

2021 5th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT 2021)

**Dhaka, Bangladesh
18 – 20 November 2021**



**IEEE Catalog Number: CFP2181X-POD
ISBN: 978-1-6654-9523-3**

**Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2181X-POD
ISBN (Print-On-Demand):	978-1-6654-9523-3
ISBN (Online):	978-1-6654-9522-6

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

A CONVOLUTIONAL NEURAL NETWORK FOR END TO END STRUCTURAL PREDICTION AND LANE DETECTION FOR AUTONOMOUS VEHICLE	1
<i>Md. Rashidul Islam; Taushif Ahmed Siddique; Md. Intiazul Hoque Sakib; Shafayat Hossain</i>	
THE ROLE OF IOT IN DIGITALIZING MINING SECTOR OF BANGLADESH	7
<i>Md Abdur Rob; Sagar A. S. M. Sharifuzzaman</i>	
DRIVING RANGE PREDICTION OF ELECTRIC VEHICLES: A MACHINE LEARNING APPROACH	13
<i>Shahid A. Hasib; Dip K. Saha; S. Islam; Mahib Tanvir; Md. Shahinur Alam</i>	
IMPACT OF TRACE-BASED MOBILITY MODELS ON THE ENERGY CONSUMPTION OF DELAY-TOLERANT ROUTING PROTOCOLS	19
<i>Md. Khalid Mahbub Khan; Muhammad Sajjadur Rahim; Abu Zafor Md. Touhidul Islam</i>	
MODIFIED EURL ADIABATIC LOGIC FOR ULTRA LOW POWER VLSI APPLICATIONS	25
<i>Mohammad Redwan Islam; Takibul Islam Sabbir; Nafiul Islam Ananta; Saroar Jaman Badhon; Satyendra N. Biswas</i>	
ALLERHYBRID: A HYBRID SYSTEM TO PREDICT THE ALLERGEN USING K-MER AND PHYSICOCHEMICAL PROPERTIES	30
<i>Md Ruman Islam; Md Abul Kashem; Limon Mia</i>	
BEST ELEVEN FORECAST FOR BANGLADESH CRICKET TEAM WITH MACHINE LEARNING TECHNIQUES	36
<i>Md. Kawsher Mahbub; Md. Abdul Mozid Miah; Sikder Md. Saiful Islam; Sadia Sorna; Sajjad Hossain; Milon Biswas</i>	
DEMAND SIDE MANAGEMENT IN A MODEL HOUSE FOR BETTER LOAD PROFILE IN THE PERSPECTIVE OF BANGLADESH	42
<i>Muhammad Azharul Islam; Sadiqul Alam Saimon; Md. Ejajul Hoque Chowdhury; Sk. Md. Golam Mostafa; Md. Abdullah Al Masud; Md. Shaiful Alam</i>	
A UNIVERSAL ENERGY HARVESTING SYSTEM FOR ULTRA-LOW POWER MANAGEMENT AND IOT APPLICATIONS	47
<i>Arnob Barua; Gobinda Pada Bhadra; M. Salauddin Rasel</i>	
HDM-CHAIN: A SECURE BLOCKCHAIN-BASED HEALTHCARE DATA MANAGEMENT FRAMEWORK TO ENSURE PRIVACY AND SECURITY IN THE HEALTH UNIT	52
<i>Md. Jobaer Hossain; Md. Anwar Hussen Wadud; Md. Alamin</i>	
INTEGRATING CLOUD COMPUTING IN E-HEALTHCARE: SYSTEM DESIGN, IMPLEMENTATION AND SIGNIFICANCE IN CONTEXT OF DEVELOPING COUNTRIES	58
<i>Md Ishak; Raiyan Rahman; Tahasin Mahmud</i>	
SURVEY ON CHARACTERISTICS OF LIGHTNING INJURIES IN REMOTE AREA OF BANGLADESH AND ITS PREVENTION	64
<i>Md Rosaidul Mawla; Nasrin Sultana; Msaaf Shiblee</i>	
A SELF-SUPERVISED CONVOLUTIONAL NEURAL NETWORK APPROACH FOR SPEECH ENHANCEMENT	70
<i>Nursadul Mamun; Sharmin Majumder; Khadija Akter</i>	
A DEEP CNN BASED KAGGLE CONTEST WINNING MODEL TO RECOGNIZE REAL-TIME FACIAL EXPRESSION	75
<i>Aziza Sultana; Samrat Kumar Dey; Md. Armanur Rahman</i>	
DURISE- DEBLURRING OF UNDERWATER IMAGE SEARCH ENGINE BY CBIR	80
<i>Sumaiya; Md Armanuzzaman</i>	
ANALYSIS OF CNL-UNET FOR EFFICIENT BIOMEDICAL IMAGE SEGMENTATION	85
<i>Rifat Ahommed; Md. Badiuzzaman Shuvo; M. M. A. Hashem</i>	
COMPARISON OF CONDITION NUMBERS AND RANKS OF THE MIMO CHANNEL AT 77 GHZ CARRIER FREQUENCY	91
<i>Syed Abdullah-Al-Nahid; Tafsir Ahmed Khan; Md. Abu Taseen; Silvia Tasnim; Taniza Marium; A. K. M. Baki</i>	
REVISITING DEEP LEARNING MODELS FOR ROAD LANE DETECTION	97
<i>Raiyan Ibne Hafiz; Toaha Bin Faruq; Hussain Nyeem</i>	
AN IOT-BASED SYSTEM FOR AIR POLLUTION DATA ANALYSIS AND VISUALIZATION	103
<i>Nayan Das; Asaduzzaman</i>	
FINDING EFFICIENT MACHINE LEARNING MODEL FOR HAND GESTURE CLASSIFICATION USING EMG DATA	109
<i>Adria Binte Habib; Faisal Bin Ashraf; Arif Shakil</i>	

COCHLEAGRAM BASED SPEAKER IDENTIFICATION USING NOISE ADAPTED CNN	115
<i>Sabbir Ahmed; Nursadul Mamun; Md Azad Hossain</i>	
ESTIMATING TRAFFIC DENSITY ON ROADS USING CONVOLUTIONAL NEURAL NETWORK WITH BATCH NORMALIZATION	120
<i>Mahmudul Hasan; Sumanda Das; Md. Nafis Tahmid Akhand</i>	
NON-LINEAR BEHAVIOUR INVESTIGATION OF ACCUMULATION MODE SILICON NANOWIRES FOR BIOSENSING APPLICATION	126
<i>Nawshad Ahmed Chowdhury; Molla Md Zubaer; Mohammad Mojammel Al Hakim</i>	
DEVELOPING A MACHINE LEARNING BASED SUPPORT SYSTEM FOR MITIGATING THE SUPPRESSION AGAINST WOMEN AND CHILDREN	131
<i>Md. Rokonzaman Reza; Fabiha Mukarrama Binte Mannan; Dhrubo Barua; Shafayetul Islam; Nafiz Imtiaz Khan; Sharifa Rania Mahmud</i>	
A DEEP ENSEMBLE APPROACH FOR RECOGNITION OF PAPAYA DISEASES USING EFFICIENTNET MODELS	137
<i>Rashidul Hasan Hridoy; Mosammat Rokeya Anwar Tuli</i>	
OPTIMIZATION OF RECONFIGURABLE INTELLIGENT SURFACE FOR M2M COMMUNICATIONS OVER CELLULAR NETWORKS	143
<i>Zarin Tarannum Azim; Shaba Altaf Shaon; Sree Krishna Das; Md Golam Mostafa</i>	
ONLINE REVIEW BASED SENTIMENT CLASSIFICATION ON BANGLADESH AIRLINE SERVICE USING SUPERVISED LEARNING	150
<i>Khan Md. Hasib; Nurul Akter Towhid; Md. Golam Rabiul Alam</i>	
DESIGN AND ANALYSIS OF MINIATURE TYPE IMPULSE BASED UWB TRANSMITTER IN 90 NM CMOS FOR MEDICAL APPLICATION	156
<i>Shanjida Akter; Pran Kanai Saha; Md. Tawfiq Amin</i>	
MEDICAL SPECIALTY CLASSIFICATION FROM A BANGLA DATASET: A TOKEN LEVEL APPROACH USING SEVERAL MACHINE AND DEEP LEARNING ALGORITHMS	162
<i>Adil Ahnaf; Tasnim Hossain Orpa; Mubdiul Islam Rizu</i>	
DESIGN AND CONSTRUCTION OF BIOGAS PLANT FROM HUMAN EXCRETA AT REMOTE ISLAND OF BANGLADESH AND ITS SOCIO-ENVIRONMENTAL BENEFITS	167
<i>Md Rosaidul Mawla; Nasrin Sultana; Msaaf Shiblee</i>	
A REVIEW ON PREDICTING AUTISM SPECTRUM DISORDER(ASD) MELTDOWN USING MACHINE LEARNING ALGORITHMS	173
<i>Sara Karim; Nazina Akter; Muhammed J. A. Patwary; Md. Rashedul Islam</i>	
A STUDY ON THE PERFORMANCE ANALYSIS OF HYBRID DIVERSITY COMBINING TECHNIQUES FOR RAYLEIGH AND RICIAN FADING CHANNELS UNDER AWGN	179
<i>Tasmiha Tahseen Faiza; Sharika Shirin Haq; Dibaloke Chanda; Md Abdul Halim</i>	
THEORETICAL INVESTIGATION FOR GROWTH OF HIGH QUALITY GAN ON EPITAXIAL GRAPHENE	185
<i>Maruf Ahsan Rifat; Md. Sharifuzzman Shakil; Ashrafal Ghani Bhuiyan; Akihiro Hashimoto</i>	
A DEEP LEARNING BASED APPROACH FOR REAL-TIME DRIVER DROWSINESS DETECTION	188
<i>Anis-Ul-Islam Rafiq; Atiqul Islam Chowdhury; Amit Raha Niloy; Nusrat Sharmin</i>	
EFFECTS OF STRUCTURAL VARIATION FOR IMPROVED PERFORMANCE OF A VERTICAL ALGAN/GAN SUPERJUNCTION HEMT	193
<i>Shahriar Sheikh; Arefin Ahamed Shuvo; Ashrafal Ghani Bhuiyan</i>	
A SINGLE STAGE OFF-BOARD EV CHARGER BASED ON CUK TOPOLOGY	198
<i>Nazmul Hasan; Md. Abu Saim</i>	
THE GOLD COATED PLASMONIC REFRACTIVE INDEX SENSOR WITH LOW PROPAGATION LOSS	204
<i>K. M. Mustafizur Rahman; Atik Yasir Rahman</i>	
SPEECH COMMAND RECOGNITION SYSTEM USING DEEP RECURRENT NEURAL NETWORKS	210
<i>Subrata Kumer Paul; Rakhi Rani Paul</i>	
COMPARATIVE ANALYSIS OF HYBRID DIVERSITY SCHEMES UNDER AWGN AND IMPULSIVE NOISE MODELS FOR RAYLEIGH FADING CHANNELS	216
<i>Md Abdul Halim; Sharika Shirin Haq; Tasmiha Tahseen Faiza; Dibaloke Chanda</i>	
AN EFFICIENT SWITCHED-CAPACITOR BASED SINGLE DC SOURCE INVERTER WITH SELECTIVE HARMONIC ELIMINATION	222
<i>Md Fazla Elahi; Md Aminul Islam</i>	
A CASE STUDY ON RISK PREDICTION IN HEART FAILURE PATIENTS USING RANDOM SURVIVAL FOREST	228
<i>Asif Newaz; Farhan Shahriyar Haq; Nadim Ahmed</i>	

INTERPRETING AND COMPARING CONVOLUTIONAL NEURAL NETWORKS: A QUANTITATIVE APPROACH	234
<i>Mohammad Mohaiminul Islam; Zahid Hassan Tushar</i>	
DESIGN OF AN INTEGRAL SLIDING MODE CONTROLLER-BASED ON A HYBRID REACHING LAW FOR DC MICROGRIDS	240
<i>Tithi Rani; Tushar Kanti Roy</i>	
A HYBRID REACHING LAW BASED DOUBLE-INTEGRAL SLIDING MODE CONTROLLER DESIGN TO MITIGATE SSR EFFECTS IN A DFIG-BASED WIND FARM	245
<i>Ahamad Sazzad Jewel; Tushar Kanti Roy</i>	
SIMULATION OF A MASSIVE MIMO FSO SYSTEM UNDER ATMOSPHERIC TURBULENCE	250
<i>Syed Md. Ahnaf Hasan; Saif Ahmed; A. K. M. Nazrul Islam</i>	
ARTIFICIAL INTELLIGENCE BASED REAL-TIME ATTENDANCE SYSTEM USING FACE RECOGNITION	256
<i>Khandaker Mohammad Mohi Uddin; Aditta Chakraborty; Md. Abdul Hadi; Md Ashraf Uddin; Samrat Kumar Dey</i>	
AN EFFICIENT PROTECTION AND CONTROL SCHEMES FOR IBDG SYSTEM WITH RESISTIVE SUPERCONDUCTING CURRENT LIMITER	262
<i>M. Shafiul Alam; Fahad Saleh Al-Ismail; Md Shafiullah; Md Shamimul Haque Choudhury; M. A. Abido</i>	
AUTOMATIC DETECTION AND RECOGNITION OF OBJECT TO HELP VISUALLY IMPAIRED PEOPLE WHILE VISITING LIBERATION WAR MUSEUM IN BANGLADESH	267
<i>Md. Mehedi Hasan; Khairul Alam; Md. Rejaul Alam; Md. Nahiduzzaman Sajeeb; Afsana Akther Ankhi; Rubaiya Hafiz</i>	
EFFECT OF ELECTRIC VEHICLE FAST CHARGING STATION ON RESIDENTIAL DISTRIBUTION NETWORK IN BANGLADESH	272
<i>Imtiaz Mahmud Nafi; Sanzana Tabassum; Quazi Rafid Hassan; Fahim Abid</i>	
DESIGN OF INERTIAL MEASUREMENT UNIT IN ATTITUDE AND HEADING REFERENCE SYSTEM FOR REAL-TIME MANEUVER MONITORING BY USING KALMAN FILTER	277
<i>Md Masiat Roushan Masrafee; Nabia Fardin; Ashfaque Ahmed; Md Hossam-E-Haider</i>	
MULTIMODAL DECISION FUSION OF EEG AND FNIRS SIGNALS	282
<i>Md. Hasin Raihan Rabbani; Sheikh Md. Rabiul Islam</i>	
A NOVEL AUTHENTICATION MECHANISM FOR SECURING UNDERWATER WIRELESS SENSORS FROM SYBIL ATTACK	288
<i>Al Amin Islam; Kazi Abu Taher</i>	
IMPROVING AUTOMATIC SIGN LANGUAGE TRANSLATION WITH IMAGE BINARISATION AND DEEP LEARNING	294
<i>Mahmudul Haque; Syma Afsha; Tareque Bashar Ovi; Hussain Nyeem</i>	
PID, LQR, AND LQG CONTROLLERS TO MAINTAIN THE STABILITY OF AN AVR SYSTEM AT VARIED MODEL PARAMETERS	299
<i>Md. Rayid Hasan Mojumder; Naruttam Kumar Roy</i>	
PERFORMANCE EVALUATION OF A DIRECTIONAL BEAM FORMING CIRCULAR ANTENNA FOR ISM BAND APPLICATION	305
<i>Md. Ershadul Haque; Tanvir Hossain; Asraful Islam; Salah Uddin; Amira Khanom</i>	
PERFORMANCE ANALYSIS OF LSTMS AND FBPROPHET MODELS FOR SHORT TERM LOAD FORECASTING	311
<i>Md. Arafat Alam; Sheikh Mehrab Hossain; Dibaloke Chanda; Md Ahsan Kabir</i>	
AUTOMATED DIABETIC RETINOPATHY DETECTION USING TRANSFER LEARNING MODELS	316
<i>Silvia Sanjana; Nazmus Shakib Shadin; Mayisha Farzana</i>	
A FRAMEWORK FOR EYE-BASED HUMAN MACHINE INTERFACE	322
<i>Shimul Bhowmick; Hossen Asiful Mustafa</i>	
DESIGN OF CANSAT FOR ENVIRONMENTAL MONITORING AND OBJECT DETECTION	328
<i>Mahmudul Hasan; Intesar Ihsas Rahman; Mohammed Hossam-E-Haider; A. A. M. Shah Sadman</i>	
A PROTOTYPE OF MULTI FUNCTIONAL RESCUE ROBOT USING WIRELESS COMMUNICATION	334
<i>Md. Nahidul Alam; Md. Saïam; Abdullah Al Mamun; Md. Musfiqur Rahman; Umma Hany</i>	
PERFORMANCE ANALYSIS OF INITIALIZATION ALGORITHMS OF DEEP NEURAL NETWORK BASED COORDINATED BEAMFORMING SYSTEM FOR MMWAVE	339
<i>Dibaloke Chanda; Ali-Emam-Al-Badi; A K M Nazrul Islam</i>	
PERFORMANCE ANALYSIS THROUGH IMAGE AND VIDEO TRANSMISSION FOR ALAMOUTI SPACE TIME BLOCK CODING OVER RAYLEIGH AND RICIAN FADING CHANNEL	345
<i>Dibaloke Chanda; Muhaiminul Islam Akash</i>	

THERMAL SIMULATION OF 3D HIGH POWER GAN HEMT WITH A LOW COST TECHNIQUE TO REDUCE JUNCTION TEMPERATURE DUE TO SELF HEATING	350
<i>Md. Tahmidul Alam; Md. Mahadi Hasan</i>	
PERFORMANCE INVESTIGATION OF MULTI-CONSTELLATION GLOBAL NETWORK SATELLITE SYSTEM (GNSS) USING PRECISE POINT POSITIONING OVER BANGLADESH	355
<i>Nishat Tasnim; Md Hossam-E-Haider; Md Lutfor Rahman</i>	
SMART METER DATA COMPRESSION AND LOAD PROFILE CLASSIFICATION USING UMAP AND RANDOM FOREST	360
<i>Mahmood Reaz Sunny; Md Ahsan Kabir; Roubaiath Islam; Saraban Nazifa</i>	
DESIGN AND ANALYSIS OF SYMMETRIC AND ASYMMETRIC TYPE CASCADED H-BRIDGE MULTILEVEL INVERTERS	366
<i>Sazzad Parvez Shuvo; Md Abu Salman; Md Aminul Islam</i>	
PERFORMANCE ANALYSIS OF GRAPHENE/AL_xGA_{1-x}N SCHOTTKY CONTACT AT ELEVATED TEMPERATURE	370
<i>Md. Soyaeb Hasan; Sunjida Sultana; Md. Rafiqul Islam</i>	
DESIGN OF I-V SCANNER TO ANALYZE THE EFFECTS OF PARTIAL SHADING DUE TO SOILING AND BIRD-DROPPING ON PV PANELS	374
<i>Mohammad Didarul Islam; Md Aminul Islam; M. Ryyan Khan</i>	
DESIGN AND ANALYSIS OF A DGS BASED UWB MONOPOLE ANTENNA FOR BRAIN TUMOR DETECTION	380
<i>Antora Hossain; Md Aminul Islam</i>	
FUNCTIONAL MODIFICATION OF ADVANCED ENCRYPTION STANDARD ALGORITHM BY PERTURBING THE DIFFUSION AND CONFUSION PROPERTIES	385
<i>Sharmin Sultana Sharmee; Sadia Nowshiny; Md. Mahbubur Rahmanz; Musfiqur Sazal</i>	
DATA-DRIVEN EMBEDDING WITH PIXEL REPETITION FOR HIGH CAPACITY REVERSIBLE DATA HIDING	391
<i>Mohammad Mahruf Mahdi; Hussain Nyeem</i>	
INFLUENCE OF LARGE SCALE SOLAR POWER ON STABILITY OF EAST WEST INTERCONNECTOR SYSTEM OF BANGLADESH POWER SYSTEM	395
<i>Pollen Barua; Ratul Barua; Muhammad Quamruzzaman; M. G. Rabbani</i>	
MC-CDMA SYSTEM FOR MULTI-USER USING WALSH CODE ON RAYLEIGH FADING CHANNEL	399
<i>H. M. Abidur Rahman; Foyjul Hasan; Md. Mizanul Hoque; Md. Mizanur Rahman; Md. Waliur Rahman</i>	
DIAMOND SHAPED DUAL CORE HIGH SENSITIVE SURFACE PLASMON RESONANCE PHOTONIC CRYSTAL FIBER SENSOR IN VISIBLE TO NEAR-INFRARED REGION	404
<i>K. M. Mustafizur Rahman; Ismat Shahriar Rakib; Arman Sharif</i>	
COMPARISON OF TOTAL ELECTRON CONTENT WITH INTERNATIONAL REFERENCE IONOSPHERE MODEL PREDICTIONS NEAR THE NORTHERN CREST OF EIA AT BANGLADESH	410
<i>Md Golam Mostafa; Christina Oikonomou; Haris Haralambous</i>	
CARDIAC ARRHYTHMIA DIAGNOSIS BASED ON FEATURES EXTRACTION AND CONVOLUTIONAL NEURAL NETWORK FROM ECG SIGNALS	416
<i>Shadhon Chandra Mohonta; Md. Firoj Ali</i>	
APPLICATION OF HYBRID CLASSIFIER FOR MULTI-CLASS CLASSIFICATION OF MRI BRAIN TUMOR IMAGES	421
<i>Gazi Jannatul Ferdous; Khaleda Akhter Sathi; Md. Azad Hossain</i>	
DIAGNOSIS OF LEFT VENTRICULAR HYPERTROPHY FROM ECG SIGNALS BASED ON CCS METHODOLOGY USING SVM	427
<i>Muhtasheem Ajwad Mahin; Mohiuddin Ahmad</i>	
HIGH-EFFICIENCY MULTI QUANTUM WELL BLUE LED USING 2D-SIC AS AN ACTIVE MATERIAL	433
<i>Md. Sherajul Islam; Md. Rayid Hasan Mojumder; Asif Hassan; Minhaz Uddin Sohag; Jeongwon Park</i>	
CONTROL FACTOR BASED TWO STEP LMS ALGORITHM FOR CHANNEL TRACKING AND IMPULSE NOISE MITIGATION	439
<i>Mithun Kumar; Rubaiyat Yasmin</i>	
DEVELOPING A SEMANTIC SEARCH METHOD FOR RETRIEVING FOOD RELATED VERSES AND CONCEPTS FROM HOLY QURAN USING ONTOLOGY	445
<i>Zinnia Sultana; Mohammed Mahmudur Rahman; Muhammad Nazim Uddin; Mohammed Arfat</i>	
DESIGN OF ROTOR FOR SINGLE-PHASE INDUCTION MOTOR TO IMPROVE STARTABILITY IN REFRIGERATOR APPLICATION	451
<i>Md. Rashedur Rahman; Md. Abu Taleb; Md. Sheikh Shadi; Meer Muzahedin Islam</i>	

CHAOTIC SINGER GRASSHOPPER OPTIMIZATION ALGORITHM FOR SOLVING COMBINED ECONOMIC AND EMISSION DISPATCH.....	456
<i>Md. Ashaduzzaman Niloy; Faisal Hossain Reevu; Abrar Yeaser; Rubaiyat Islam Shupty; Abrar Shahriar Pramanik</i>	
CLASSIFICATION AND PERFORMANCE ANALYSIS OF CANCER MICROARRAYS USING RELEVANT GENES.....	462
<i>Tasniah Mohiuddin; Shamima Naznin; Paramita Basak Upama</i>	
DESIGN AND IMPLEMENTATION OF IGBT BASED SINGLE PHASE MULTICONVERTER FOR INDUSTRIAL LOAD CONTROL.....	468
<i>Md. Mahmudul Hasan; Muhammad Abdul Goffar Khan; Md. Rafiul Islam; Md. Abdul Malek</i>	
AN ADAPTIVE SYSTEM FOR DETECTING DRIVING ABNORMALITY OF INDIVIDUAL DRIVERS USING GAUSSIAN MIXTURE MODEL	474
<i>Md. Nazmus Shakib; Md. Shamim; Md. Nazirul Hasan Shawon; Most. Kaniz Fatema Isha; M. M. A. Hashem; M. A. S. Kamal</i>	
ANALYSIS OF A HEXAGONAL LATTICE PHOTONIC CRYSTAL FIBER BIOSENSOR BASED ON SURFACE PLASMON RESONANCE.....	480
<i>Afra Anzum Erina; S. M. Abu Sufian Sunny; Alok Kumar Paul</i>	
ULTRA-WIDE REFRACTIVE INDEX RANGE PHOTONIC CRYSTAL FIBER BASED SENSOR WITH GALLIUM DOPED ZINC OXIDE COATING	484
<i>K. M. Mustafizur Rahman; Sajjadur Rahman</i>	
RECOGNITION OF BASIC HANDWRITTEN MATH SYMBOLS USING CONVOLUTIONAL NEURAL NETWORK WITH DATA AUGMENTATION	490
<i>Rafi Ibn Sultan; Md. Nahid Hasan; Mohammad Kasedullah</i>	
A REAL-TIME END-TO-END BANGLADESHI LICENSE PLATE DETECTION AND RECOGNITION SYSTEM FOR ALL SITUATIONS INCLUDING CHALLENGING ENVIRONMENTAL SCENARIOS.....	496
<i>Rashik Rahman; Abdul Fattah Rakib; Mariam Rahman; Tanjina Helaly; Tanmoy Sarkar Pias</i>	
OPTIMIZATION AND SENSITIVITY ANALYSIS OF A SINGLE CORE LOW LOSS PCF SENSOR.....	502
<i>Sanjida Sultana; Md. Faiyaz Bin Hassan; Hriteshwar Talukder; Shovasis Kumar Biswas</i>	
AN EFFICIENT ADJUSTABLE DUTY CONTROL BASED CURRENT LIMITER FOR GRID- CONNECTED SOLAR PV SYSTEM.....	508
<i>M. Shafiul Alam; Fahad Saleh Al-Ismail; Md. Shamimul Haque Choudhury; Md Shafiullah; S. M. G. Mostafa; M. A. Abido</i>	
NON-INVASIVE DECEPTION DETECTION IN VIDEOS USING MACHINE LEARNING TECHNIQUES.....	513
<i>Siam Islam; Popin Saha; Touhidul Chowdhury; Asif Sorowar; Raqeebir Rab</i>	
IMPROVING OPERATING VOLTAGE AND FREQUENCY RANGES IN A MICROCONTROLLER-BASED LOW-COST OSCILLOSCOPE.....	519
<i>Muhammad Navid Anjum Aadit; Sharadindu Gopal Kirtania; Md Zahurul Islam</i>	
A CASE STUDY ON THE COST-EFFECTIVENESS OF NET ENERGY METERING OF RESIDENTIAL GRID-CONNECTED PHOTOVOLTAIC IN THE CONTEXT OF BANGLADESH.....	525
<i>Fahad Raihan Saquib; Ankon Chakma; Atik Yasir Rahman; Fariha Hakim Sneha; M. S. A. A. F. Shiblee; Mahfuzar Rahman Riad</i>	
EVALUATION OF DBSCAN ALGORITHM ON DIFFERENT PROGRAMMING LANGUAGES: AN EXPLORATORY STUDY	531
<i>Md Amiruzzaman; Rashik Rahman; Md. Rajibul Islam; Rizal Mohd Nor</i>	
DESIGN OF A 7.5 MVA AUTOMATED SUBSTATION WITH FAULT ANALYSIS USING ETAP SOFTWARE	537
<i>Munazza Batul Ahona; Fariha Hakim Sneha; Atik Yasir Rahman; Atia Islam Ankhi; Md. Ali Azam Khan</i>	
IOT BASED SMART WASTE MONITORING AND MANAGEMENT SYSTEM	542
<i>Md. Sayed Imam; Md. Hossain Azad; Rubel Ahmed; Shafayat Hossain; Md. Iquebal Hossain Patwary; Md. Atikur Rahman Reyad</i>	
ESTIMATION OF ZNO NANOPARTICLES CRYSTALLITE PARAMETERS AT DIFFERENT COMPRESSION TEMPERATURES.....	546
<i>Zia Uddin; Md. Jaber Uddin; Mohammad Rafiqul Islam; M. Shafiul Alam; Tetsuo Soga; Md. Shamimul Haque Choudhury</i>	
BANGLA-EXTRASUM: COMPARATIVE ANALYSIS OF DIFFERENT METHODS IN AUTOMATED EXTRACTIVE BENGALI TEXT SUMMARIZATION	552
<i>Towhid Ahmed Foysal; Mohaimen Abid Mahadi; Md. Mahadi Hasan Nahid; Ayesha Tasnim</i>	
Author Index	