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Professor

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CAREER HISTORY

PRIMARY POSITIONS

- **Professor**, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh (July 2014 – to date).
- **Associate Professor**, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh (July 2011 – July 2014).
- **Assistant Professor**, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh (August 2002 – July 2011).
- **Lecturer**, BUET, Dhaka, Bangladesh (November 1999 – August 2002).

SECONDARY POSITIONS

- **Registrar (Additional Charge)**, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh (May 2018 – Aug 2020).
- **Visiting Professor and Founding Head of EEE**, University of Liberal Arts Bangladesh (ULAB), Dhaka, Bangladesh (December 2016 – November 2017).
- **NSERC Post-Doctoral Research Fellow**, Identity, Privacy, and Security Institute (IPSI), Edward S. Rogers Sr. Department of Electrical and Computer Engineering (ECE), University of Toronto (UofT), Toronto, Canada (December 2011 – May 2012).
- **Research Assistant**, Concordia University (ConU), Montreal, Canada (September 2003 – June 2009).
- **Course Assistant**, Concordia University (ConU), Montreal, Canada (September 2004 – December 2008).
- **Teaching Assistant**, Concordia University (ConU), Montreal, Canada (January 2004 – December 2008).
- **Teaching Fellow**, Concordia University (ConU), Montreal, Canada (January 2004 – December 2008).
- **Member**, Bureau of Research, Testing and Consultations, BUET, Bangladesh (August 2002 – August 2003, July 2009 – todate).
- **Assistant Professor**, part-time, North South University (NSU), Dhaka, Bangladesh (September 2009 – April 2010).
- **Assistant Professor**, part-time, Islamic University of Technology (IUT), Dhaka, Bangladesh (August 2002 – August 2003).
- **Lecturer**, part-time, Ahsanullah University of Science and Technology (AUST), Dhaka, Bangladesh (August 2001 – August 2002).

EDUCATION

Ph.D. in Electrical and Computer Engineering April 2009
Concordia University (ConU), Montreal, Canada.

Dissertation: *Probabilistic modeling of wavelet coefficients for processing of image and video signals.*

Supervisors: Professor M. Omair Ahmad and Professor M. N. S. Swamy

Five full-length papers in IEEE/IET Transactions and eight papers in proceedings of international conferences were published from the doctoral research. The external examiner, late Professor Rui J. P. Figueiredo of the University of California, Irvine judged the work of the thesis as “outstanding” and a “new invention”. The thesis won the Distinguished Doctoral Dissertation Prize as the best thesis defended in Science and Engineering of Concordia University in 2009.

M.Sc. in Electrical and Electronic Engineering May 2002
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

Dissertation: *Improved wavelet-based image denoising algorithm using adaptive center weighted median filter.*

Supervisor: Professor Md. Kamrul Hasan

One full-length paper in a reputed international journal and two papers in proceedings of an international conference were published from the master’s research.

B.Sc. in Electrical and Electronic Engineering September 1999
BUET, Dhaka, Bangladesh.

Ranked 3rd among 117 graduating students

H.S.C. in Science Group October 1992
Michael Modhusudan College, Jessore, Bangladesh.

Secured 1st Division and 84.60% marks

S.S.C. in Science Group September 1990
Narail Government High School, Narail, Bangladesh.

Secured 1st Division and 74.10% marks

AREAS OF RESEARCH INTERESTS

My research experiences and interests cover the challenging issues of modeling, processing, and computation of visual or multimedia signals such as image, video, and audio signals in the areas of deep learning, pattern recognition, intelligent transportation system, biometric security system, cognitive science, stereo vision, virtual and mixed reality, responsive media, biomedical visualization, human computer interaction (HCI), geosciences (e.g., SAR), genetics (e.g., cDNA microarray), astronomy, surveillance and communication systems. I am particularly interested in the following:

- Development of mathematically tractable and computationally efficient deterministic or stochastic models for the audio-visual signals that describe essential features of a signal (e.g., motion in a video or discriminative features that represent affective states of human) by considering the higher-order structural variability or statistics of the data samples.
- Application of these models in various real-world processing and computational techniques such as pattern recognition for machine intelligence, depth estimation for stereo vision, visualization of virtual world and immersive video, reduction of noise and speckle, restoration, registration, regression, fusion,

detection of edge and texture, enhancement, copyright protection, encryption, compression, classification, stabilization, and segmentation.

- Deterministic or stochastic analysis of these signals in the space-time and various transform domains such as the DFT, DCT, wavelet, curvelet, orthogonal polynomial transformations in their multidimensional representations (e.g., 2D and 3D) as well as the analysis of architecture of deep convolution neural networks as per the problem formulation.

TEACHING EXPERIENCE

Professor (or Faculty Position)

Department of Electrical and Electronic Engineering (EEE)

Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh Nov. 1999 – to date

University of Liberal Arts Bangladesh (ULAB), Dhaka, Bangladesh Nov. 2016 – Mar. 2018

- As a full-time faculty member, I have taught the following:

Postgraduate lecture course:

EEE 6002 (Selected Topics in Electrical and Electronic Engineering)

EEE 6209 (Digital Image Processing)

Undergraduate lecture courses:

EEE 447 (Introduction to Digital Image Processing)

EEE 101 (Electrical Circuits I)

EEE 103 (Electrical Circuits II)

EEE 213_old (Electronic Circuits II)

EEE 267_old (Electrical and Electronic Technology)

EEE 211/EEE 301_old (Continuous Signals and Linear Systems)

EEE 311_old (Electronic Circuits III)

EEE 311_new (Digital Signal Processing I)

- In addition to these lecture courses, I taught the following laboratory courses:

Undergraduate laboratory courses:

EEE 102 (Electrical Circuits I Sessional)

EEE 214_old (Electronic Circuits II Sessional)

EEE 304 (Digital Electronics Sessional)

EEE 312_old (Electronic Circuits III Sessional)

EEE 312_new (Digital Signal Processing I Sessional)

EEE 314_old (Telecommunication Engineering Sessional)

EEE 316_old (Industrial Electronics Sessional)

EEE 332_old (Electrical Machines III Sessional)

EEE 418 (Digital and Satellite Communication Engineering Sessional)

- Besides the lecture and laboratory courses, I have supervised the theses of undergraduate and postgraduate students. Notable theses are:

Postgraduate theses:

- Image Registration Algorithm Using Statistics of Curvelet Coefficients (Completed)
- Multiple Time Spatial Images for Video-Based Automatic Tracking of Vehicles (Completed)
- Facial Expression Recognition Using 2D Gauss-Hermite Moments of Images (Completed)
- Moment-Based Depth Estimation from Monocular Images for Stereo Vision (Completed)
- Reduction of Mixed Gaussian-Impulse Noise Using Convolutional Neural Network (Completed)

- Handwritten Bangla Character Recognition Using Deep Convolution Neural Network (Completed)
- Multiple Time Spatial Images for Video-Based Recognition of Traffic Signals (In-Progress)
- Deep Learning on Orthogonal Moment-Based Patches for Fingerprint Classification (In-Progress)
- Music Driven Dance Video Synthesis Using Deep Learning (In-Progress)

Undergraduate theses (completed):

- Detection of Traffic Signs from Live Stream Video Captured in Vehicles
- Wavelet-Based Detection of Electric Arcs Modeled by Using Circuit Components
- Deep Learning Approach to Localize Copy-Move-Based Forged Patches in Images
- Detection and Tracking of Fingertips for Geometric Transformation of Virtual Object
- Responsive Viewing System for Immersive Video Using Head Pose Estimation
- Augmented Immersive Reality-Based Education System: An Analysis on Image Target to Determine Readers' Satisfaction
- Monocular Face Cue-Based Movement of Objects in Virtual Environment
- IOT-Based Home Security System Using Biometric Imprints
- Prediction of Likeness of Advertisements Using Deep Convolutional Neural Network
- GHM-Based Depth Estimation from Multiview Scenes for Labeling of 3D Objects
- Significance of Body-Parts in Person Re-Identification Using Feature Warp Function
- Estimation of Affective Dimension from Audio-Visual Data Using Two-Stream CNN
- Estimation of Frame-Level Shot Importance Using Deep Convolution Neural Network
- Distraction Classification for Assistive Driving by Tracking Body Parts
- Reducing Mixed Noise from Images Using Deep Convolution Neural Network
- Mutual Information-Based Multimodal Affective Features for Continuous Level Emotional State
- Comparison of Discriminatory Facial Parts from 3D Point Cloud Data
- Face Recognition Using 3D Gaussian-Hermite Moments
- Recognition of Spontaneous Expression Using Motion Magnification of Video
- Non-Rigid Image Registration Using Feature-Based Diffeomorphic Log-Demons
- Detection of Affinity Group Using Motion Trajectories of Humans
- Hand Posture Recognition Using Complex Zernike Moments
- Recognizing Identities from Non-Cooperative Iris Images
- Cooperative Iris Recognition Using 2D Gauss-Hermite Moments
- Segmentation and 3D Visualization of Volumetric Images of Brains
- Classification of Image Textures Using Probabilistic Distance Metric of Wavelet Coefficients
- Detection and Classification of Vehicles from Video Using Time-Spatial Images
- A Robust Image Encryption Technique for Real-Time Applications
- Enhancement of Fingerprints for Biometric Identification

Assistant Professor

Sep. 2009 – Apr. 2010

Department of Electrical Engineering and Computer Science (EECS)

North South University (NSU), Dhaka, Bangladesh

- As a part-time faculty member, I taught the following

Undergraduate lecture course:

ETE 423 (Principles of Telecommunication Networks)

- I have supervised the following

Undergraduate thesis (completed):

- A Robust Encryption Technique for Real-Time Video Surveillance (Completed)

Course Assistant

Sep. 2004 – Dec. 2008

**Department of Electrical and Computer Engineering (ECE)
Concordia University (ConU), Montreal, Canada**

I helped to develop the following course materials for

Undergraduate courses:

Lecture notes, Quiz, Mid-Terms of ENGR 233 (Applied Advanced Calculus)

Laboratory Manual for the Experiments of COEN 315 (Digital Electronics)

Teaching Assistant

Jan. 2004 – Dec. 2008

Department of ECE

Concordia University (ConU), Montreal, Canada

Helped in understanding the concepts and solving the problems of the materials of the following:

Undergraduate lecture courses

ELEC 273 (Basic Circuit Analysis)

ELEC 275 (Principles of Electrical Engineering)

ELEC 370 (Modeling and Analysis of Physical Systems)

ELEC 312 (Electronics-II)

Teaching Fellow

Jan. 2004 – Dec. 2008

Department of ECE

Concordia University (ConU), Montreal, Canada

As an instructor, I taught the following:

Undergraduate laboratory courses

ELEC 273 (Basic Circuit Analysis)

ELEC 275 (Principles of Electrical Engineering)

ELEC 370 (Modeling and Analysis of Physical Systems)

Assistant Professor

Aug. 2002 – Aug. 2003

Department of EEE

Islamic University of Technology (IUT), Dhaka, Bangladesh

- As a part-time faculty member, I taught the following:

Undergraduate lecture course

EEE 411 (Digital Signal Processing)

- I helped to develop the following course materials and conducted the following

Undergraduate laboratory courses

Laboratory Manual for the Experiments of EEE 412 (Digital Signal Processing Sessional)

Lecturer

Aug. 2001 – Aug. 2002

Department of EEE

Ahsan Ullah University of Science and Technology (AUST), Dhaka, Bangladesh

- As a part-time faculty member, I taught the following

Undergraduate laboratory courses:

EEE 454 (Industrial Electronics Sessional)

EEE 334 (Measurement and Instrumentation Sessional)

RESEARCH AND GRANTS

Professor (or Faculty Positions)

Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh Jul. 2009 – to date
University of Liberal Arts Bangladesh (ULAB), Dhaka, Bangladesh Nov. 2016 – Mar. 2018

As a faculty member of the Department of EEE in BUET/ULAB, I have been supervising several postgraduate and undergraduate students for their theses. In these research works, I am focusing on developing efficient biometric security system, affective computing for behavioral analysis, scoring of multimedia for commercial clips, real-time video surveillance system, 3D visualization, virtual and mixed reality systems for HCI, and biomedical imaging system. In addition to provide academic, research and administrative services for the department, I am also interested in improving the capacity of the university. For example, a contemporary e-accessioning and RFID-managements systems for the books and articles has been developed for Central Library of BUET under my direct supervision with an external grant. In particular, I played the key role for integration of the RFID-based access control system and RFID-based KOHA-based Library Management System (LMS), wherein the database of bibliographic articles are kept in MARC21 format. Two new laboratories have been introduced in the department of EEE in ULAB due to my initiation. In order to achieve my goals, I am continuously trying to manage grants from various available sources so that a significant level of resources can be built to improve the capacity of my university as well as to produce significant results in the area of my research interests. Some of the notable achievements and progresses are given below:

- A capacity-built grant was obtained from Higher Education Quality Enhancement Project (HEQEP) of the Ministry of Education (MoE) supported by the World Bank for the ‘Digitalization of Central Library of BUET’. The digitalization part includes the introduction of MARC 21 format database creation for 50,000+ bibliographic articles, 3,000+ e-resources, and 2,000+ institutional repository (IR), accessioning and managing these resources using KOHA-based LMS and D-Space-based IR management system, as well as introduction of federated searching of articles using VuFind (Grant No. CP 2107; Amount: 3,45,53,520 BDT; Extended Amount: 77,66,280 BDT; Duration: Apr. 2012 – Mar. 2016).
- A research grant was obtained from Higher Education Quality Enhancement Project (HEQEP) of the Ministry of Education (MoE) supported by the World Bank for the development of low-cost ultrasound-based elasticity imaging system for early cancer detection. A research is going on segmentation and 3D visualization of volumetric images using wavelet transform for accurate detection of tumors (Grant No. CP 096; Amount: 91,48,000 BDT; Duration: Jan. 2011 – Dec. 2013).
- A research grant was obtained from the Ministry of Science and Information & Communication Technology (MoSICT), Bangladesh, for doing research in the area of fingerprint, face, voice, and iris-based biometric identification system (Grant No. 122; Amount: 4,00,000 BDT; Duration: Nov. 2009 – Dec. 2010). During the research period in ULAB, a research book titled 'Orthogonal Image Moments for Human-Centric Visual Pattern Recognition' has been written. As per the contract with Springer Nature, Singapore the book has been submitted in June 2018 and revised recently. It is expected that the book will be published by June 2019. The significant parts of the book cover the advancements in the area of biometric security in the recent years. A research is on-going to develop integrated micro-services for the IOT-based smart biometric security system for a home.
- Several research works on designing suitable architectures of deep neural network are under investigation. The investigations focus on the regression-type problems of real-life such as estimation of emotional dimensions, feelings on media quality, scores of goodness of commercial videos, and learning filters for providing high resolution videos. Being a notable research group in a least developed country, we have secured a Titan XP GPU at free of cost (regular price is 1200 USD) from NVIDIA Corporation, USA in December 2017.

- A research output on detection and classification of vehicles from a video using time-spatial image has been published in an international conference and the advanced version of this algorithm is published a top ranking journal in the area. We are planning to file the concept for a patent. This research has now been extended for vehicle tracking and even for recognizing traffic signals. This research will be of significant contribution in the area of developing Intelligent Transportation System. The database developed in this research has been deployed for public use.
- A research output on recognizing distractions of a driver from a video using tracking trajectories of body parts of the driver has been published in the top-notch journal, named, IEEE Transactions on Circuits and Systems for Video Technology in April 2019. The database developed in this research has also been deployed for public use. We are in process of developing a generalize platform for distraction recognition and detection of following vehicle to avoid collision. A research is going on for tracking of multiple objects using the Kalman and Particle filtering and finding the affinity group among the tracked objects.
- A research is on-going on developing responsive media that tracks the human facial gesture and align the axis of immersive video accordingly. We are also working in the area of analysis of shapes and texture of marker and target in the virtual, augmented or mixed reality (VR/AR/MR). This research would ultimately helps in developing efficient algorithms for human and computer interface (HCI).
- A research is going on for recognition of an identity and affective state using facial images using the 2D/3D orthogonal moments. Motion magnification in video has also been investigated for improving the recognition performance. Region specific data clouds of 3D faces or body parts of human gaits are also under investigation to find the most discriminatory features. The results have been and will be recognized as notable contributions in the area of biometric security, person re-identification in video surveillance, and cognitive science.
- A research on the development of image registration algorithm using the statistics of curvelet coefficients has been done. Research on diffeomorphic log-Demons-based nonlinear image registration has been underway. Deep convolution neural network-based mixed noise removal from images is also under investigation. A research is going on texture classification of image database using probabilistic distance metric of wavelet coefficients. Another research on development of robust encryption algorithm of image and video for real-time operation is also in progress. These results are very effective for generalized applications of image processing.

Ph.D. student (or Ph.D. works)
Concordia University (ConU), Montreal, Canada

Sept. 2003 – Apr. 2009

As a Ph.D. student of the Multimedia Signal Processing Research Group at the Department of Electrical and Computer Engineering (ECE), I have been responsible for conducting research on the processing of image and video signals with special references to their space-time-frequency representations, statistical modeling, developing various estimation and detection techniques, experimentations, and performance studies. Specifically,

- A unified probabilistic model for the wavelet coefficients of the image and video signals has been developed using the Gauss-Hermite expansion¹. An important motivation for using such expansion is that an appropriate number of parameters that are functions of the higher-order moments of data samples can be used for a better modeling performance.
- The performance of the probabilistic model has been investigated in various types of wavelet representations such as orthogonal/biorthogonal, real/complex, and separable/non-separable. In particular,

¹ This expansion has been used in view of the fact that empirical model of the wavelet coefficients that have non-compact support, resembles the standard Gaussian function.

the statistics of the data samples are analyzed in terms of the transformation matrices and mathematical operations of the transform.

- The performance of the developed model has been studied in several estimation techniques such as denoising (reducing additive white Gaussian noise), despeckling (reducing multiplicative and correlated noise), deblurring (restoration from the degradation due to point spread function), and fusion (obtain an informative signal from multi-sensed data). Estimation performances have been evaluated on several data sources that include natural images and video, medical images, and remote sensing images.
- The performance of the developed model has also been studied in the case of the detection of edge and textures and the detection of watermark for copyright protection.

M.Sc. Student (or M.Sc. works)

May 2000 – May 2002

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

As an M.Sc. student of the Signal Processing Research Group at the Department of Electrical and Electronic Engineering (EEE), I was responsible for conducting research on the image processing with concentrations given to image filtering, contrast enhancement, and neural network-based image compression.

ADMINISTRATIVE EXPERIENCE

Professor (or Faculty Position)

Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

Apr. 2010 – to date

University of Liberal Arts Bangladesh (ULAB), Dhaka, Bangladesh

Nov. 2016 – Mar. 2018

As a faculty member in the area of Electrical and Electronic Engineering, I have been serving in several administrative positions both inside the universities and national organizations. Some of the notable positions are:

- Served as the **Registrar (Additional Charge)** of BUET. Through this position, I serve as one of the key facilitators for the faculties, students, and staffs of BUET towards achieving the academic goals of the university. As the Registrar, I have been serving as the Secretary to the Syndicate and the Academic Council of BUET. I also served as the Secretary of the Main Committee of BUET Convocation 2019 (May 2018 – Aug 2020).
- Served as the **Founding Head of EEE** department during my position in ULAB. My responsibilities encompass in all aspects of establishing a new department such as setting the mission and vision for the undergraduate program, curriculum design for an engineering degree under the concept of liberal arts, counseling the students, recruitments of faculty members, developing new laboratories, and procuring new books. In my leadership, a closely allied-department, namely, Electronics and Telecommunication Engineering (ETE) department of ULAB has secured accreditation from Board of Accreditation for Engineering and Technical Education (BAETE) that is managed by the Institute of Engineers of Bangladesh (IEB). Being convinced with my leadership quality, the Board of Governors of ULAB nominated me as one of the candidates for the post of Pro-Vice Chancellor in March 2018 (Nov. 2016 – Mar. 2018).
- Served as the **Chair** of Provisional Acceptance Test (PAT) Committee and Internet Data Center (IDC) Sub-Committee, and a **Member** of Top Supervision Committee of Tier IV National Data Center (4TDC) at Bangabandhu Hi-Tech City, Kaliakoir, Gazipur, implemented by ICT Division of Government of Bangladesh. Visited China and Germany as a **Member** of the Inspection Team formed by the ICT Division to recommend on the electrical, electronic, and IT equipment manufactured in the factories of ZTE Corporation and Schnieder Electric GmbH (Budget of Project: 194.78 million USD, Duration: Jan. 2015 – Jun. 2019).

- Serving as a **Board Member** of Bangladesh Data Center Company Limited (BDCCL) at Bangabandhu Hi-Tech City, Kaliakoir, Gazipur established by ICT Division of Government of Bangladesh. (Aug 2020 – to date).
- Served as **Sub-Project Manager** for the grant obtained from Higher Education Quality Enhancement Project (HEQEP) of the Ministry of Education (MoE), Bangladesh, for the ‘Digitalization of Central Library of BUET’ at Bangladesh University of Engineering and Technology (Grant No. CP 2107; Amount: 3,45,53,520 BDT; Extended Amount:77,66,280 BDT; Duration: Apr. 2012 – Mar. 2016).
- Served as **Associate Sub-Project Manager** for the grant obtained from Higher Education Quality Enhancement Project (HEQEP) of the Ministry of Education (MoE), Bangladesh, for the ‘Development of An Ultrasound-Based Elasticity Imaging System for Early Cancer Detection’ at Bangladesh University of Engineering and Technology (Grant No. CP 096; Amount: 91,48,000 BDT; Duration: Jan. 2011 – Dec. 2013).
- Served as **Associate Project Counterpart** for the grant obtained from Ministry of Science and Information & Communication Technology (MoSICT), Bangladesh, for ‘Laboratory Development for Biometric Identification and Imaging System’ at Bangladesh University of Engineering and Technology (Grant No. 122; Amount: 4,00,000 BDT; Duration: Nov. 2009 – Dec. 2010).
- Serving as **Adviser (Electrical)** for the Vice-Chancellor of BUET (Jan. 2018 – to date).
- Served as **Provost** for the Shaheed Smrity Residential Hall of BUET (May 2016 – Oct. 2016).
- Served as **Assistant Provost** for the Ahsan Ullah Residential Hall of BUET (Apr. 2010 – Nov. 2012).
- Served as **Moderator** for technical questions prepared for the nationwide recruitment examination of Bangladesh Civil Service (BCS) organized by the Public Service Commission (PSC) of Bangladesh (Mar. 2014).
- Served as a **Member** of Board of Accreditation for Engineering and Technical Education (BAETE), Institute of Engineers of Bangladesh (IEB) (Dec. 2009 – Aug. 2010).
- Served as a **Member** of the Project Manager Team formed by the University Grants Commission (UGC) of Bangladesh to visit the Central Libraries of the National University of Malaysia, Malaysia and the Singapore National University, Singapore (May 2012).
- Serving as a **Member** of Technical Committee, Technical Specification Committee or Tender Evaluation Committee for the procurements of electrical and electronic equipment, security equipment, or machineries for several government organizations such as Special Branch (SB), Police Bureau of Investigation (PBI), Bangladesh Police, Parliament Bangladesh Television, Power Cell Bangladesh, Directorate of Prison, Ministry of Home Affairs, and Bangabandhu Sheikh Mujibur Rahman Novo Theatre (Jul. 2010 – to date).
- Served as a **Member** of Negotiation Committee for establishing five full-pledged centers for the state-owned Bangladesh Television (BTV) under the Ministry of Information with the support of Aerospace Long-March International Co. Ltd. (ALIT) and Radio, TV & Film Design and Research Institute (DRFT) of People’s Republic of China (May 2015 – Feb. 2016).
- Served as a **Member** of Interview Committee of recruitment of Assistant Engineers for Bangladesh Chemical Industries Corporation (BCIC), TeleTalk Bangladesh Limited (TBL) and Nuclear Power Company Bangladesh Limited (NPCBL) (Dec. 2014 – Feb 2020).
- Serving as a **Member** of Selection Board for recruitment of Professor and Associate Professor of EEE department of Khulna University of Engineering and Technology (KUET) (Jul 2019 – to date).

- Serving as a **Member** of Selection Board or Short Listing Committee for recruitment of different positions of Officer and Staff in BUET (Dec. 2014 – to date).
- Serving as **Convener** of Committee to establish Memorandum of Understanding (MoU) between BUET, University of Maryland (UM), USA, and National Fire Protection Association (NFPA), USA to improve the Fire Safety Issues in Bangladesh (Dec. 2015 – to date).

SCHOLARSHIPS/FELLOWSHIPS/AWARDS

- Travel Grant Award to attend 1st International Conference on New Trends in Computing Sciences (ICTCS), Amman, Jordan, Amount: 1,000 USD (Oct. 2017).
- ICCIT 2016 Best Paper Award, 19th International Conference on Computer and Information Technology (ICCIT), Dhaka, Bangladesh, Amount: N/A (Dec. 2016).
- Late Sydney R. Parker Best Paper Award in Signal Processing, Journal of Circuits, Systems and Signal Processing, Springer Nature, Amount: 400 USD (Nov. 2015).
- M. N. S. Swamy Best Paper Award, Journal of Circuits, Systems and Signal Processing, Springer Nature, Amount: 400 USD (Nov. 2015).
- Travel Grant Award to attend the ISI Regional Statistical Conference, Kuala Lumpur, Malaysia, Amount: 900 USD (Nov. 2014).
- Distinguished Doctoral Dissertation Prize, Concordia University, Canada, Amount: 2,500 CAD (Apr. 2010).
- Postdoctoral Fellowship, Natural Sciences and Engineering Research Council (NSERC), Canada, Amount: 40,000 CAD/year (Received on Apr. 2009 for 2 years, Tenured on Dec. 2011).
- Student Travel Grant Award to attend the 42nd IEEE International Symposium on Circuits and Systems, Concordia University, Canada, Amount: 1,500 CAD (Apr. 2009).
- Faculty of Engineering and Computer Science Graduate Scholarship, Concordia University, Canada, Amount: 2,750 CAD/semester (Sep. 2008 – Apr. 2009).
- Student Travel Grant Award to attend the 41st IEEE International Symposium on Circuits and Systems, Concordia University, Canada, Amount: 1,500 CAD (May 2008).
- Carolyn and Richard Renaud Teaching Assistantship Award, Concordia University, Canada, Amount: 5,000 CAD/semester (Sep. 2007 – Apr. 2008).
- Faculty of Engineering and Computer Science Graduate Scholarship, Concordia University, Canada, Amount: 2,750 CAD/semester (Sep. 2006 – Apr. 2007).
- Finalist: Student Paper Competition Award, the 49th IEEE International Mid-West Symposium on Circuits and Systems, PR, USA, Amount: 300 CAD (Aug. 2006).
- Doctoral Teaching Assistantship Award, Concordia University, Canada Amount: 5,000 CAD/semester (Sep. 2004 – Dec. 2004).
- Concordia University Graduate Fellowship, Concordia University, Canada Amount: 10,800 CAD/year (Sep. 2003 – Aug. 2006).

- International Tuition Fee Remission Award, Concordia University, Canada, Amount: 11,000 CAD/year (Sep. 2003 – Aug. 2006).
- Best Student Paper Award: Travel Grant, the 3rd International Symposium on Communication System, Network and Digital Signal Processing, Staffordshire, UK, Amount: 200 GBP (Jul. 2002).
- University Merit Scholarship, Bangladesh University of Engineering and Technology (BUET), Bangladesh, Amount: 2,000 BDT/month (Jun. 1994 – Aug.1999).
- Dean's List Award, BUET, Bangladesh, Amount: 1,000 BDT/month (Jun. 1994 – Aug.1999).
- Board Scholarship, Ministry of Education, Bangladesh, Amount: 400 BDT/month (Jan. 1986 – Dec. 1992).

PROFESSIONAL ACTIVITIES

MEMBERSHIPS

- **Life Fellow**, Institute of Engineers of Bangladesh (IEB), Membership No. F/10706 (Sep. 2012 – to date).
- **Member**, Institute of Electrical and Electronic Engineers (IEEE), USA, Membership No. 92215557 (Jan. 2012 – Dec. 2019).
- **Member**, International Statistical Institute (ISI), USA, Membership No. 17274 (Jan. 2014 – Dec. 2014).
- **Member**, International Biometric Society (IBS), Membership No. M-1319355 (Jan. 2018 – Dec. 2018).
- **Member**, Institute of Engineers of Bangladesh (IEB), Membership No. M-26185 (Jun. 2010 – Sep. 2012).
- **Student Member**, American Statistical Association (ASA), Membership No. 146550 (Jun. 2007 – Jun. 2008).

EDITORIALS

- **Associate Editor**, Journal of Circuits, Systems and Signal Processing, Springer Nature (Mar. 2017 – to date).
- **Editor**, ULAB Journal of Science and Engineering (Feb. 2017 – to date).
- **Expert Reviewer** of several papers for the IEEE Transactions on Intelligent Transportation Systems, IEEE Magazine on Intelligent Transportation System, IEEE Signal Processing Letters, IEEE Transactions on Signal Processing, IEEE Transactions on Image Processing, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Audio, Speech, and Language Processing, IEEE Transactions on Circuits and Systems: Regular Paper, ACM Transactions on Multimedia Computing, Communications and Applications, Journal of Electronic Imaging and Optical Engineering from SPIE, Journal of Medical and Biological Engineering and Computing, Journal of Circuits, Systems and Signal Processing, and Journal of Signal, Image and Video Processing from Springer (May 2007 – to date).
- **Expert Reviewer** for research grant application for American University of Beirut, Lebanon (Apr. 2010 – May 2010).
- Served as the **Technical Secretary** for the IEEE sponsored 8th International Conference on Electrical and Computer Engineering (ICECE), Pan Pacific Sonargaon Dhaka, December 20-22, 2014 (Dec. 2013 – Feb. 2015).

AS AN ORGANIZER

- Serving in a number of IEEE sponsored International conferences such as 2018 ICECE, 2017 R10 HTC, 2017 ICTP, 2016 ICECE, 2015 ICTP, 2014 ICEEICT, 2014 IFOST, 2012 ICECE, 2010 ICECE in various capacities including the **Session Chair**, **Member** of Technical Committee, **Convener** of Registration and Kit Committee, and **Member** of Organizing Committee (Jul. 2009 – to date).
- **Organizing Chair** of HEQEP sponsored Tutorial Program on the RFID-based Library Management System the RFID-based Library Management System of Central Library of BUET (Dec. 2015).
- **Organizing Chair** of HEQEP sponsored Seminar Series on Literary Contents for Conducting High Impact Research in Engineering: Challenges and Prospects in the Context of Bangladesh (Dec. 2015)
- **Team Leader** to attend a Workshop on Open Source Software for Library Management System, Khulna University of Engineering and Technology (KUET), Khulna, Bangladesh (Sep. 2012).

OTHERS

- **Delivered a talk** on Appointment and Leave Rules for Post of Teachers in BUET, in Foundation Training for Newly Appointed Faculty Members, organized by Institutional Quality Assurance Cell (IQAC), Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh (Aug. 2019).
- **Attendee** in a Workshop on Fundamental Concepts of Fire Fighting and Formulation of Legislation Regarding Hazardous Fire, BUET–Japan Institute of Disaster Prevention and Urban Safety, Bangladesh (Jan. 2011).
- **Attendee** in Teaching Assistant Workshop, Center for Teaching and Learning Services, Concordia University, Canada (Aug. 2007).
- **Attendee** in a training course on Teachers' Appreciation Workshop, Directorate of Continuing Education, BUET, Bangladesh (Sep. 2001).
- **Attendee** in a short course on ORACLE 8i Developer 6, Institute of Information and Communication Technology, BUET, Bangladesh (May 2001 – Jun. 2001).

INVITED TALK/ SEMINAR/TUTORIAL/LECTURE

- Delivered a talk as the Chief Guest on 2nd National Science Festival for Schools and Colleges, **Birshreshtha Munshi Abdur Rouf Public College, Dhaka, Bangladesh** (Mar. 2020).
- Delivered an invited talk on Electrical Safety: First Principles to Codes and Practices, in 3rd National Fire Safety Workshop for Graduate Engineers, Fire Safety Program, **Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh** (Mar. 2018).
- Delivered a tutorial on Orthogonal Moments for Face Recognition, in IEEE sponsored 3rd **International Conference on Electrical Engineering and Information & Communication Technology (iCEEiCT)**, Military Institute of Science and Technology, Dhaka, Bangladesh (Sep. 2016).
- Delivered an invited talk on Conditioning of Image Data Using Orthogonal Moments to Meet the Challenges of Face Recognition, in Faculty of Science and Technology, **Federation University Australia, Victoria, Australia** (Apr. 2016).

- Delivered an invited talk in short course on Current Trends in Research Leading to Industrial Applications of Image Processing – Image Compression: Techniques, Standards and Practices, **Islamic University of Technology (IUT), Gazipur, Bangladesh** (Dec. 2015).
- Delivered an invited research seminar on Statistical Modeling of Wavelet Coefficients for Images and Video, Department of Electrical and Electronic Engineering, **Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh** (Feb. 2007).
- Delivered an invited research seminar on Wavelet-Based Center Weighted Median Filter for Image Denoising, Visual Information Processing Group, **Imperial College, London, UK** (Jul. 2002).

CONFERENCE/TECHNICAL PRESENTATIONS

- Attended as an Author in the 16th ACS/IEEE Conference on Computer Systems and Applications, Abu Dhabi, United Arab Emirates (Nov. 2019).
- Attended as an Author in the XXIX International Biometric Conference, Barcelona, Spain (Jul. 2018).
- Presented two papers in the 1st International Conference on New Trends in Computing Sciences, Amman, Jordan (Oct. 2017).
- Presented a paper in the 13th International Conference on IEEE Advanced Video and Signal-Based Surveillance, Colorado Springs, CO, USA (Aug. 2016).
- Presented a paper in the 11th Pacific Asia Workshop on Intelligence and Security Informatics, Auckland, New Zealand (Apr. 2016).
- Presented a paper in the 1st IAPR International Conference on Computer Vision and Image Processing, Roorkee, India (Feb. 2016).
- Attended as an Author in the 1st ISI Regional Statistical Conference, Kuala Lumpur, Malaysia (Nov 2014).
- Presented a paper in the 8th IEEE International Symposium on Image and Signal Processing and Analysis, Trieste, Italy (Sep. 2013).
- Presented a paper in the 42nd IEEE International Symposium on Circuits and Systems, Taipei, Taiwan, Republic of China (May 2009).
- Presented a paper in the 1st International Symposium on Digital Life Technologies, Tainan, Taiwan, Republic of China (May 2009).
- Presented a paper in the 51st IEEE International Mid-West Symposium on Circuits and Systems, Knoxville, TN, USA (Aug. 2008).
- Presented a paper in the 41st IEEE International Symposium on Circuits and Systems, Seattle, WA, USA (May 2008).

- Presented a paper in the 14th IEEE International Conference on Image Processing, San Antonio, TX, USA (Sep. 2007).
- Presented a paper in the 8th Joint Statistical Meeting, Salt Lake City, UT, USA (Jul. 2007).
- Presented a paper in the 49th IEEE International Mid-West Symposium on Circuits and Systems, San Juan, PR, USA (Aug. 2006).
- Presented a paper in the 3rd IEEE International North-East Workshop on Circuits and Systems, Quebec City, QC, Canada (Jun. 2005).
- Presented two papers in the 3rd International Symposium on Communication System, Network and Digital Signal Processing, Staffordshire, UK (Jul. 2002).

COURSES COMPLETED IN POSTGRADUATE PROGRAM

- | | |
|---|--|
| 1) Doctoral Seminar | 7) Advanced Digital Signal Processing |
| 2) Doctoral Research Proposal | 8) Advanced Telecommunication Engineering |
| 3) Advanced Stochastic Processes for Communications and Signal Processing | 9) Engineering Analysis |
| 4) Digital Video Processing | 10) Testing of VLSI Circuits |
| 5) Adaptive Signal Processing | 11) Compound Semiconductor Devices |
| 6) Detection and Estimation Theory | 12) Semiconductor Materials and Heterostructures |

PUBLICATIONS

Book Published in Springer Nature:

1. **S. M. Mahbubur Rahman**, Tamanna Howlader, Dimitrios Hatzinakos, “*Orthogonal Image Moments for Human-Centric Visual Pattern Recognition*,” Springer Nature, Singapore, 2019 (ISBN 978-981-32-9944-3). See <https://www.springer.com/gp/book/9789813299443>

Book-Chapter Published in Springer Nature:

1. Tamanna Howlader, **S. M. Mahbubur Rahman**, Yogendro P. Chaubey, “On wavelet-based methods for noise reduction of cDNA microarray images,” in Chapter 4, *Mathematical and Statistical Applications in Life Sciences and Engineering*, pp. 99-120, Springer Nature, Singapore, Jun. 2017 (ISBN 978-981-10-5369-6).

Bibliometrics of Refereed International Journals in which Articles are Published:

- IEEE Transactions on Image Processing - IF (4.828), EF (0.05273), AIS (1.826)
- IEEE Transactions on Intelligent Transportation Systems - IF (3.724), EF (0.01414), AIS (0.964)
- IEEE Transactions on Circuits and Systems for Video Tech. - IF (3.599), EF (0.01494), AIS (1.254)
- IEEE Transactions on Circuits and Systems I - IF (2.407), EF (0.02249), AIS (1.080)

- Pattern Recognition (Elsevier) - IF (4.582), SJR (1.699), SNIP (2.988)
- Pattern Recognition Letters (Elsevier) - IF (2.810), SJR (0.662), SNIP (1.640)
- Expert Systems with Applications (Elsevier) - IF (3.928), SJR (1.433), SNIP (2.492)
- Signal Processing (Elsevier) - IF (3.110), SJR (1.048), SNIP (1.905)
- Signal Processing: Image Communication (Elsevier) - IF (2.073), SJR (0.551), SNIP (1.499)
- Journal of Visual Communication & Image Representation (Elsevier) - IF (2.164), SJR (0.646), SNIP (1.509)
- Circuits, Systems & Signal Processing (Springer) - IF (1.694), SJR (0.563), SNIP (1.004)
- Int. Journal of Machine Learning and Cybernetics (Springer) - IF (1.699), SJR (0.658), SNIP (1.138)
- EURASIP Journal of Image and Video Processing (Springer) - IF (1.742) SJR (0.472) SNIP (0.508)
- Signal Image and Video Processing (Springer) - IF (1.102), SJR (0.391), SNIP (1.067)
- IET Image Processing - IF (1.044), EF (0.00222), AIS (0.310)

Index of Scientific Research Impact (as per Google Scholar and Research Gate)

- **Citation count:** 850+
- **h-index:** 13+
- **i10-index:** 14+
- **RG score:** 22+

List of Articles Published or Accepted in Refereed International Journals:

1. Ramesh Basnet, Mohammad Tariqul Islam, Tamanna Howlader, **S. M. Mahbubur Rahman**, and Dimitrios Hatzinakos, "Estimation of affective dimensions using CNN-based features of audiovisual data," *Pattern Recognition Letters*, vol. 128, pp. 290-297, Sept. 2019.
2. Tashrif Billah, **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Recognizing distractions for assistive driving by tracking body parts," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 29, no. 4, pp. 1048-1062, Apr. 2019.
3. Mohammad Tariqul Islam, **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Mixed Gaussian-impulse noise reduction using convolutional neural network," *Signal Processing: Image Communication*, vol. 68., pp. 26-41, Oct. 2018.
4. Syed Shahnewaz Ali, Tamanna Howlader, and **S. M. Mahbubur Rahman**, "Pooled shrinkage estimator for quadratic discriminant classifier: An analysis for small sample sizes in face recognition," *International Journal of Machine Learning and Cybernetics, Springer Nature*, vol. 9, no. 3, pp. 507-522, Mar. 2018.
5. Samiul Haque, **S. M. Mahbubur Rahman**, and Dimitrios Hatzinakos, "Gaussian-Hermite moment-based depth estimation from single still image for stereo vision," *Journal of Visual Communication and Image Representation, Elsevier Science Publishers*, vol. 41C, pp. 218-295, Nov. 2016.
6. Niluthpol Chowdhury Mithun, Tamanna Howlader, and **S. M. Mahbubur Rahman**, "Video-based tracking of vehicles using multiple time-spatial images," *Expert Systems with Applications, Elsevier Science Publishers*, vol. 62, pp. 17-31, Nov. 2016.

7. Saif Muhammad Imran, **S. M. Mahbubur Rahman**, and Dimitrios Hatzinakos, "Differential components of discriminative 2D Gaussian-Hermite moments for recognition of facial expressions," *Pattern Recognition, Elsevier Science Publishers*, vol. 56, pp. 100-115, Aug. 2016.
8. **S. M. Mahbubur Rahman**, Tamanna Howlader, and Dimitrios Hatzinakos, "On the selection of 2D Krawtchouk moments for face recognition," *Pattern Recognition, Elsevier Science Publishers*, vol. 54, pp. 83-93, Jun. 2016.
9. **S. M. Mahbubur Rahman**, Shahana Parvin Lata, and Tamanna Howlader, "Bayesian face recognition using 2D Gaussian-Hermite moments," *EURASIP Journal on Image and Video Processing, Springer Nature*, vol. 2015, no. 35, pp. 1-20, Dec. 2015.
10. Fatema Tuz Jhohura, Tamanna Howlader, and **S. M. Mahbubur Rahman**, "Bayesian fusion of ensemble of multifocused noisy images," *Circuits, Systems & Signal Processing, Springer Nature*, vol. 34, no. 7, pp. 2287-2308, Jul. 2015 (**Winner of 2015 Late Sydney R. Parker Best Paper Award in Signal Processing and 2015 M. N. S. Swamy Best Paper Award**).
11. Md Mushfiqul Alam, Tamanna Howlader, and **S. M. Mahbubur Rahman**, "Entropy-based image registration method using the curvelet transform," *Signal, Image and Video Processing, Springer Nature*, vol. 8, no. 3, pp. 491-505, Mar. 2014.
12. Sanjit Roy, Tamanna Howlader, and **S. M. Mahbubur Rahman**, "Image fusion technique using multivariate statistical model for wavelet coefficients," *Signal, Image and Video Processing, Springer Nature*, vol. 7, no. 2, pp. 355-366, Mar. 2013.
13. Niluthpol Chowdhury Mithun, Nafi Ur Rashid, and **S. M. Mahbubur Rahman**, "Detection and classification of vehicles from video using multiple time-spatial images," *IEEE Transactions on Intelligent Transportation Systems*, vol. 13, no. 3, pp. 1215-1225, Sep. 2012.
14. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Contrast-based fusion of noisy images using discrete wavelet transform," *IET Image Processing*, vol. 4, no. 5, pp. 374-384, May 2010.
15. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "A new statistical detector for DWT-based additive image watermarking using the Gauss-Hermite expansion," *IEEE Transactions on Image Processing*, vol. 18, no. 8, pp. 1782-1796, Aug. 2009.
16. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Bayesian wavelet-based image denoising using the Gauss-Hermite expansion," *IEEE Transactions on Image Processing*, vol. 17, no. 10, pp. 1755-1771, Oct. 2008.
17. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Statistics of 2D DT-CWT coefficients for Gaussian distributed signal," *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 55, no. 7, pp. 2013-2025, Aug. 2008.

18. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Video denoising based on inter-frame statistical modeling of the wavelet coefficients," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 17, no. 2, pp. 187-198, Feb. 2007.
19. **S. M. Mahbubur Rahman** and Md. Kamrul Hasan, "Wavelet-domain iterative center weighted median filter for image denoising," *Signal Processing, Elsevier Science Publishers*, vol. 83, no. 5, pp. 1001-1012, May 2003.

List of Articles Published or Accepted in Proceedings of Refereed International Conferences, Symposiums, Meetings or Workshops:

1. Mohammad Mahmudul Alam, **S. M. Mahbubur Rahman**, "Detection and tracking of fingertips for geometric transformation of objects in virtual environment," to be presented in *IEEE/ACS 16th International Conference on Computer Systems and Applications*, pp. 1-8, Abu Dhabi, UAE, Nov. 2019.
2. Mohammad Tariqul Islam, Dipayan Saha, **S. M. Mahbubur Rahman**, M. Omair Ahamad, M. N. S. Swamy, "A variational step for reduction of mixed Gaussian-impulse noise from images," in *Proceedings 10th International Conference on Electrical and Computer Engineering*, pp. 97-100, Dhaka, Bangladesh, Dec. 2018.
3. Sheikh Mridula Koyshi, **S. M. Mahbubur Rahman**, Tamanna Howlader, Dimitrios Hatzinakos, "Discrimination power of body parts in person re-identification: An evaluation by histogram based warping function," in *Proceedings of IEEE 10th International Conference on Systems, Man, and Cybernetics*, pp. 1979-1984, Miyazaki, Japan, Oct. 2018 (**Student Travel Grant**).
4. Sadman Sakib Enan, **S. M. Mahbubur Rahman**, Samiul Haque, Tamanna Howlader, Dimitrios Hatzinakos, "Object labeling in 3D from multiview scenes using Gaussian-Hermite moment-based depth map," presented in *3rd International Conference on Computer Vision and Image Processing*, pp. 1-12, Jabalpur, India, Sept.-Oct. 2018.
5. Sheikh Mridula Koyshi, **S. M. Mahbubur Rahman**, Tamanna Howlader, "Discrimination power of human body parts for person re-identification using dynamic time warping and histogram-based features," presented in *XXIX International Biometric Conference*, pp. 1-6, Barcelona, Spain, Jul. 2018.
6. Mohaiminul Al Nahian, A. S. M. Iftekhhar, Mohammad Tariqul Islam, **S. M. Mahbubur Rahman**, Dimitrios Hatzinakos, "CNN-based prediction of frame-level shot importance for video summarization," in *Proceedings of 1st International Conference on New Trends in Computing Sciences*, pp. 24-29, Amman, Jordan, Oct. 2017 (**Travel Grant**).
7. Ramesh Basnet, Mohammad Tariqul Islam, Tamanna Howlader, **S. M. Mahbubur Rahman**, Dimitrios Hatzinakos, "Statistical selection of CNN-based audiovisual features for instantaneous estimation of human emotional states," in *Proceedings of 1st International Conference on New Trends in Computing Sciences*, pp. 50-54, Amman, Jordan, Oct. 2017 (**Travel Grant**).
8. Tamanna Howlader, **S. M. Mahbubur Rahman**, "Face recognition across age using random effects model," in *Proceedings of 61st ISI World Statistics Congress*, pp. 1-6, Marrakech, Morocco, Jul. 2017.
9. Tamanna Howlader, Fatema Fazrin, **S. M. Mahbubur Rahman**, "Improving storage and distribution of agricultural produce in Bangladesh: Can cluster analysis help?," in *Proceedings of 2nd ISI Regional Statistical Conference*, pp. 1-7, Bali, Indonesia, Mar. 2017.
10. Sudipto Paul, Nurani Saoda, **S. M. Mahbubur Rahman**, Dimitrios Hatzinakos, "Mutual information-based selection of audiovisual features to predict instantaneous emotional state," in *Proceedings of 19th*

International Conference on Computer and Information Technology, pp. 463-468, Dhaka, Bangladesh, Dec. 2016 (**Winner of Best Paper Award**).

11. Rafiul Amin, A. Farhan Shams, **S. M. Mahbubur Rahman**, Dimitrios Hatzinakos, "Evaluation of discrimination power of facial parts from 3D point cloud data," in *Proceedings of 9th International Conference on Electrical and Computer Engineering*, pp. 602-605, Dhaka, Bangladesh, Dec. 2016.
12. Amit Kumar Kundu, Md. Didarul Islam, **S. M. Mahbubur Rahman**, "Roboticon: A realistic platform to imitate facial expressions," in *Proceedings of 9th International Conference on Electrical and Computer Engineering*, pp. 365-368, Dhaka, Bangladesh, Dec. 2016.
13. Tashrif Billah, and **S. M. Mahbubur Rahman**, "Tracking-based detection of driving distraction from vehicular interior video," in *Proceedings of 13th IEEE International Conference on Advanced Video and Signal-based Surveillance*, vol. W, pp. 23-28, Colorado Springs, CO, USA, Aug. 2016.
14. B. M. S. Bahar Talukder, Brinta Chowdhury, Tamanna Howlader, **S. M. Mahbubur Rahman**, "Intelligent recognition of spontaneous expression using motion magnification of spatio-temporal data," in *Lecture Notes in Computer Science: 11th Pacific Asia Workshop on Intelligence and Security Informatics*, vol. 9650, pp. 114-128, Auckland, New Zealand, Apr. 2016.
15. Md. Azim Ullah, **S. M. Mahbubur Rahman**, "Low-complexity non-rigid image registration using feature-based diffeomorphic log-Demons," in *Book Chapter of Advances in Intelligent Systems and Computing Series: Proceedings of 1st International Conference on Computer Vision and Image Processing*, vol. 459, pp. 357-367, Roorkee, Uttarakhand, India, Feb. 2016.
16. Abdullah Al Masum, Mahady Hasan Rafy, **S. M. Mahbubur Rahman**, "Video-based affinity group detection using trajectories of multiple subjects," in *Proceedings 8th International Conference on Electrical and Computer Engineering*, pp. 120-123, Dhaka, Bangladesh, Dec. 2014.
17. Bashirul Azam Biswas, Shams Shad Islam Khan, **S. M. Mahbubur Rahman**, "Discriminative masking for non-cooperative IrisCode recognition," in *Proceedings 8th International Conference on Electrical and Computer Engineering*, pp. 124-127, Dhaka, Bangladesh, Dec. 2014.
18. Syed Shahnewaz Ali, Tamanna Howlader, **S. M. Mahbubur Rahman**, "Quadratic discriminant classifier for moment-based face recognition," in *Proceedings of 1st ISI Regional Statistical Conference*, pp. 1-12, Kuala Lumpur, Malaysia, Nov. 2014 (**Winner of Best Paper Award – First Prize**).
19. Md Abdul Aowal, Adeeb Shahriar Zaman, **S. M. Mahbubur Rahman**, Dimitrios Hatzinakos, "Static hand gesture recognition using discriminative 2D Zernike moments," in *Proceedings of 35th IEEE TENCON*, pp. 1-5, Bangkok, Thailand, Oct. 2014.
20. **S. M. Mahbubur Rahman**, M. Masud Reza, Q. M. Zubair Hasani, "Low-complexity iris recognition method using 2D Gauss-Hermite moments," in *Proceedings of 8th IEEE International Symposium on Image and Signal Processing and Analysis*, pp. 135-139, Trieste, Italy, Sept. 2013
21. Tamanna Howlader, Fatema Tuz Jhohura, **S. M. Mahbubur Rahman**, "A novel statistical image fusion rule for noisy source images," in *Proceedings of 59th ISI World Statistics Congress*, pp. 3630-3635, Hong Kong, Aug. 2013.
22. Riazul Islam, Abdullah Al Mamun, Mohammed Imamul Hassan Bhuiyan, **S. M. Mahbubur Rahman**, "Segmentation and 3D visualization of volumetric images for detection of tumor in cancerous brain," in *Proceedings of 7th International Conference on Electrical and Computer Engineering*, pp. 863-866, Dhaka, Bangladesh, Dec. 2012.
23. Nafi Ur Rashid, Niluthpol Chowdhury Mithun, Bhadhan Roy Joy, and **S. M. Mahbubur Rahman**, "Detection and classification of vehicles from a video using time-spatial image," in *Proceedings of 6th*

International Conference on Electrical and Computer Engineering, Dhaka, Bangladesh, pp. 502-505, Dec. 2010.

24. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "A new bivariate MAP estimator for DT-CWT-based video denoising," in *Proceedings of 42nd IEEE International Symposium on Circuits and Systems*, Taipei, Taiwan, Republic of China, pp. 517-520, May 2009.
25. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "A new contrast-based fusion scheme for noisy images using wavelet transform," in *Proceedings of 1st International Symposium on Digital Life Technologies*, Tainan, Taiwan, Republic of China, pp. 108-111, May 2009.
26. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Improved image restoration using wavelet-based denoising and Fourier-based deconvolution," in *Proceedings of 51st IEEE International Mid-West Symposium on Circuits and Systems*, Knoxville, TN, USA, pp. 249-252, Aug. 2008.
27. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Statistical detector for wavelet-based image watermarking using modified GH PDF," in *Proceedings of 41st IEEE International Symposium on Circuits and Systems*, Seattle, WA, USA, pp. 712-715, May 2008.
28. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Locally adaptive wavelet-based image denoising using the Gram-Charlier prior function," in *Proceedings of 14th IEEE International Conference on Image Processing*, San Antonio, TX, USA, vol. 3, pp. 549-552, Sep. 2007.
29. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Bayesian wavelet-based despeckling of ultrasound medical images using the Gauss-Hermite expansion," in *Proceedings of 8th Joint Statistical Meetings*, Salt Lake City, UT, USA, pp. 1718-1725, Jul. 2007.
30. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Wavelet-based video denoising using Gauss-Hermite density function," in *Proceedings of 49th IEEE International Mid-West Symposium on Circuits and Systems*, San Juan, PR, USA, vol. 1, pp. 592-595, Aug. 2006 (**Winner of Best Paper Nomination**).
31. **S. M. Mahbubur Rahman**, M. Omair Ahmad, and M. N. S. Swamy, "Wavelet-domain image denoising algorithm using series expansion of coefficient p.d.f. in terms of Hermite polynomials," in *Proceedings of 3rd International IEEE North-East Workshop on Circuits and Systems*, Quebec City, QC, Canada, pp. 271-275, Jun. 2005.
32. **S. M. Mahbubur Rahman** and Md. Kamrul Hasan, "Improved wavelet-based image denoising algorithm using iterative center weighted median filter," in *Proceedings of 3rd International Symposium on Communication System, Network and Digital Signal Processing*, Staffordshire, UK, pp. 304-307, Jul. 2002 (**Winner of Student Paper Award**).
33. M. R. Huq, M. I. H. Bhuiyan, M. M. Rahman, **S. M. M. Rahman**, and M. K. Hasan, "An improved memoryless vector quantizer using LBG algorithm and neural networks for image compression," in *Proceedings of 3rd International Symposium on Communication System, Network and Digital Signal Processing*, Staffordshire, UK, pp. 264-267, Jul. 2002.

Articles Published in National Magazines, Booklets, Conferences or Workshops:

1. M. I. H. Bhuiyan, S. P. Majumder, Y. Arafat, **S. M. M. Rahman**, M. Z. Islam, "On the guidelines for electrical safety audits in RMG industry of Bangladesh," in *Proceedings of National Conference on Safety in Garments Industry, Five Years after Rana Plaza*, Dhaka, pp. 26-32, Apr. 2018.
2. Bashirul Azam Biswas, **S. M. Mahbubur Rahman**, "Opportunities and challenges for electrical engineers: In view of the present context of Bangladesh," in *Booklet of ULAB Career Fair*, Dhaka, pp. 26-27, Oct. 2017.

3. **S. M. Mahbubur Rahman**, and Quazi Deen Mohd Khosru, "ICECE: A recurrent international research festival for electrical and computer engineering," *The Guardian*, vol. 25, no. 4, pp. 51-53, Jun. 2015.
4. **S. M. Mahbubur Rahman**, "Modernizing BUET central library: To shape the way students learn and enjoy reading in the 21st century," in *Booklet of National Workshop on HEQEP Achievements*, BICC, Dhaka, pp. 58-60, Nov. 2015.

CONSULTANCY SERVICES

- **Core committee member** of BUET expert team to conduct recruitment exams of various public and private organizations (May 2018 - to date).
- **Lead Expert** of iZoom Limited to develop Automatic Training System (ATS) for Special Security Force (SSF) of Bangladesh. The ATS consists of a number of military-grade pop-up hit reactive target system connected in a wireless network through a programmable controller (Nov. 2016 - Nov. 2018).
- **Member** of the BUET expert team for vetting the Tender Document of installation of Multi-Door centrally controlled Access Control System for Bangladesh Bank buildings, Head Office, Dhaka (Sep. 2010).
- **Member** of the BUET expert team for studying the impacts on Bangladesh Grid System due to the addition of 40 MW load (including 36 MW electric arc furnace) of M/S. Abul Khair Steel Products (AKSP) Ltd. Chittagong and their mitigations (Apr. 2010 - Jun. 2010).
- **Member** of the BUET expert team for study on the impacts on Bangladesh Grid System due to the proposed 18 MW load (including induction heating furnace) of Sitalpur Steel Mills Ltd. Chittagong and their mitigations (Dec. 2010 - Jan. 2011).
- **Member** of the BUET expert team for study on the impacts on Bangladesh Grid System due to the proposed 150 MW load (including electric arc furnace) of BSRM Steel Mills Ltd. Chittagong and their mitigations (Jan. 2011- Apr. 2011).
- **Member** of the BUET expert team for study on the impacts on Bangladesh Grid System due to the proposed 25 MW load (including electric arc and induction furnaces) of Rahim Steel Mills Ltd. Chittagong and their mitigations (May 2011- Sep. 2011).
- **Coordinator and Member** of the BUET expert team for consultancy services in writing a project profile to establish an Accredited Electrical and Electronic Testing Laboratory for Bangladesh Electrical Merchandize Manufacturers Association (BEMMA) requested by Small and Medium Entrepreneurs (SME) Foundation of Bangladesh (Apr. 2011 – Apr. 2014).
- **Member** of the BUET expert team for consultancy services to test the performance of 15 kWp grid-tied inverter and 5 kW off-grid battery backup inverter solar power systems at the premise of Bangladesh Petroleum Exploration (BAPEX) and Production Company Limited (Nov. 2013).
- **Member** of the BUET expert team for consultancy services to recommend on the 25 Nos. 11 kV, SF₆ GIS panel repair or replacement by AIS panel at Shah Amanat International Airport, Chittagong, requested by the Civil Aviation Authority of Bangladesh (CAAB) (Jan. 2013 – Mar. 2013).
- **Member** of the BUET expert team for consultancy services in designing the automatic fire detection and alarm system in the buildings of Terminal 1 and 2, VVIP Terminal, Domestic Terminal, Lounge and Corridor,

and Operation Centre at Hazrat Shahjalal International Airport (HSIA), Kurmitola, Dhaka requested by the CAAB (Jan. 2013 – Nov. 2013).

- **Coordinator and Member** of the BUET expert team for consultancy services in observing the accordance of Bangladesh National Building Codes (BNBC) in regard to the Electrical Safety and Fire Detection and Alarm System in the Ready Made Garment (RMG) factories in Bangladesh, requested by the International Labor Organization (ILO) (Nov. 2013 – Jun. 2014).
- **Member** of the BUET expert team for consultancy services in finding the cause of fire and estimating the extent of damages in regard to machinery and equipments of Aswad Composite Mills, requested by the Engineers Survey Associated Limited (Nov. 2013 – Feb. 2014).
- **Member** of the BUET expert team for Technical Audit in Rural Electrification and Renewable Energy Development Project requested by the Infrastructure Development Company Limited (IDCOL), Bangladesh (Aug. 2014 – Mar. 2016).
- **Member** of the BUET expert team for Technical Audit in Solar Power-Based Wild Life Fencing System requested by the International Union for Conservation of Nature (IUCN), Bangladesh Country Office (Sep. 2016).
- **Member** of the BUET expert team to conduct recruitment examination for entry level post (e.g., Assistant Engineer) in various state-owned companies such as Dhaka Power Distribution Company Limited (DPDCL) and Power Grid Company of Bangladesh Limited (PGCBL) for the engineers graduated in Electrical and Electronic Engineering (Aug. 2014 – Oct. 2015).
- **Member** of the BUET expert team for resolving arbitration on technical issues of imported items (e.g., cellular phone, SIM card, and LED monitor) in order to decide appropriate VAT, Tax, and Duties by Bangladesh Customs (Oct. 2016 - Feb. 2018).

REFEREES

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