Technical Program

Day-1, Thursday, 18th November 2021

Keynote Session 1 Day-1, Thursday, 18th November 2021 Time: 1130-1230 (Hybrid)	
Venue: General Mustafiz Multipurpose Hall, (10th Floor), Tower-1	
Session Chair: Syed Akhter Hossain, CSE, ULAB	
Session Co-chair: Major Md Mokhlesur Rahman, CSE, MIST	
Keynote Speaker	**Keynote Topic**
Anind K. Dey University of Washington, USA	Using Everyday Routines for Understanding Health Behaviors

Keynote Session 2 Day-1, Thursday, 18th November 2021 Time: 1400-1500 (Virtual)	
Session Chair: Shahriar Khan, EEE, IUB	
Session Co-chair: Captain M S A Al Farook Shiblee, (BN), EECE, MIST	
Keynote Speaker	**Keynote Topic**
Kashem M. Muttaqi University of Wollongong, Australia	Energy Technologies for Future Grids

Keynote Session 3 Day-1, Thursday, 18th November 2021 Time: 1400-1500 (Virtual)	
Session Chair: Kaushik Dev, CSE, CUET	
Session Co-chair: Major Maruf Hasan, BME, MIST	
Keynote Speaker	**Keynote Topic**
Syoji Kobashi University of Hyogo, Japan	Medical image analysis with artificial intelligence

Technical Session 1A
Day-1, Thursday, 18th November 2021
Time: 1515-1700 (Virtual)

Session Title: Artificial Intelligence-1

Session Chair: A.K.M Ashikur Rahman, CSE, BUET

Session Co-chair: Lieutenant Colonel Muhammad Nazrul Islam, CSE, MIST

Serial No	Paper ID	Title of the paper
1	42	Diagnosis of Left Ventricular Hypertrophy from ECG Signals Based on CCS Methodology using SVM
2	46	Developing a Semantic Search Method for Retrieving Food Related Verses and Concepts from Holy Quran Using Ontology
3	246	Smart Meter Data Compression and Load Profile Classification Using UMAP and Random Forest
4	59	Recognition of Basic Handwritten Math Symbols Using Convolutional Neural Network with Data Augmentation
5	78	Non-invasive Deception Detection in Videos Using Machine Learning Techniques
6	102	A Convolutional Neural Network for End-to-End Structural Prediction and Lane Detection for Autonomous Vehicle

Technical Session 1B
Day-1, Thursday, 18th November 2021
Time: 1515-1700 (Virtual)

Session Title: Biomedical Engineering-1

Session Chair: Mohiuddin Ahmed, EEE, KUET

Session Co-chair: Md. Enamul Hoque, BME, MIST

Serial No	Paper ID	Title of the paper
1	40	Application of Hybrid Classifier for Multi-class Classification of MRI Brain Tumor Images
2	52	Classification and Performance Analysis of Cancer Microarrays Using Relevant Genes
3	111	AllerHybrid: A Hybrid System to Predict the Allergen Using K-mer and Physicochemical Properties
4	148	Non-linear Behaviour Investigation of Accumulation Mode Silicon Nanowires for Biosensing Application
5	164	Medical Specialty Classification from A Bangla Dataset: A Token Level Approach Using Several Machine and Deep Learning Algorithms
6	256	Design and Analysis of a DGS Based UWB Monopole Antenna for Brain Tumor Detection

Technical Session 1C
Day-1, Thursday, 18th November 2021
Time :1515-1700 (Virtual)
Session Title: Communication Technology-1

Session Chair: Md. Raqibul Mostafa, EEE, UIU

Session Co-chair: Brigadier General Shaikh Muhammad Rizwan Ali, CSE, MIST

Serial No	Paper ID	Title of the paper
1	22	Performance Evaluation of a Directional Beam Forming Circular Antenna for ISM Band Application
2	175	A Study on the Performance Analysis of Hybrid Diversity Combining Techniques for Rayleigh and Rician Fading Channels under AWGN
3	245	Performance Investigation of Multi-Constellation Global Network Satellite System (GNSS) Using Precise Point Positioning over Bangladesh
4	188	Comparative Analysis of Hybrid Diversity Schemes under AWGN and Impulsive Noise models for Rayleigh Fading Channels
5	203	Simulation of a Massive MIMO FSO System Under Atmospheric Turbulence
6	237	Performance Analysis Through Image and Video Transmission for Alamouti Space Time Block Coding Over Rayleigh and Rician Fading Channel

Technical Session 1D
Day-1, Thursday, 18th November 2021
Time :1515-1700 (Virtual)
Session Title: Multimedia and Signal Processing-1

Session Chair: Md Golam Mostafa, EECE, MIST

Session Co-chair: Group Captain Md Abdul Halim, EECE, MIST

Serial No	Paper ID	Title of the paper
1	32	MC-CDMA System for Multi-User Using Walsh Code on Rayleigh Fading Channel
2	44	Control Factor Based Two Step LMS Algorithm for Channel Tracking and Impulse Noise Mitigation
3	66	A Real-time End-to-End Bangladeshi License Plate Detection and Recognition System for All Situations Including Challenging Environmental Scenarios
4	129	A Self-Supervised Convolutional Neural Network Approach for Speech Enhancement
5	136	DURISE- Deblurring of Underwater Image Search Engine by CBIR
6	217	Improving Automatic Sign Language Translation with Image Binarisation and Deep Learning

Technical Session 1E
Day-1, Thursday, 18th November 2021
Time :1515-1700 (Virtual)
Session Title: Power System & Renewable Energy-1

Session Chair: Abdul Hasib Chowdhury, EEE, BUET

Session Co-chair: Md. Ali Azam Khan, EECE, MIST

Serial No	Paper ID	Title of the paper
1	28	Influence of Large-Scale Solar Power on Stability of East West Interconnector System of Bangladesh Power System
2	218	PID, LQR, and LQG Controllers to Maintain the Stability of an AVR System at Varied Model Parameters
3	75	An Efficient Adjustable Duty Control Based Current Limiter for Grid-Connected Solar PV System
4	201	Design of an Integral Sliding Mode Controller-Based on a Hybrid Reaching Law for DC Microgrids
5	126	Survey on Characteristics of Lightning Injuries in Remote Area of Bangladesh and Its Prevention

6	85	A Case Study on the Cost-effectiveness of Net Energy Metering of Residential Grid Connected Photovoltaic in the Context of Bangladesh

Technical Session 1F
Day-1, Thursday, 18th November 2021
Time: 1515-1700 (Virtual)
Session Title: Semiconductor Device & Circuits-1

Session Chair: Quazi Deen Mohd Khosru, EEE, BUET

Session Co-chair: Lieutenant Colonel Md. Tawfiq Amin, EECE, MIST

Serial No	Paper ID	Title of the paper
1	34	Diamond Shaped Dual Core High Sensitive Surface Plasmon Resonance Photonic Crystal Fiber Sensor in Visible to Near-Infrared Region
2	57	Ultra-Wide Refractive Index Range Photonic Crystal Fiber Based Sensor with Gallium Doped Zinc Oxide Coating
3	185	The Gold Coated Plasmonic Refractive Index Sensor with Low Propagation Loss
4	178	Theoretical Investigation for Growth of High Quality GaN on Epitaxial Graphene
5	181	Effects of Structural Variation for Improved Performance of a Vertical AlGaN/GaN Super junction HEMT
6	250	Performance Analysis of Graphene/Al$_x$Ga$_{1-x}$N Schottky Contact at Elevated Temperature

Keynote session 4
Day-1, Thursday, 18th November 2021
Time :1830-1930 (Virtual)

Session Chair: A. B. M. Alim Al Islam, CSE, BUET

Session Co-chair: Lieutenant Colonel Muhammad Nazrul Islam, CSE, MIST

Keynote Speaker	Keynote Topic
Henning Schulzrinne, Columbia University, NY, USA	The Internet of Things that Shouldn't be on the Internet

Technical Program

Day-2, Friday, 19th November 2021

<table>
<tr><td colspan="3">Industrial session 1
Day-2, Friday, 19th November 2021
Time: 0900-1100 (Hybrid)</td></tr>
<tr><td colspan="3">Venue: General Mustafiz Multipurpose Hall, (10th Floor), Tower-1</td></tr>
<tr><td colspan="3">Session Chair: Mustafa Habib Chowdhury, EEE, IUB</td></tr>
<tr><td colspan="3">Session Co-chair: Colonel Molla Md Zubaer, EECE, MIST</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Time</td><td>Name of the Industry</td><td>Name of the Speaker</td></tr>
<tr><td>0900-0930</td><td>Microsoft</td><td>Marcus Tee and Jannatul Popy</td></tr>
<tr><td>0930-1000</td><td>Grameenphone</td><td>S M Monirul Haque</td></tr>
<tr><td>1000-1030</td><td>Samsung</td><td>Raquibul Hasan and Sazzad Hissain Khan</td></tr>
<tr><td>1030-1100</td><td>Arduino</td><td>Massimo Sacchi and Imtiaz Farhan</td></tr>
</table>

<table>
<tr><td colspan="3">Technical Session-2A
Day-2, Friday, 19th November 2021
Time :1115-1300 (Virtual)</td></tr>
<tr><td colspan="3">Session Title: Artificial Intelligence-2</td></tr>
<tr><td colspan="3">Session Chair: Mohammed Moshiul Hoque, CSE, CUET</td></tr>
<tr><td colspan="3">Session Co-chair: Md. Mahbubur Rahman, CSE, MIST</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Serial No</td><td>Paper ID</td><td>Title of the paper</td></tr>
<tr><td>1</td><td>112</td><td>Best Eleven Forecast for Bangladesh Cricket Team with Machine Learning Techniques</td></tr>
<tr><td>2</td><td>138</td><td>Analysis of CNL-UNet for Efficient Biomedical Image Segmentation</td></tr>
<tr><td>3</td><td>162</td><td>Online Review based Sentiment Classification on Bangladesh Airline Service Using Supervised Learning</td></tr>
<tr><td>4</td><td>168</td><td>A Review on Predicting Autism Spectrum Disorder (ASD) Meltdown Using Machine Learning Algorithms</td></tr>
<tr><td>5</td><td>187</td><td>Speech Command Recognition System Using Deep Recurrent Neural Networks</td></tr>
<tr><td>6</td><td>106</td><td>Driving Range Prediction of Electric Vehicles: A Machine Learning Approach</td></tr>
</table>

Technical Session-2B
Day-2, Friday, 19th November 2021
Time :1115-1300 (Virtual)
Session Title: Multimedia and Signal Processing-2

Session Chair: A. B. M. Aowlad Hossain, ECE, KUET

Session Co-chair: Lieutenant Colonel Hussain Md Abu Nyeem, EECE, MIST

Serial No	Paper ID	Title of the paper
1	179	A Deep Learning Based Approach for Real-Time Driver Drowsiness Detection
2	210	Automatic Detection and Recognition of Object to Help Visually Impaired People while Visiting Liberation War Museum in Bangladesh
3	144	Cochleagram Based Speaker Identification Using Noise Adapted CNN
4	226	Automated Diabetic Retinopathy Detection Using Transfer Learning Models
5	213	Design of Inertial Measurement Unit in Attitude and Heading Reference System for Real-Time Maneuver Monitoring by Using Kalman Filter

Technical Session-2C
Day-2, Friday, 19th November 2021
Time :1115-1300 (Virtual)
Session Title: Semiconductor Device & Circuits-2

Session Chair: Ashraful Ghani Bhuiyan, EEE, KUET

Session Co-chair: Lieutenant Colonel Mustafizur Rahman, EECE, MIST

Serial No	Paper ID	Title of the paper
1	163	Design and Analysis of Miniature Type Impulse Based UWB Transmitter in 90 nm CMOS for Medical Application
2	11	Modified ECRL Adiabatic Logic for Ultra Low Power VLSI Applications
3	43	High-Efficiency Multi Quantum Well Blue LED Using 2D-SiC as an Active Material
4	70	Optimization and Sensitivity Analysis of a Single Core Low Loss PCF Sensor
5	79	Improving Operating Voltage and Frequency Ranges in a Microcontroller-based Low-cost Oscilloscope
6	98	Estimation of ZnO Nanoparticles Crystallite Parameters at Different Compression Temperatures

Technical Session-2D
Day-2, Friday, 19th November 2021
Time :1115-1300 (Virtual)
Session Title: Power System & Renewable Energy-2

Session Chair: Abdur Razzak, EEE, IUB

Session Co-chair: Captain M S A Al Farook Shiblee (BN), EECE, MIST

Serial No	Paper ID	Title of the paper
1	21	An Efficient Protection and Control Schemes for IBDG System with Resistive Superconducting Current Limiter
2	113	Demand Side Management in a Model House for Better Load Profile in the Perspective of Bangladesh
3	202	A Hybrid Reaching Law Based Double-Integral Sliding Mode Controller Design to Mitigate SSR Effects in a DFIG-Based Wind Farm
4	211	Effect of Electric Vehicle Fast Charging Station on Residential Distribution Network in Bangladesh
5	253	Design of I-V Scanner to Analyze the Effects of Partial Shading due to Soiling and Bird-dropping on PV Panels
6	95	Design of a 7.5 MVA Automated Substation with Fault Analysis Using ETAP Software

Technical Session-2E
Day-2, Friday, 19th November 2021
Time :1115-1300 (Virtual)
Session Title: Power Electronics and Drives-1

Session Chair: Tareq Aziz, EEE, AUST

Session Co-chair: Fahim Abid, EEE, IUT

Serial No	Paper ID	Title of the paper
1	47	Design of Rotor for Single-Phase Induction Motor to Improve Startability in Refrigerator Application
2	53	Design and Implementation of IGBT Based Single Phase Multi converter for Industrial Load Control
3	116	A Universal Energy Harvesting System for Ultra-Low Power Management and IoT Applications
4	184	A Single Stage Off-board EV Charger Based on CUK Topology
5	189	An Efficient Switched-Capacitor Based Single DC Source Inverter with Selective Harmonic Elimination
6	249	Design and Analysis of Symmetric and Asymmetric Type Cascaded H-Bridge Multi-Level Inverters

	Technical Session-2F
	Day-2, Friday, 19th November 2021
	Time :1115-1300 (Virtual)
	Session Title: Artificial Intelligence-3

Session Chair: Muhammad Aminul Haque Akhand, CSE, KUET

Session Co-chair: M. Akhtaruzzaman, CSE, MIST

Serial No	Paper ID	Title of the paper
1	192	A Case Study on Risk Prediction of Heart Failure Patients Using Random Survival Forest
2	208	Artificial Intelligence Based Real-Time Attendance System Using Face Recognition
3	230	A Prototype of Multi-Functional Rescue Robot Using Wireless Communication
4	225	Performance Analysis of LSTMs and Fbprophet Models for Short Term Load Forecasting
5	229	Design of CanSat for Environmental Monitoring and Object Detection

Keynote session 5
Day-2, Friday, 19th November 2021
Time: 1400-1500 (Virtual)

Session Chair: Habib Kabir, EEE, IUT

Session Co-chair: Brigadier General Md Humayun Kabir Bhuiyan, ME, MIST

Keynote Speaker	Keynote Topic
Marco Liserre University of Kiel, Germany	Unlocking the hidden capacity of the electrical grid through power electronics

Keynote session 6
Day-2, Friday, 19th November 2021
Time: 1515-1615 (Virtual)

Session Chair: MMA Hashem, CSE, KUET

Session Co-chair: Major Md Abdul Wahed, EECE, MIST

Keynote Speaker	Keynote Topic
Ahmet Murat Tekalp Koç University, Turkey	Recent Advances in Learned Image and Video Compression

Keynote session 7 Day-2, Friday, 19th November 2021 Time: 1630-1730 (Virtual)	
Session Chair: Muhammad Abdul Goffar Khan, EEE, RUET	
Session Co-chair: Commander K M Tanveer Anwar, EECE, MIST	
Frede Blaabjerg Aalborg University, Denmark	Power Electronics Technology - Quo Vadis

Industrial session 2 Day-2, Friday, 19th November 2021 Time: 1745-1930 (Virtual)		
Session Chair: Kazi Abu Taher, ICT, BUP		
Session Co-chair: Major Md. Fazla Elahi, BME, MIST		
Time	**Name of the Industry**	**Name of the speaker**
1745-1845	Cumulus Neuro	Laura M. Rueda-Delgado and Md Nurul Islam
1845-1930	Walton	

Technical Program

Day-3, Saturday, 20th November 2021

<table>
<tr><td colspan="3" align="center">Special Session 3A
Day-3, Saturday, 20th November 2021
Time: 0900-1130 (Virtual)</td></tr>
<tr><td colspan="3" align="center">Session Title
Imaging and Next Generation Networks for Smart Applications (iNGN4SmartApp)-1
 </td></tr>
<tr><td colspan="3">Session Chair: Brigadier General A K M Nazrul Islam, EECE, MIST</td></tr>
<tr><td colspan="3">Session Co-chair: Major Md Aminul Islam, EECE, MIST</td></tr>
<tr><td colspan="3"> </td></tr>
<tr><th align="center">Serial No</th><th align="center">Paper ID</th><th align="center">Title of the paper</th></tr>
<tr><td align="center">1</td><td align="center">35</td><td>A Deep CNN Based Kaggle Contest Winning Model to Recognize Real-Time Facial Expression</td></tr>
<tr><td align="center">2</td><td align="center">139</td><td>Comparison of Condition Numbers and Ranks of the MIMO Channel at 77 GHz Carrier Frequency</td></tr>
<tr><td align="center">3</td><td align="center">153</td><td>Optimization of Reconfigurable Intelligent Surface for M2M Communications over Cellular Networks</td></tr>
<tr><td align="center">4</td><td align="center">215</td><td>Multimodal Decision Fusion of EEG and fNIRS Signals</td></tr>
<tr><td align="center">5</td><td align="center">216</td><td>A Novel Authentication Mechanism for Securing Underwater Wireless Sensors from Sybil Attack</td></tr>
<tr><td align="center">6</td><td align="center">261</td><td>Data-driven Embedding with Pixel Repetition for High Capacity Reversible Data Hiding</td></tr>
</table>

<table>
<tr><td colspan="3" align="center">Special Session 3B
Day-3, Saturday, 20th November 2021
Time :0900-1130(Virtual)</td></tr>
<tr><td colspan="3" align="center">Session Title
Imaging and Next Generation Networks for Smart Applications (iNGN4SmartApp)-2
 </td></tr>
<tr><td colspan="3">Session Chair: M Shamim Kaiser, IIT, JU</td></tr>
<tr><td colspan="3">Session Co-chair: Nusrat Sharmin, CSE, MIST</td></tr>
<tr><td colspan="3"> </td></tr>
<tr><th align="center">Serial No</th><th align="center">Paper ID</th><th align="center">Title of the paper</th></tr>
<tr><td align="center">1</td><td align="center">36</td><td>Cardiac Arrhythmia Diagnosis Based on Features Extraction and Convolutional Neural Network from ECG Signals</td></tr>
<tr><td align="center">2</td><td align="center">99</td><td>Bangla-ExtraSum: Comparative Analysis of Different Methods in Automated Extractive Bengali Text Summarization</td></tr>
</table>

3	135	A Deep CNN Based Kaggle Contest Winning Model to Recognize Real-Time Facial Expression
4	140	Revisiting Deep Learning Models for Road Lane Detection
5	142	Finding Efficient Machine Learning Model for Hand Gesture Classification Using EMG Data
6	228	A Framework for Eye-Based Human Machine Interface

Special Session 3C
Day-3, Saturday, 20th November 2021
Time :0900-1130 (Virtual)

Session Title
Imaging and Next Generation Networks for Smart Applications (iNGN4SmartApp)-3

Session Chair: Abu Yousuf, IIT, JU

Session Co-chair: Colonel Shajahan Majib, CSE, MIST

Serial No	Paper ID	Title of the paper
1	50	Chaotic Singer Grasshopper Optimization Algorithm for Solving Combined Economic and Emission Dispatch
2	54	An Adaptive System for Detecting Driving Abnormality of Individual Drivers Using Gaussian Mixture Model
3	145	Estimating Traffic Density on Roads Using Convolutional Neural Network with Batch Normalization
4	149	Developing a Machine Learning Based Support System for Mitigating the Suppression Against Women and Children
5	152	A Deep Ensemble Approach for Recognition of Papaya Diseases Using Efficient Net Models
6	232	Performance Analysis of Initialization Algorithms of Deep Neural Network Based Coordinated Beamforming System for mm Wave

Special Session 3D
Day-3, Saturday, 20th November 2021
Time: 0900-1130 (Virtual)

Session Title
Imaging and Next Generation Networks for Smart Applications (iNGN4SmartApp)-4

Session Chair: Shamim Al Mamun, IIT, JU

Session Co-chair: Lieutenant Colonel Hussain Md Abu Nyeem, EECE, MIST

Serial No	Paper ID	Title of the paper
1	09	Evaluation of DBSCAN Algorithm on Different Programming Languages: An Exploratory Study
2	107	Impact of Trace-Based Mobility Models on the Energy Consumption of Delay-Tolerant Routing Protocols
3	118	HDM-Chain: A Secure Blockchain-based Healthcare Data Management Framework to Ensure Privacy and Security in the Health Unit
4	120	Integrating Cloud Computing in E-healthcare: System Design, Implementation and Significance in Context of Developing Countries
5	200	Interpreting and Comparing Convolutional Neural Networks: A Quantitative Approach
6	259	Functional Modification of Advanced Encryption Standard Algorithm by Perturbing the Diffusion and Confusion Properties

Technical Session 3E
Day-3, Saturday, 20th November 2021
Time: 0900-1130 (Virtual)
Session Title: Computing and Communication-1

Session Chair: Mohammed Hossam-E-Haider, EECE, MIST

Session Co-chair: Md Soyaeb Hasan, EECE, MIST

Serial No	Paper ID	Title of the paper
1	165	Design and Construction of Biogas Plant from Human Excreta at Remote Island of Bangladesh and Its Socio-Environmental Benefits
2	55	Analysis of a Hexagonal Lattice Photonic Crystal Fiber Biosensor Based on Surface Plasmon Resonance
3	96	IoT Based Smart Waste Monitoring and Management System
4	103	The Role of IoT in Digitalizing Mining Sector of Bangladesh
5	141	An IoT-based System for Air Pollution Data Analysis and Visualization
6	242	Thermal Simulation of 3D high Power GaN HEMT with a Low-Cost Technique to Reduce Junction Temperature due to Self-Heating

Keynote Session 8
Day-3, Saturday, 20th November 2021
Time: 1145-1245 (Virtual)

Session Chair: Md. Ali Azam Khan, EEE, MIST

Session Co-chair: Mubdiul Islam Rizu, EECE, MIST

Keynote Speaker	Keynote Topic
Ranjan Gangopadhyay LNM Institute of Information Technology, India	Multi-perspectives of New and Next Generation Radio

Keynote Session 9
Day-3, Saturday, 20th November 2021
Time: 1145-1245 (Virtual)

Session Chair: Md Mahbubur Rahman, CSE, MIST

Session Co-chair: Asadur Rahman, BME, MIST

Keynote Speaker	Keynote Topic
Anirudh Agarwal LNM Institute of Information Technology, India	UAV Relaying for Optimal B5G Cooperative Communication

Tutorial Session 1
Day-3, Saturday, 20th November 2021
Time: 1145-1315 (Virtual)

Industry Name	Name of the Speaker	Tutorial Topic
Code 19	Ms Khadija Akhter	Advanced Arduino IoT board hands-on tutorial session