiobjective Problems <i>Md. Kowsar Hossain, Md. Amjad Hossain, M.M.A. Hashem, Md. Mohsin Ali</i>	21
Two Dimensional Range Minimum/Maximum Query Revisited <i>Maxime Crochemore and Masud Hasan and Tanaeem M Moosa and M. Sohel Rahman</i>	27

<b>Artificial Intelligence</b>	<b>Page #</b>
A novel ACO technique for Fast and Near Optimal Solutions for the Multi-dimensional Multi-choice Knapsack Problem <i>Shahrear Iqbal, Md. Faizul Bari, Dr. M. Sohel Rahman</i>	33
Comparison of Artificially Intelligent Methods in Short Term Rainfall Forecast <i>Sumi S. Monira, Zaman M. Faisal, H. Hirose</i>	39
Curvelet Texture Based Face Recognition Using Principal Component Analysis <i>Shafin Rahman, Sheikh Motahar Naim, Abdullah Al Farooq and Md. Monirul Islam</i>	45
Designing an Effective Fuzzy Logic Controller based on Quantum Evolutionary Algorithm <i>Md. Amjad Hossain, Pintu Chandra Shill, Md. Kowsar Hossain, Kazuyuki Murase</i>	51
Evolutionary Multi-Objective Clustering with Adaptive Local Search <i>Kazi Shah Nawaz Ripon, Kyrre Glette, Mats Hovin, Jim Torresen</i>	57
On the Performance of Recurring Multistage Evolutionary Algorithm for Continuous Function Optimization <i>Mohammad Shafiul Alam, Md. Wasi Ul Kabir, Md. Monirul Islam</i>	63
Self-adaptation of Mutation Step Size in Artificial Bee Colony Algorithm for Continuous Function Optimization <i>Mohammad Shafiul Alam, Md. Wasi Ul Kabir, Md. Monirul Islam</i>	69
Soft Computing Models to Predict Daily Temperature of Dhaka <i>Shipra Banik, Mohammed Anwer and A.F.M. Khodadad Khan</i>	75
Spatio-temporal Template Discovery Using Rough Set Theory <i>Sanchita Mal-Sarkar, Iftikhar U. Sikder, and Vijay K. Konangi</i>	81

<b>Bangla Language Processing</b>	<b>Page #</b>
A Context Free Grammar and its Predictive Parser for Bangla Grammar Recognition <i>K. M. Azharul Hasan, Amit Mondal, Amit Saha</i>	87
A Multidimensional Partitioning Scheme for Developing English to Bangla Dictionary <i>K. M. Azharul Hasan, Esmot Ara, Farhana Hoque, Jenifar Yasmin</i>	92
An Efficient Speech Generation Method Based On Character and Modifier of Bangla PDF Document <i>Kamrul Hasan Talukder, Md. Mustaneer Rahman, Toukir Ahmed</i>	97
Bangla Phoneme Recognition for ASR Using Multilayer Neural Network <i>Mohammed Rokibul Alam Kotwal, Manoj Banik, Qamrun Nahar Eity, Mohammad Nurul Huda, Ghulam Muhammad, Yousef Ajami Alotaibi</i>	103
Conversion of Bangla Sentence for Universal Networking Language <i>Md. Nawab Yousuf Ali, Abu Mohammad Nurannabi, M. Ameer Ali, Jugal Krishna Das, Golum Farook Ahmed</i>	108
Special Feature Extraction Techniques for Bangla Speech <i>M. A. N. R. Rahaman, A. Das, M. Z. Nayen, M. S. Rahman</i>	114

<b>Computer Network &amp; Data Communication</b>	<b>Page #</b>
A New Approach of Extendable Multicast Routing Protocol in Mobile Ad Hoc Networks <i>Md. Saidur Rahman, Saikat Mondal, Shushanto Kumar Ghosh and Md. Mahbubur Rahman</i>	120
Bivariate Gamma Distribution: A plausible solution for joint distribution of packet arrival and their sizes <i>Arup Bhattacharjee, Sukumar Nandi</i>	125
Construction of a Multi-Level Hierarchical Quasi-Cyclic Matrix with Layered Permutation for Partially-Parallel LDPC Decoders <i>Vikram Arkalgud Chandrasetty and Syed Mahfuzul Aziz</i>	131
Development of the Smart QoS Monitors to Enhance the Performance of the NS2 Network Simulator <i>Muhammad Jakaria Rahimi, Selina Parveen, Monjur Morshed, Masoodur Rahman Khan, Palash Sarker,</i>	137
Dynamic TDMA Slot Reservation Protocol for Cognitive Radio Ad Hoc Networks <i>S. M. Kamruzzaman, Mohammad Shamsul Alam</i>	142
Influence of Polarization Mode Dispersion on the BER Performance of DS-OCDMA <i>Md. Jahedul Islam and Md. Rafiqul Islam</i>	148
Novel Design of Address Generator for WiMAX Multimode Interleaver using FPGA based Finite State Machine <i>Bijoy Kumar Upadhyaya, Iti Saha Misra and Salil Kumar Sanyal</i>	153
Pagemap: A Dynamic User Guiding Approach to the Most Relevant and Popular Pages in a Website <i>Prosunjit Biswas, Sifatur Rahim</i>	159
Performance Evaluation of AODVH: An Ad hoc Networking Scheme for Hybrid Nodes <i>Yasmin Jahir, Mohammed Atiqzaman, Hazem Refai, Peter G. LoPresti</i>	165
Performance Limitations in Fiber Bragg Grating Based Optical Add-Drop Multiplexer due to Crosstalk <i>M. Mahiuddin and M. S. Islam</i>	170

Performance of Sub-carrier Mapping in Single Carrier FDMA Systems Under Radio Mobile Channels <i>Md. Masud Rana</i>	175
SQL TUNNELLING THROUGH HTTP <i>Thomas Kvamme and Shakil Ahmed</i>	181

### **Computer Networks & Distributed Systems**

	<b>Page #</b>
An Analytical Framework for Identifying Redundant Sensor Nodes from a Dense Sensor Network <i>Kazi Sakib, Zahir Tari, Peter Bertok</i>	187
Application of Wireless Sensor Networks in Forest Fire Detection under Uncertainty <i>Sanchita Mal-Sarkar, Iftikhar U. Sikder, and Vijay K. Konangi</i>	193
Distributed Memory Caching for the Fail Safe Computation to Improve the Grid Performance <i>Sabir Ismail, Abu Fazal Md Shumon, Md Ruhul Amin</i>	198
Dynamic Communication Performance Enhancement in Hierarchical Torus Network by Selection Algorithm <i>M.M. Hafizur Rahman, Yukinori Sato, and Yasushi Inoguchi</i>	204
High Performance Hierarchical Torus Network Under Adverse Traffic Patterns <i>M.M. Hafizur Rahman, Yukinori Sato, and Yasushi Inoguchi</i>	210
Robust Synchronization Technique for Mobile DTV Broadcasting System <i>Md. Jahidur Rahman, Xianbin Wang, Sung IK Park, and Heung Mook Kim</i>	216

### **Digital Logic & System Design**

	<b>Page #</b>
A High-Speed and Low-Power Ternary CAM Design Using Match-Line Segmentation and Feedback in Sense Amplifiers <i>Syed Iftekhar Ali, M. S. Islam</i>	221
A Novel Method for the Synthesis of Odd Base Quantum Full Adder <i>Faisal Mohsin</i>	227
An Encoding Technique for Design and Optimization of Combinational Logic Circuit <i>Dipayan Bhadra, Tanvir Ahmed Tarique, Sultan Uddin Ahmed, Md. Shahjahan, Kazuyuki Murase</i>	232
Analyzing Carbon Nanotube Interconnects in VLSI Application <i>Mahmudur Rahman, Ahrar Ahmed Chowdhury</i>	237
On the Design of Quaternary Comparators <i>Ifat Jahangir and Anindya Das</i>	241

### **Digital Signal & Image Processing**

	<b>Page #</b>
A New Z-Scanning Scheme for Directional Spatial Prediction of AVS Intra Coding <i>Md. Salah Uddin Yusuf, and Mohiuddin Ahmad.</i>	249
A Parametric Formulation to Detect Speech Activity of Noisy Speech using EDON <i>Mahmudul Hasan, Md. Ekramul Hamid</i>	252
Application of Canny Filter and DWT in Fingerprint Detection a New Approach <i>Nasima Begum, Mahbulul Alam, Md. Imdadul Islam</i>	256
Imaging Investigation on the Spray Penetration of Gasohol Blends Image <i>A.K. Amirruddin, M. H. Razali, and Emishaw D. Iffa</i>	261

Optimization of Control Parameter of Differential Evolution Algorithm for Efficient Design of FIR Filter	267
<i>S.Chattopadhyay, S.K.Sanyal and A.Chandra</i>	
Performance Evaluation of MLPC and MFCC for HMM based Noisy Speech Recognition	273
<i>Mizanur Rahman, Md. Babul Islam</i>	

### **E-Commerce, E-governance & Others**

	<b>Page #</b>
Cognitive Change in Women's Empowerment in Rural Bangladesh	277
<i>Zebunnessa Laizu, Jocelyn Armarego, Fay Sudweeks</i>	
Employee Characteristics and Their Value Perceptions about Web-based B2E Systems Use in Bangladesh	283
<i>Md Mahbubur Rahim, Mohammed Quaddus and Shahin Akhter</i>	
How experience affects technology acceptance: A quest for ICT development strategies in Bangladesh	289
<i>Md. Shah Azam, Mohammed Quaddus, Mahbubur Rahim</i>	
Sensor Proxy Mobile IPv6 (SPMIPv6) - A Framework of mobility supported IP-WSN	295
<i>Md. Motaharul Islam, Mohammad Mehedi Hassan, Eui-Nam Huh</i>	
Towards mobile based e-learning in Bangladesh: A framework	300
<i>Ahsan Habib, A. S. M. Latiful Hoque</i>	

### **Graphics, Multimedia & Others**

	<b>Page #</b>
Comparative Performance Analysis of MPEG4, FLV and 3GP Multimedia File Formats using Wireless Network Parameters	306
<i>Mohammad A. R. Mustafa, Mohammad Mamun Elahi, M. Alamgir Hossain, Mohammad Mahfuzul Islam</i>	
Data Exchange: Query Answering for Positive Query with at Most One Inequality	312
<i>Md. Shirajum Munir, Md. Ahsanul Alam, S. M. Masud Karim</i>	
Developing an Efficient Search Suggestion Generator, Ignoring Spelling Error for High Speed Data Retrieval Using Double Metaphone Algorithm	317
<i>Ashis Kumar Mandal, Md. Delowar Hossain, Md.Nadim</i>	
Facial Expression Recognition Based on a Weighted Local Binary Pattern	321
<i>Mohammad Shoyaib, M. Abdullah-Al-Wadud, Jo Moo Youl, Muhammad Mahbub Alam , Oksam Chae</i>	
Kinetisation of View of 3D Point Set	325
<i>M. A. Wahid, M. Kaykobad, Masud Hasan</i>	
Session Management Protocol for Virtual Classroom in Teleteaching	331
<i>Pallab Biswas, Vivek Nair, Soumen Nandi, Soumendra Nath Biswas, Amitava Biswas, Animesh Dutta</i>	

### **Information System & Digital System Design**

	<b>Page #</b>
A Composition Technique of Multiple Switching Functions Based on BDD	337
<i>Md. Sayem Chowdury, G. M. Rokibul Hasan, Kamrul Hasan Talukder</i>	
A Multivalued Storage System Using Memristor	343
<i>Faisal Mohsin</i>	
A Safe System with Safe Logistics Support for Chittagong Port	347
<i>Md. Kafil Uddin, Muhammad Kamal Hossen</i>	

A study of privacy policy enforcement in access control models <i>Md. Moniruzzaman, Md. Sadek Ferdous and Roksana Hossain</i>	352
--	-----

## Information Systems

	Page #
Automated Essay Scoring Using Generalized Latent Semantic Analysis <i>Md. Monjurul Islam, A. S. M. Latiful Hoque</i>	358
Issues in M-Banking: Challenges and Opportunities <i>Saifullah M Dewan</i>	364
Subscribers Fluctuations of Different Cell Operators Based on Different Offers <i>G. M. M. Bashir, Md.Rabiul Alam, Mahabub Sikder, Md. Milon Gazi</i>	370
TCO model for Server Operating System <i>Thomas Jensen and Shakil Ahmed</i>	376

## Knowledge & Data Engineering

	Page #
Efficient Computation for k-dominant Skyline Queries with Domination Power Index <i>Md. Anisuzzaman Siddique and Yasuhiko Morimoto</i>	382
Mining Classification Rules via an Apriori Approach <i>S M Monzurur Rahman, Mohammed Rokibul Alam Kotwal, Xinghuo Yu</i>	388
Spatial Data Mining on Literacy Rates and Educational Establishments in Bangladesh <i>A. K. M. Zahiduzzaman, Mohammed Nahyan Quasem, Mridul Khan, Rashedur M Rahman</i>	394
Sustainable Approach to Segmented Digital Display: Complete, Precise and Economic <i>Fariha Tasmin Jaigirdar, Mohammad Abdul Hadi Bhuiyan, Shahid Al Noor</i>	400
Towards A Tableau Based High Performance Automated Theorem Prover <i>Md Zahidul Islam, Ahmed Shah Mashiyat, Kashif Nizam Khan and S.M. Masud Karim</i>	406

## Neural Networks, Robotics & Others

	Page #
Chaotic Dynamics of Supervised Neural Network <i>Sultan Uddin Ahmed, Md. Shahjahan, Kazuyuki Murase</i>	412
Dynamic Modeling and Fuzzy Logic Control of a Two-link Flexible Manipulator using Genetic Optimization Techniques <i>Tahmina Zebin and M. S. Alam</i>	418
Maximization of the Gradient Function for Efficient Neural Network Training <i>Sultan Uddin Ahmed, Md. Shahjahan, Kazuyuki Murase</i>	424
Multi-layer Neural Network Classification of Tongue Movement Ear Pressure Signal for Human Machine Interface <i>Khondaker A. Mamun , Manoj Banik, Michael Mace, Mark E. Lutmen, Ravi Vaidyanathan, Shouyan Wang</i>	430
On Bangla Character Recognition <i>Sanjit Kumar Saha, Md. Shamsuzzaman, Prof. Dr. Md. Al-Amin Bhuiyan</i>	436
Reconstruction of Gene Regulatory Networks Using Differential Evolution <i>Briti Sundar Mondal, Arup Kumar Sarkar, Md. Mahmudul Hasan, Nasimul Noman</i>	440

<b>Pattern Recognition &amp; Image Processing</b>	<b>Page #</b>
An Inhibition/Enhancement Network for Noise Robust ASR <i>Mohammad Nurul Huda, Md. Shahadat Hossain, Foyzul Hassan, Mohammad Mahedi Hasan, Nusrat Jahana Lisa, Ghulam Muhammad</i>	446
Character Recognition using Wavelet Compression <i>Hayder Ali, Younus Ali, Eklas Hossain, Shirin Sultana</i>	452
Leaf Shape Identification Based Plant Biometrics <i>Javed Hossain, M. Ashraful Amin</i>	458
Multi-Objective Optimisation for Multi-Drug Chemotherapy Scheduling <i>S Algoul, M S Alam, M A Hossain and M A A Majumder</i>	464
Optical Encryption System Employing Orthogonal Code and Multiple Reference-based Joint Transform Correlation <i>Mohammed Nazrul Islam and Mohammad Ataul Karim</i>	470
Performance of MPEG-7 Edge Histogram Descriptor in Face Recognition Using Principal Component Analysis <i>Shafin Rahman, Sheikh Motahar Naim, Abdullah Al Farooq and Md. Monirul Islam</i>	476
Selection of Distinguishing Features for Fabric Defect Classification Using Neural Network <i>Md. Tarek Habib, M. Rokonzaman</i>	482
Speech Segmentation Using Divergence Algorithm with Zero Crossing Property <i>M.S Salam, Dzulkifli Mohamad, S.H Salleh</i>	488

<b>Ubiquitous &amp; Mobile Computing</b>	<b>Page #</b>
An Agent-based Cooperative Communication Method in Wireless Sensor Network for Port logistics <i>Haosong Gou, Md. Kafil Uddin, Muhammad Kamal Hossen</i>	494
Cost Analysis of NEMO Protocol Entities <i>Md. Shohrab Hossain, Mohammed Atiqzaman, William Ivancic</i>	500
Development of Mobile Phone Based Surveillance System <i>Badrin Nahar and Md. Liakot Ali</i>	506
Lessons Learned from Real MANET Experiments and Simulation-based Evaluation of UDP and TCP <i>Joarder Mohammad Mustafa Kamal, Mohammad Shahidul Hasan, Alison L. Carrington, Hongnian Yu</i>	511
Performance Analysis of NEMO using City Section Mobility Model <i>Md. Shohrab Hossain, Mohammed Atiqzaman, William Ivancic</i>	516

<b>Wireless Communication</b>	<b>Page #</b>
A Cross Layer Framework for WLANs: Joint Radio Propagation and MAC Protocol <i>Nurul I. Sarkar</i>	522
A Cyclic Quorum based Multi-channel MAC Protocol with Layered Approach for Mobile Ad-hoc Networks <i>Md. Mosaddek Khan, Md. Tanvir Hamid, Syed Kutub Uddin Ahmed</i>	527
A Novel Strategy to Discover Internet Gateways in Mobile Ad Hoc Networks <i>Shahid Md. Asif Iqbal, Mohammad Iftekhar Monir, Sheikh Md. Rukunuddin Osmani, Farhana Shirin Chowdhury, Alok Kumar Chowdhury, Kingshuk Dhar</i>	533

A Stable Clustering Method for Efficient Geographic Routing in Mobile Ad-Hoc Networks <i>Md. Mosaddek Khan, Md. Mamun-or-Rashid</i>	539
Channel Estimation Techniques and LTE Terminal Implementation Challenges <i>Md. Masud Rana</i>	545
Map Outage Factor Optimization for WiMAX <i>A.K.M Fazlul Haque, Sagar Chandra Kar, Khandakar Asif Adnan, Kawsar Ahammed</i>	550
Multitaper Spectrum: A Promising Method in Spectrum Sensing Cognitive Radio <i>Abdullah Al-Mamun, Mohammad Rafiq Ullah</i>	556
Optimization Technique for configuring IEEE 802.11b Access Point Parameters to improve VoIP Performance <i>Tamal Chakraborty, Atri Mukhopadhyay, Iti Saha Misra, Salil K. Sanyal</i>	561
PAIZM-CPC: Enhancement of Spectrum Co-existence in Wireless Networks <i>Md. Akbar Hossain, Shah Ahsanul Haque</i>	567
Peak to Average Power Reduction using Precoding with Clipping and Filtering <i>Mohammad Rakibul Islam</i>	573
Performance Comparison of Selection Combining Diversity Receivers for different modulation schemes in OFDM System <i>Nadia Nowshin, A K M Arifuzzman, Md. Anwar Hossain, Mohammed Tarique</i>	579
Performance Evaluation of Multidimensional Traffic in Micro-Macro Cellular System <i>Sarwar Jahan, Md. Imdadul Islam, and M. R. Amin</i>	585
Radio Network Planning for Fixed WiMax in Dhaka City and it's Performance Analysis <i>Mohammad Mirza Golam Rashed, Saleh Uddin Md. Joni, Md. Muhtasib Ibne Siddique</i>	589
Secret data communication in a degraded Practical Multiple Input Multiple Output Multiple Eavesdropper channel <i>Mohammad Rakibul Islam</i>	594
Shared Key Vulnerability in IEEE 802.16e : Analysis & Solution <i>A.K.M. Nazmus Sakib, Mir Md. Saki Kowsar</i>	600
Theoretical Maximum Throughput of IEEE 802.11e EDCA Mechanism <i>N. M. Shafiul Kabir Chowdhury, Md. Shahriar Hussain, Farruk Ahmed</i>	606
Towards Enhancing System Lifetime and Maximizing Data Communication in Wireless Sensor Networks <i>Bijan Kumar Debroy, Muhammad Sheikh Sadi, Md. Al Imran</i>	612