

# **TENCON 2021 – 2021 IEEE Region 10 Conference (TENCON 2021)**

**Auckland, New Zealand  
7-10 December 2021**

**Pages 1-503**



**IEEE Catalog Number: CFP21TEN-POD  
ISBN: 978-1-6654-9533-2**

**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:	CFP21TEN-POD
ISBN (Print-On-Demand):	978-1-6654-9533-2
ISBN (Online):	978-1-6654-9532-5
ISSN:	2159-3442

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# TABLE OF CONTENTS

<b>DETECTION OF CRICKETING ACTIVITIES USING DEEP LEARNING</b> .....	1
<i>Miftaul Mannan; Mahmudur Rahman; Enamul Haq Chowdhury; Ahnaf Shahriar; Shoeb Mohammad Shahriar</i>	
<b>NOVEL ALL-PASS SECTION FOR HIGH-PERFORMANCE SIGNAL PROCESSING USING CMOS DCCII</b> .....	7
<i>Taaha Nizam; V. Vijay; A. Srinivasulu; Dipankar Pal</i>	
<b>PREDICTORS OF ONLINE ACADEMIC SELF-CONCEPT OF COMPUTING STUDENTS</b> .....	11
<i>Annaliza E. Catacutan-Bangit; Rex P. Bringula; Saida Ulfa</i>	
<b>SALVIANET: A MACHINE LEARNING-BASED LEAF SIGNATURE PROFILING AND SPECIES IDENTIFICATION OF THE ENDEMIC GENUS SALVIA IN CENTRAL ASIA</b> .....	17
<i>Ronnie Concepcion; Obidjon Turdiboev; Christan Hail Mendigoria; Ferhat Celep; Elena Baikova; Maria Gemel Palconit; Ryan Rhay Vicerra; Argel Bandala; Elmer Dadios</i>	
<b>PATH-AGNOSTIC NETWORK MEASUREMENTS USING DISTRIBUTED SKETCHES</b> .....	23
<i>Radhika Sukapuram</i>	
<b>CONTENT-BASED FASHION RECOMMENDER SYSTEM USING UNSUPERVISED LEARNING</b> .....	29
<i>Marielet Guillermo; Jason Española; Robert Kerwin Billones; Ryan Rhay Vicerra; Argel Bandala; Edwin Sybingco; Elmer P. Dadios; Alexis Fillone</i>	
<b>A COMPARISON OF ELECTROMAGNETIC BEHAVIOUR IN CLASSICAL AND MUTUALLY COUPLED SWITCHED RELUCTANCE GENERATORS</b> .....	35
<i>Mahdi Heidarian; Adam P. R. Taylor; Timothy Anderson</i>	
<b>INVESTIGATION OF DIELECTRIC POCKET AND WORK FUNCTION ENGINEERING IN TRIPLE MATERIAL HETERO GATE STACK OXIDE DOUBLE GATE TFET FOR LOW POWER APPLICATIONS</b> .....	40
<i>Priyanka Karmakar; P. K. Sahu</i>	
<b>REAL-TIME TRAFFIC MONITORING AND TRAFFIC OFFENSE DETECTION USING YOLOV4 AND OPENCV DNN</b> .....	46
<i>Fahimul Hoque Shubho; Fahim Iftekhar; Ekhsa Hossain; Shahnewaz Siddique</i>	
<b>AN FPGA-BASED MIDDLEBOX WITH REMOTE DYNAMICALLY RECONFIGURABLE APPLICATION PLANE</b> .....	52
<i>Tze Hon Tan; Chia Yee Ooi; M. N. Marsono</i>	
<b>PERFORMANCE ANALYSIS OF THREE USER COOPERATIVE NOMA</b> .....	57
<i>Uddipak Bhuyan; Shilpa Rao</i>	
<b>THERMOELECTRIC GENERATION SYSTEM WITH MAXIMUM POWER POINT TRACKING ALGORITHM</b> .....	63
<i>Bryan E. Escoto; Gerard Ang</i>	
<b>MITIGATION TECHNIQUE AGAINST NETWORK ISOLATION ATTACK ON RPL IN 6LOWPAN NETWORK</b> .....	68
<i>Abhay Deep Seth; Santosh Biswas; Amit Kumar Dhar</i>	
<b>PERFORMANCE OF A NEW 17-LEVEL ASYMMETRICAL INVERTOR MODULE</b> .....	74
<i>Anushka Ponnethuparambil Vijayan; Adam Peter Roy Taylor</i>	
<b>A STUDY OF TOTAL VARIATION REGULARIZATION IN DIGRAPH SIGNAL DENOISING</b> .....	80
<i>Chien-cheng Tseng; Su-ling Lee</i>	
<b>NODE CLASSIFICATION USING GRAPH CONVOLUTIONAL NETWORK WITH DROPOUT REGULARIZATION</b> .....	84
<i>Bing-Yu Xiao; Chien-Cheng Tseng; Su-Ling Lee</i>	
<b>TOWARDS THE DEVELOPMENT OF A LOW-COST SOIL DRYING OVEN</b> .....	88
<i>Praneel Chand; Matt Foulkes; Ajay Kumar</i>	
<b>DETECTION AND IDENTIFICATION OF ABACA DISEASES USING A CONVOLUTIONAL NEURAL NETWORK CNN</b> .....	94
<i>Lyndon T. Buenconsejo; Noel B. Linsangan</i>	
<b>DEVELOPMENT OF AN ABACA FIBER AUTOMATED GRADING SYSTEM USING COMPUTER VISION AND DEEP CONVOLUTIONAL NEURAL NETWORK</b> .....	99
<i>Jonel Hong; Meo Vincent C. Caya</i>	
<b>STUDENT RISK ASSESSMENT: PREDICTING UNDERGRADUATE STUDENT GRADUATION PROBABILITY USING LOGISTIC REGRESSION, SVM, AND ANN</b> .....	105
<i>Darvy P. Ong; Jhoanna Rhodette I. Pedrasa</i>	
<b>ANALYSIS OF A VEHICLE PROPULSION SYSTEM USING CONTINUOUS TRACK LIMS ON STEEL PLATES</b> .....	111
<i>Mark Simpson; Adam P. R. Taylor</i>	
<b>IMPROVING THE PLUCKING POINT POSITION ESTIMATION IN A CLASSICAL GUITAR PERFORMANCE USING A NOVEL VIDEO-BASED APPROACH</b> .....	117
<i>Carl Timothy Tolentino; Franz De Leon</i>	
<b>DEVELOPMENT OF HIGH PERFORMANCE HARDWARE BY HIGH-LEVEL SYNTHESIS OF MEDIAN-BASED DYNAMIC BACKGROUND SUBTRACTION METHOD WITH MULTIPLE LINE BUFFERS</b> .....	123
<i>Kohei Shinyamada; Akira Yamawaki</i>	
<b>ASSISTING WHEELCHAIR: ASSIST W</b> .....	128
<i>Dileesha Ranaweera; Chanuka Athalage; Murthi Sri Virajamana; Chamoth Kaveesha; Dilshan De Silva; Hansi De Silva</i>	

<b>CLASSIFICATION OF BREAST CANCER USING USER-DEFINED WEIGHTED ENSEMBLE VOTING SCHEME .....</b>	<b>134</b>
<i>Ajay Kumar; Rama Sushil; Arvind Kumar Tiwari</i>	
<b>OMNIDIRECTIONAL BACKGROUND SCROLLING IN HIGH-LEVEL SYNTHESIS ORIENTED GAME PROGRAMING LIBRARY .....</b>	<b>140</b>
<i>Kilryong Lee; Akira Yamawaki</i>	
<b>MODULATION CHARACTERISTICS OF SIMULTANEOUS MULTI-CHANNEL OFDM TV SIGNAL CONVERSION SYSTEM.....</b>	<b>145</b>
<i>Tao Guo; Junji Murotani; Koji Kikushima</i>	
<b>MATHEMATICALLY MODELLING THE BRAIN RESPONSE TO AUDITORY STIMULUS.....</b>	<b>151</b>
<i>Thimothy Miles; Eva Ignatious; Sami Azam; Mirjam Jonkman; Friso De Boer</i>	
<b>MODELLING THE THERMAL EFFECTS OF TUMBLING ON CUBESATS EQUIPPED WITH HTS COILS.....</b>	<b>157</b>
<i>Thomas Berry; Jamal R. Olatunji; Chris Acheson</i>	
<b>ROS BASED HETEROGENEOUS MULTIPLE ROBOTS CONTROL USING HIGH LEVEL USER INSTRUCTIONS.....</b>	<b>163</b>
<i>U. U. Samantha Kumara Rajapaksha; Chandimal Jayawardena; Bruce A. Macdonald</i>	
<b>CONSIDERING METHODS OF MANAGING NOISES SUCH AS COUGHS AND FOOTSTEPS WHEN MEASURING LUNG SOUNDS IN REAL TIME .....</b>	<b>169</b>
<i>Tetsunori Suzuki; Osamu Sakata</i>	
<b>MODELLING OF A 1 T HIGH-TEMPERATURE SUPERCONDUCTING APPLIED FIELD MODULE FOR A MAGNETOPLASMA DYNAMIC THRUSTER.....</b>	<b>173</b>
<i>Jamal R. Olatunji; Nicholas M. Strickland; Max R. Goddard Winchester; Kiyoshi Kinefuchi; Daisuke Ichihara; Nicholas J. Long; Stuart C. Wimbush</i>	
<b>COMPARISON OF DIRECT AND LOCALIZATION-BASED METHODS FOR POSITION VERIFICATION USING DISTANCE MEASUREMENT.....</b>	<b>179</b>
<i>Junichi Naganawa</i>	
<b>A NEW MEMORY CONSISTENCY MODEL FOR REAL-TIME MULTICORE PROCESSORS .....</b>	<b>185</b>
<i>Aye Myat Mon; Kiyofumi Tanaka</i>	
<b>NON-CONTACT, RAPID AND ROBUST METHOD TO DETERMINE THE OPTIMAL EEG ELECTRODE POSITIONS USING OPTICAL MOTION TRACKING SYSTEM .....</b>	<b>191</b>
<i>M. Sougantika; James Kusuma Dewa Halim; Nurbaya Siti; Shaohui Foong; Hwee Lee Ng; Corrine Kang; Siti Maryam; Faith Chan</i>	
<b>HARDWARE REALIZATION OF SOLAR POWERED CAPACITOR START INDUCTION MOTOR WATER PUMP FED BY SEVEN LEVEL INVERTER WITH MINIMIZED SWITCH COUNT .....</b>	<b>197</b>
<i>T. Poompavai; M. Kowsalya</i>	
<b>AN IMPROVED LZW ALGORITHM FOR LARGE DATA SIZE AND LOW BITWIDTH PER CODE .....</b>	<b>203</b>
<i>Yi-Lin Tsai; Jian-Jiun Ding</i>	
<b>COMPUTER-AIDED RETINAL HAEMORRHAGE DETECTION AND SUPER-RESOLUTION IN DIABETIC RETINOPATHY DIGITAL FUNDUS IMAGES .....</b>	<b>209</b>
<i>Amritha Abdul Salam; Poulomi Pal; Manjunatha Mahadevappa</i>	
<b>AUTOMATED CLASSIFICATION OF EEG INTO MEDITATION AND NON-MEDITATION EPOCHS USING COMMON SPATIAL PATTERN, LINEAR DISCRIMINANT ANALYSIS, AND LSTM.....</b>	<b>215</b>
<i>Jerrin Thomas Panachakel; K. G. Pradeep; A. G. Ramakrishnan; Kanishka Sharma</i>	
<b>PROCESS MANAGEMENT FOR ADMISSION CONTROL TO ACCESS AVAILABLE RESOURCES FOR DELAY SENSITIVE SERVICE IN FOG-TO-CLOUD ARCHITECTURE.....</b>	<b>219</b>
<i>U. S. Premarathne</i>	
<b>R-PEAK DETECTION FROM ECG SIGNALS USING FRACTAL BASED MATHEMATICAL MORPHOLOGICAL OPERATORS.....</b>	<b>225</b>
<i>Deepankar Nankani; Bhagath Parabattina; Rashmi Dutta Baruah; Pradip K. Das</i>	
<b>CROSS-HEAD ATTENTIVE DEEP NEURAL NETWORK FOR ESTIMATING LEFT VENTRICULAR FUNCTIONAL PARAMETERS .....</b>	<b>231</b>
<i>Poulomi Pal; Amritha Abdul Salam; Manjunatha Mahadevappa</i>	
<b>PERFORMANCE OF UPLINK NOMA-MIMO SYSTEM WITH JOINT DPC-OSIC DETECTOR.....</b>	<b>237</b>
<i>Rahul Makkar; Venugopalachary Kotha; Neha Sharma; Nilesh Bankar; Divyang Rawal; Vijay Kumar Chakka</i>	
<b>SPEAKER LOCALIZATION IN SMARTPHONES USING ADAPTIVE EIGENVALUE DECOMPOSITION WITH NOISE REDUCTION .....</b>	<b>242</b>
<i>Jose Marie Mendoza; Franz De Leon</i>	
<b>PIGMENTNET: CHLOROPHYLL-B PREDICTION OF LACTUCA SATIVA LEAF UNDER HYBRID GENETIC ALGORITHM AND RECURRENT NEURAL NETWORK .....</b>	<b>248</b>
<i>Heinrick L. Aquino; Ronnie S. Concepcion; Ryan Rhay Vicerra; Christian Hail Mendigoria; Oliver John Alajas; Elmer P. Dadios; Joel Cuello</i>	
<b>IDENTIFYING ISSUES IN GEOTHERMAL ENERGY PRODUCTION FROM PETROLEUM FIELDS .....</b>	<b>254</b>
<i>Rohit Duggal; Ramesh Rayudu; Jim Hinkley; John Burnell; Simon Ward</i>	
<b>IMAGE COMPRESSION USING APPROXIMATE ADDITION .....</b>	<b>260</b>
<i>Raunaq Nayyar; Padmanabhan Balasubramanian; Douglas Leslie Maskell</i>	
<b>A BLOCKCHAIN-BASED SECURITY SCHEME FOR VEHICULAR AD HOC NETWORKS IN SMART CITIES.....</b>	<b>266</b>
<i>Xue Jun Li; Maode Ma; Yong Xing Yong</i>	
<b>INSECT DETECTION AND IDENTIFICATION USING YOLO ALGORITHMS ON SOYBEAN CROP.....</b>	<b>272</b>
<i>Shani Verma; Shrivishal Tripathi; Anurag Singh; Muneendra Ojha; Ravi R. Saxena</i>	

<b>A NOVEL DEEP LEARNING FRAMEWORK TO IDENTIFY FALSE DATA INJECTION ATTACK IN POWER SECTOR</b> .....	278
<i>Debottam Mukherjee; Samrat Chakraborty; Ramashis Banerjee; Joydeep Bhunia; Pabitra Kumar Guchhait</i>	
<b>EMOJI PREDICTION USING LSTM AND NAIVE BAYES</b> .....	284
<i>Ritwik Ranjan; Palak Yadav</i>	
<b>DETECTING CHANGES IN COGNITIVE LOAD THROUGH AUDIFIED EEG</b> .....	289
<i>Roderick Spender; T. Claire Davies; Shane D. Pinder</i>	
<b>SNS TOPICS COMPARISON ON COVID-19 IN INDIA, JAPAN, AND INDONESIA</b> .....	293
<i>Yukari Shirota; Takako Hashimoto; Basabi Chakraborty; Riri Fitri Sari</i>	
<b>COMPARISON OF STEP-DOWN CHARGE PUMP CONVERTERS AND SUPERCAPACITOR-ASSISTED LOW-DROPOUT (SCALDO) REGULATORS</b> .....	299
<i>Kasun Subasinghage; Kosala Gunawardane; Nihal Kularatna</i>	
<b>IMPROVED HANDSHAKING PROCEDURES FOR TRANSPORT LAYER SECURITY IN SOFTWARE DEFINED NETWORKS</b> .....	305
<i>Xue Jun Li; Maode Ma; Cho Wai Hlaing</i>	
<b>LESSON LEARNED AND FUTURE DESIGN OF IEC 61850 BASED DIGITAL BAY IN CENTRAL JAVA SUBSTATIONS</b> .....	311
<i>Eko Prasetyo; Rendie Ramadhan; Ibnu Kurniawan; Rousyan Faikar</i>	
<b>DESIGN OF A 3-STATE SWITCHING CELL CONVERTER USING HYBRID FUZZY PID AND H-INFINITY CONTROLLER</b> .....	317
<i>Nibedita Swain; Nivedita Pati; Babita Panda</i>	
<b>ATPG FOR INCOMPLETE TESTING OF SOC CONSIDERING BRIDGING FAULTS</b> .....	323
<i>Kunwer Mrityunjay Singh; Santosh Biswas; Jatindra Kumar Deka</i>	
<b>MULTIPLE DISTRIBUTED GENERATION ALLOCATION IN RADIAL DISTRIBUTION NETWORKS BY CONSIDERING LOSS REDUCTION AND CURTAILMENT</b> .....	329
<i>Krithapat Peanviboon; Thavatchai Tayjasanant</i>	
<b>VEHICLE RE-IDENTIFICATION IN SMART CITY TRANSPORTATION USING HYBRID SURVEILLANCE SYSTEMS</b> .....	335
<i>B. Ashutosh Holla; M. M. Manohara Pai; Ujjwal Verma; Radhika M. Pai</i>	
<b>NAMDATA: A WEB-APPLICATION FOR THE NETWORK ANALYSIS OF MICROBIOME DATA</b> .....	341
<i>Roberto Daniel Aguinaldo; Geoffrey Solano; Marc Jermaine Pontiveros; Marilen Parungao Balolong</i>	
<b>FEATURE SUBSET SELECTION USING GENETIC ALGORITHM WITH AGGRESSIVE MUTATION FOR CLASSIFICATION PROBLEM</b> .....	347
<i>Marc Jermaine Pontiveros; Geoffrey A. Solano; Joey Mark S. Diaz; Jaime D. L. Caro</i>	
<b>EXPERIMENTAL OBSERVATION OF CHARGED DROP COALESCENCE UNDER ELECTRIC FIELD</b> .....	353
<i>Wikanda Nantanawut; Boonchai Techaumnat; Nutthaphong Tanthanuch</i>	
<b>A CONTEXT-AWARE POI RECOMMENDATION</b> .....	357
<i>Tipajin Thaipisutikul; Ying-Nong Chen</i>	
<b>IMPROVING <math>\phi</math>-OTDR SIGNAL-TO-NOISE RATIO TO REDUCE AMBIGUITY IN INTRUSION DETECTION</b> .....	363
<i>M. S. Yusri; B. Faisal; M. F. Ismail; N. D. Nordin; N. L. Saleh; A. Ismail; F. Abdullah; M. Z. Jamaludin; A. H. Sulaiman</i>	
<b>AMBISONICS AND SONIC SIMULATION IN VIRTUAL REALITY</b> .....	369
<i>Yulia Yagunova; Mark A. Poletti; Paul D. Teal</i>	
<b>COST-SENSITIVE BOOTSTRAPPED WEIGHTED RANDOM FOREST FOR DOS ATTACK DETECTION IN WIRELESS SENSOR NETWORKS</b> .....	375
<i>Deepa Krishnan; Swapnil Singh</i>	
<b>SYNTHETIC IMAGES GENERATION USING CONDITIONAL GENERATIVE ADVERSARIAL NETWORK FOR SKIN CANCER CLASSIFICATION</b> .....	381
<i>Ranpreet Kaur; Hamid Gholamhosseini; Roopak Sinha</i>	
<b>AGRO-MATE: A VIRTUAL ASSISTANT TO MAXIMIZE CROP YIELD IN AGRICULTURE SECTOR</b> .....	387
<i>S. Dayalini; M. Sathana; P. R. N. Navodya; R. W. A. I. M. N. Weerakkodi; Anuradha Jayakody; Narmada Gamage</i>	
<b>SYNTHESIS OF LOCALIZED FLOODING DISASTER SCENES USING CONDITIONAL GENERATIVE ADVERSARIAL NETWORK</b> .....	393
<i>Keigo Hama; Prarinya Siritanawan; Kotani Kazunori</i>	
<b>A FAULT DIAGNOSIS TECHNIQUE OF SMGFS IN <math>\mathbb{Z}/N\mathbb{Z}</math>-CNOT BASED REVERSIBLE CIRCUITS</b> .....	399
<i>Mousum Handique; Jantindra Kumar Deka; Santosh Biswas</i>	
<b>DEEP LEARNING-BASED SURVEILLANCE SYSTEM FOR COCONUT DISEASE AND PEST INFESTATION IDENTIFICATION</b> .....	405
<i>S. P. Vidhanaarachchi; P. K. G. C. Akalanka; R. P. T. I. Gunasekara; H. M. U. D. Rajapaksha; N. S. Aratchige; Dilani Lunugalage; Janaka L. Wijekoon</i>	
<b>DWT BASED TRANSFORMED DOMAIN FEATURE EXTRACTION APPROACH FOR EPILEPTIC SEIZURE DETECTION</b> .....	411
<i>Mahajabin Mostafa; Mohtasim Abrar Samin; Nabila Bintey Hassan; Saiara Zerine Nibras; Samir Rahman; Mohammed Abid Abrar; Mohammad Zavid Parvez</i>	
<b>CONVOLUTIONAL NEURAL NETWORK OR VISION TRANSFORMER? BENCHMARKING VARIOUS MACHINE LEARNING MODELS FOR DISTRACTED DRIVER DETECTION</b> .....	417
<i>Hong Vin Koay; Joon Huang Chuah; Chee-Onn Chow</i>	
<b>ROBUST STATE FEEDBACK CONTROL OF ELECTRIC HEATING FURNACE USING A NEW DISTURBANCE OBSERVER</b> .....	423
<i>Kamal Rsetam; Mohammad Al-Rawi; Zhenwei Cao</i>	

<b>OVERWHELMED BY FEAR: EMOTION ANALYSIS OF COVID-19 VACCINATION TWEETS</b> .....	429
<i>Sanghyub John Lee; Shohil Kishore; Jongyoon Lim; Leo Paas; Ho Seok Ahn</i>	
<b>FULL HARDWARE IMPLEMENTATION OF FREERTOS-BASED REAL-TIME SYSTEMS</b> .....	435
<i>Wakako Nakano; Yukino Shinohara; Nagisa Ishiura</i>	
<b>HYPERSPECTRAL IMAGE CLASSIFICATION BASED ON MULTI-STAGE VISION TRANSFORMER WITH STACKED SAMPLES</b> .....	441
<i>Xiaoyue Chen; Sei-Ichiro Kamata; Weilian Zhou</i>	
<b>DEEP SECURITY SCANNER FOR INDUSTRIAL CONTROL SYSTEMS</b> .....	447
<i>Lagineni Mahendra; R. K. Senthil Kumar; Reddi Hareesh; B. S. Bindhumadhava; Rajesh Kalluri</i>	
<b>A METHOD OF SERVICE FUNCTION CHAIN CONFIGURATION TO MINIMIZE COMPUTING AND NETWORK RESOURCES FOR VNF FAILURES</b> .....	453
<i>Akihiko Taniguchi; Norihiko Shinomiya</i>	
<b>A DEFENSE METHOD AGAINST FACIAL ADVERSARIAL ATTACKS</b> .....	459
<i>Chiranjeevi Sadu; Pradip K. Das</i>	
<b>ADDING A COMPUTATIONALLY-TRACTABLE PROBABILISTIC DIMENSION TO META-HEURISTIC-BASED MICROGRID SIZING</b> .....	464
<i>Soheil Mohseni; Alan C. Brent; Daniel Burmester; Will N. Browne; Scott Kelly</i>	
<b>DIGITISATION OF CONVENTIONAL WATER METERS USING AUTOMATED NUMBER RECOGNITION</b> .....	470
<i>Xue Jun Li; Yi Gao</i>	
<b>FLOOD MAGNITUDE ASSESSMENT FROM UAV AERIAL VIDEOS BASED ON IMAGE SEGMENTATION AND SIMILARITY</b> .....	476
<i>Ananya Sharma; Ujjwal Verma</i>	
<b>ON THE ESTIMATION OF DIFFICULTY IN EMOTION REGULATION USING SPOKEN DIALOGUE</b> .....	482
<i>Rohan Kumar Gupta; Rohit Sinha</i>	
<b>DESIGN AND OPTIMIZATION OF PIEZOELECTRIC TRANSDUCERS</b> .....	488
<i>Liu Liu; Waleed Abdulla</i>	
<b>STRESS DETECTION USING CNN FUSION</b> .....	492
<i>K. Radhika; V Ramana Murthy Oruganti</i>	
<b>IN SITU INDIRECT MEASUREMENT OF NITRATE CONCENTRATION IN OUTDOOR TILAPIA FISHPOND BASED ON PHYSICO-LIMNOLOGICAL SENSORS</b> .....	498
<i>Christan Hail Mendigoria; Ronnie Concepcion; Argel Bandala; Elmer Dadios; Oliver John Alajas; Heinrick Aquino; Ryan Rhay Vicerra; Joel Cuello</i>	
<b>RECOGNITION OF ISOLATED CHARACTERS ACROSS DIFFERENT INPUT INTERFACES USING 2D DCNN</b> .....	504
<i>Kuldeep Singh Yadav; K. Anish Monsley; Saharul Alom Barlaskar; Naseem Ahmad; Rabul Hussain Laskar; M. K. Bhuyan</i>	
<b>DECISION LEVEL FUSION FOR DIAGNOSING AUTISM SPECTRUM DISORDER</b> .....	510
<i>K. Devika; V Ramana Murthy Oruganti</i>	
<b>MONOPHONIC AUDIO-BASED AUTOMATIC ACOUSTIC GUITAR TABLATURE TRANSCRIPTION SYSTEM WITH LEGATO IDENTIFICATION</b> .....	516
<i>Moirra Kelly Boloyos; Thea Kaylee Libunao; Jerome Masilungan; Franz De Leon; Crisron Rudolf Lucas; Carl Timothy Tolentino</i>	
<b>TEXT-BASED GENDER CLASSIFICATION OF TWITTER DATA USING NAIVE BAYES AND SVM ALGORITHM</b> .....	522
<i>Angelic Angeles; Maria Nikki Quintos; Manolito Octaviano; Rodolfo Raga</i>	
<b>INTELLIGENT DIGITALIZATION OF THE SINHALA FORM TEMPLATES</b> .....	527
<i>Kevin Gomez; Malidi Jinadasa; Vidula Dantanarayana; Sathira Dissanayake; Nuwan Kodagoda; Thilmi Kuruppu</i>	
<b>PRECISE EYE CENTER LOCALIZATION IN A PRACTICAL ENVIRONMENT</b> .....	533
<i>Naseem Ahmad; Rabul Hussain Laskar; Ashraf Hossain; Manir Ahmed</i>	
<b>SMART SNAKE IDENTIFICATION SYSTEM USING VIDEO PROCESSING</b> .....	539
<i>P. D. R. Deshan; D. V. H. Pabasara; N. A. Yapa; D. S. R. C. V. Perera; Dilani Lunugalage; Janaka L. Wijekoon</i>	
<b>DFCATCHER: A DEEP CNN MODEL TO IDENTIFY DEEPFAKE FACE IMAGES</b> .....	545
<i>Arpita Dhar; Likhan Biswas; Prima Achariec; Shemonti Ahmed; Abida Sultana; Dewan Ziaul Karim; Mohammad Zavid Parvez</i>	
<b>ESTIMATION AND TONAL ANALYSIS OF THE ANGLE OF ATTACK IN A CLASSICAL GUITAR PERFORMANCE</b> .....	551
<i>Carl Timothy Tolentino; Franz De Leon</i>	
<b>CONTEXTUALIZING TYPES OF FILIPINO COLLECTIVE SUPPORT DURING THE #COVID19 LOCKDOWN</b> .....	556
<i>Brenda Benosa; Christine Diane Ramos</i>	
<b>IMPACT OF BRUTE FORCE BASED FALSE DATA INJECTION ATTACK ON DISTRIBUTION SYSTEM STATE ESTIMATION</b> .....	562
<i>Poornachandratejasvi Laxman Bhattar; Naran M. Pindoriya; Anurag Sharma</i>	
<b>A NOVEL INITIALIZATION APPROACH FOR FUZZY C-MEANS ALGORITHM USING UNSUPERVISED RANDOM FOREST METHOD</b> .....	568
<i>Bhavikkumar Tandel; Ashish Phophalia</i>	
<b>VENTRICULAR ARRHYTHMIA CLASSIFICATION AND INTERPRETATION USING RESIDUAL NEURAL NETWORK WITH GUIDED BACKPROPAGATION</b> .....	574
<i>Deepankar Nankani; Rashmi Dutta Baruah</i>	
<b>IMAGE ENHANCEMENT ALGORITHM FOR REMOTE SURVEILLANCE USING LOW COST CAMERAS IN UNEVENLY ILLUMINATED ENVIRONMENTS</b> .....	580
<i>Tharindu Dharmasena; Pradeep K. W. Abeygunawardhana</i>	

<b>CONVOLUTIONAL NEURAL NETWORK-BASED MODEL TO DETECT COVID-19 USING CHEST X-RAY IMAGES</b> .....	586
<i>Ritocheta Roy; M. V. Chilukuri</i>	
<b>GRAPH EIGENVALUE BASED STRUCTURAL METHOD TOWARDS PHONETIC BOUNDARY DETECTION</b> .....	591
<i>Parabattina Bhagath; Pradip K. Das</i>	
<b>CONCEPT-TO-IMPLEMENTATION OF NEW THRESHOLD-BASED FALL DETECTION SENSOR</b> .....	597
<i>Kaleb Clarke; Thilanga Ariyaratna; Sarla Kumari</i>	
<b>DEVELOPMENT OF THE HUMAN TRACKING SYSTEM USING THE COOPERATING OF MULTIPLE CAMERAS ARRANGED SPARSELY</b> .....	603
<i>Taiki Sato; Shudai Ishikawa; Hirokazu Shimada</i>	
<b>DEEP LEARNING MODEL-BASED SEGMENTATION OF MEDICAL DISEASES FROM MRI AND CT IMAGES</b> .....	608
<i>Anita Murmu; Piyush Kumar</i>	
<b>VERIFICATION OF SPATIOTEMPORAL CONTINUOUS COMPLEX EVENT PROCESSING RULES BY A SYNTHESIZED DATA SET</b> .....	614
<i>Sanghyun Lee; Bonghee Hong; Woochan Kim</i>	
<b>TELEOPERATED FOOD AND MEDICINE COURIER MOBILE ROBOT FOR INFECTED DISEASES PATIENT</b> .....	620
<i>Indra Adji Sulistijono; Muhammad Rois; Andy Yuniawan; Eko Henfri Binugroho</i>	
<b>DETECTING LUNG CANCER FROM HISTOPATHOLOGICAL IMAGES USING CONVOLUTION NEURAL NETWORK</b> .....	626
<i>Dewan Ziaul Karim; Tasfia Anika Bushra</i>	
<b>HUMAN POINT CLOUD DATA SEGMENTATION BASED ON NORMAL VECTOR ESTIMATION USING PCA-SVD APPROACHES FOR ELDERLY ACTIVITY DAILY LIVING DETECTION</b> .....	632
<i>Nova Eka Budiyanata; Eko Mulyanto Yuniarno; Mauridhi Hery Purnomo</i>	
<b>PRELIMINARY INVESTIGATION ON THE PRODUCTION OF ALTERNATIVE FUEL USING SHAMPOO SACHETS AND POLYSTYRENE BLEND VIA CATALYTIC PYROLYSIS</b> .....	637
<i>Joseph D. Retumban; Johannes C. Chiong; Ria Liza C. Canlas; Cristina M. Caranto; Matt Jesusel E. Valderama; Rodgie Paul D. Dela Peña; Elvhin R. Galve; Reeve Cornelius C. Cinco; Leonard C. Ursua</i>	
<b>ELECTRIC VEHICLE CHARGING STATION USING OPEN CHARGE POINT PROTOCOL (OCP) AND ONEM2M PLATFORM FOR ENHANCED FUNCTIONALITY</b> .....	641
<i>Deeksha Devendra; Shubham Mante; D. Nitesh; Aftab M. Hussain</i>	
<b>GMLK: A FRAMEWORK FOR MOBILE AND WEB APPLICATION FOR BREAST MILK SERVICES IN THE PHILIPPINES</b> .....	646
<i>Nitzel Lyka Paruan; Jasmine Angela Dela Rosa; Rodel Cabil; Jim Clyde Trillana; Annaliza E. Catacutan-Bangit; Arlene O. Trillanes</i>	
<b>A FAIR ALLOCATION METHOD OF CURTAILED POWER FOR WIND FARMS CONSIDERING TRANSMISSION LINE CAPACITY AND CONDITIONS FOR FAIR ALLOCATION</b> .....	652
<i>Daichi Sugawara; Hiroumi Saitoh</i>	
<b>A BILINGUAL AUDIO BASED ONLINE SHOPPING MOBILE APPLICATION FOR VISUALLY IMPAIRED AND THE ELDERLY PEOPLE</b> .....	658
<i>Varniah Kangeswaran; Dilan Vasandarai; Clewin Eliyas; M. M. M. Munsil; Nuwan Kodagoda; Kushnara Suriyawansa</i>	
<b>SCENE TEXT RECOGNITION WITH ORIENTATION RECTIFICATION VIA IC-STN</b> .....	664
<i>Veronica Naosekpan; Ailneni Sai Shishir; Nilkanta Sahu</i>	
<b>UNSUPERVISED ACTION LOCALIZATION CROP IN VIDEO RETARGETING FOR 3D CONVNETS</b> .....	670
<i>Prithwish Jana; Swarnabja Bhaumik; Partha Pratim Mohanta</i>	
<b>NU READY: A WEB AND MOBILE APPLICATION FRAMEWORK FOR SCHOOL EMERGENCY RESPONSE</b> .....	676
<i>James Zacharei Betos; Michael Lawrence David; Gillian Joanna Doctor; Joshua Lagan; Annaliza Catacutan-Bangit; Bernie Fabito; Rosauro Manuel</i>	
<b>RESOURCE-CONSCIOUS HIGH-PERFORMANCE MODELS FOR 2D-TO-3D SINGLE-VIEW RECONSTRUCTION</b> .....	681
<i>Suraj Bidnur; Dhruv Srikanth; Sanjeev Gurugopinath</i>	
<b>SELFIE: A SEMANTICALLY-ENHANCED LOAD FORECASTING APPROACH WITH INDIRECT ESTIMATE OF SPATIAL INFLUENCES</b> .....	687
<i>Monidipa Das; Suparna Dutta</i>	
<b>NEURAL NETWORK ARCHITECTURE FOR THE CLASSIFICATION OF ALZHEIMER'S DISEASE FROM BRAIN MRI</b> .....	693
<i>Riasat Mahbub; Muhammad Anwarul Azim; Nafiz Ishtiaque Mahee; Zahidul Islam Sanjid; Khondaker Masfiq Reza; Mohammad Zavid Parvez</i>	
<b>IOT-BASED ON-DEMAND FEEDING SYSTEM FOR NILE TILAPIA (OREOCHROMIS NILOTICUS)</b> .....	698
<i>Maria Gemel B. Palconit; Ronnie S. Concepcion; Jonnel D. Alejandrino; Vanessa F. Fonseca; Edwin Sybingco; Argel A. Bandala; Ryan Rhay P. Vicerra; Elmer P. Dadios</i>	
<b>LETTING VILLAGES GO SMART IN INDIAN SCENARIO</b> .....	703
<i>Balambal Suryanarayanan; Radha Bai Prabhakar; Tejaswini Venkadesh; P. Kaythry</i>	
<b>PHASE-BASED ACCELERATED MOTION MAGNIFICATION USING IMAGE PYRAMID</b> .....	708
<i>Tomohito Mizokami; Kenjiro Sugimoto; Sei-Ichiro Kamata</i>	
<b>IMAGE DEBLURRING USING LOCAL GAUSSIAN MODELS BASED ON NOISE AND EDGE DISTRIBUTION ESTIMATION</b> .....	714
<i>Jian-Jiun Ding; Je-Yuan Chang; Chun-Lin Liao; Zse-Hong Tsai</i>	

<b>EXPLORING ALZHEIMER'S DISEASE PREDICTION WITH XAI IN VARIOUS NEURAL NETWORK MODELS</b> .....	720
<i>Hamza Ahmed Shad; Quazi Ashikur Rahman; Nashita Binte Asad; Atif Zawad Bakshi; S. M. Faiaz Mursalin; Md. Tanzim Reza; Mohammad Zavid Parvez</i>	
<b>FINITE FREQUENCY ROBUST CONTROL FOR ELECTRO-HYDRAULIC SERVO ACTUATED ACTIVE SUSPENSION SYSTEM</b> .....	726
<i>Mazid Ishtique Ahmed; A. K. M. Azad</i>	
<b>COMPARATIVE STUDY OF LONG DOCUMENT CLASSIFICATION</b> .....	732
<i>Vedangi Wagh; Snehal Khandve; Isha Joshi; Apurva Wani; Geetanjali Kale; Raviraj Joshi</i>	
<b>WHICH ONE IS KAPRAO? IDENTIFY THAI HERBS WITH SIMILAR LEAF STRUCTURE USING TRANSFER LEARNING OF DEEP CONVOLUTIONAL NEURAL NETWORKS</b> .....	738
<i>Sila Temsiririrkkul; Prarinya Siritanawan; Rungravi Temsiririrkkul</i>	
<b>A DEEP LEARNING TECHNIQUE FOR ELECTRICITY PRICE FORECASTING IN CONSIDERATION OF SPIKES</b> .....	744
<i>Kodai Yamada; Hiroyuki Mori</i>	
<b>SCIENCE MAPPING OF SOCIAL MEDIA ANALYTICS IN HEALTH THROUGH ARTIFICIAL INTELLIGENCE</b> .....	750
<i>Rogelio Ruzcko Tobias; Rachel Edita Roxas; Mideth Abisado</i>	
<b>PREPROCESSING IMAGE CONTOURING OPTIMIZATION OF HANDWRITING RECOGNITION USING GENETIC ALGORITHM</b> .....	756
<i>Julianne Alyson I. Diaz; Ryan Rhay P. Vicerra; Argel A. Bandala</i>	
<b>EFFECT OF DIFFERENT SPLITTING CRITERIA ON THE PERFORMANCE OF SPEECH EMOTION RECOGNITION</b> .....	760
<i>Bagus Tris Atmaja; Akira Sasou</i>	
<b>SHORT-RANGE INERTIA PREDICTION FOR POWER NETWORKS WITH PENETRATION OF RES</b> .....	765
<i>Peter Makolo; Ifedayo Oladeii; Ramon Zamora; Tek-Tjing Lie</i>	
<b>LIFELENS: DEEP LEARNING BASED APPLICATION FOR THE VISUALLY IMPAIRED</b> .....	771
<i>S. Balasubramanian; Surya Teja Cvn; Aakash Tomar; Thanikonda Sai Kiran; Niranjana Krupa</i>	
<b>TECHNOLOGY REVIEW OF ELECTRIC MOTOR FOR HYBRID-ELECTRIC VEHICLE</b> .....	777
<i>Yoga Uta Nugraha; Dimas Anton Asfani; I. Made Yulistya Negara; Muhammad Aziz; Muhammad Nur Yuniarto</i>	
<b>DIAGNOSIS OF ASTHMA IN CHILDREN BASED ON SYMPTOMS: A MACHINE LEARNING APPROACH</b> .....	782
<i>Bhabesh Mali; Subhashish Dhal; Ananta Kumar Das</i>	
<b>APPLYING LETOR AND PERSONALIZATION TO SEARCH: A TRADE ME PRACTICE</b> .....	788
<i>Hang Yu; John Earles</i>	
<b>UTILIZATION OF K-MEANS CLUSTERING AND COLOR HOMOGRAPHY FOR AUTOMATIC COLOR CALIBRATION IN IMAGE PROCESSING</b> .....	794
<i>Julianne Alyson Diaz; Edwin Sybingco; Argel Bandala</i>	
<b>PERFORMANCE COMPARISON OF IPV6 IN 802.11AC WLAN IN WINDOWS AND LINUX ENVIRONMENT</b> .....	799
<i>Apaula Aotearoa Tuifaiga; Priyanka Ashreena Ram; Samad Salehi Kolahi</i>	
<b>ENHANCEMENT OF PSNR BASED ANOMALY DETECTION IN SURVEILLANCE VIDEOS USING PENALTY MODULES</b> .....	805
<i>Bhavam Vidyarthi; Neil Sequeira; Sushant Lenka; Ujjwal Verma</i>	
<b>GREENHOUSE GAS EMISSIONS FROM GEOTHERMAL POWERPLANTS IN NEW ZEALAND: IS REINJECTION OF GASES A SOLUTION?</b> .....	811
<i>Anu Choudhary; John Burnell; Ramesh Rayudu; Jim Hinkley</i>	
<b>FINITE ELEMENT ANALYSIS ON A SINGLE-STORY GEODESIC DOME STRUCTURE USING COMBINATION OF PO-LITE HOLLOW BLOCKS AND COLD-FORMED STEEL</b> .....	816
<i>Ria Liza C. Canlas; Ma. Theresa Judith N. Principe; Gwenzel S. Riego; Vicente E. Dyreyes</i>	
<b>SMART-EDF: AN EDF BASED SEMI-PARTITIONED ENERGY-AWARE MULTICORE SCHEDULER FOR REAL-TIME SYSTEMS</b> .....	821
<i>Yanshul Sharma; Sanjay Moulik</i>	
<b>A COMPARATIVE FINITE ELEMENT ANALYSIS OF A TWO-STORY RESIDENTIAL BUILDING USING CONCRETE HOLLOW BLOCKS AND PO-LITE HOLLOW BLOCKS</b> .....	827
<i>Ria Liza Canlas; Ares Baron Talusan; Ma. Theresa Judith Principe; Llevie Gonzales; Vicente Dyreyes; Christ Anne Jovy Regonios</i>	
<b>EMI ISSUES IN LVDC-MICROGRIDS DUE TO POWER ELECTRONIC CONVERTERS</b> .....	833
<i>Angaline Krishna; Kosala Gunawardane</i>	
<b>PRESCRIPTIVE FACULTY PERFORMANCE ANALYSIS: A CASE AT THE ONSET OF COVID-19 PANDEMIC</b> .....	839
<i>Brenda Benosa; Ma. Rowena Raguin Caguait</i>	
<b>THE ROLE OF FACE EMBEDDINGS IN CLASSIFICATION OF PERSONALITY TRAITS FROM PORTRAIT IMAGES</b> .....	845
<i>P. Sreevidya; S. Veni; V. Ramana Murthy Oruganti</i>	
<b>CIRCUIT PROTECTION TECHNIQUES FOR SUPERCAPACITOR-ASSISTED LOW-DROPOUT (SCALDO) REGULATOR</b> .....	851
<i>Kasun Subasinghage; Kosala Gunawardane; Nihal Kularatna</i>	
<b>AUTONOMOUS WAREHOUSE ROBOT USING DEEP Q-LEARNING</b> .....	857
<i>Ismot Sadik Peyas; Zahid Hasan; Md. Rafat Rahman Tushar; Al Musabbir; Raisa Mehjabin Azni; Shahnewaz Siddique</i>	
<b>DEEP REINFORCEMENT LEARNING-BASED 3D EXPLORATION WITH A WALL CLIMBING ROBOT</b> .....	863
<i>Arya Das; Raju Halder; Atul Thakur</i>	



<b>GEOAGRI: A GEOSPATIAL WEB-BASED DECISION SUPPORT SYSTEM TO FARM-TO-MARKET ROAD NETWORK PLAN</b> .....	869
<i>Etsel Matt O. Morales; Elbert S. Moyon; Jaymer M. Jayoma</i>	
<b>TOPOLOGY EXPLORATION FOR LONG-DISTANCE COMMUNICATION</b> .....	875
<i>N. Gagan; Biswajit Bhowmik</i>	
<b>PORTABLE EXECUTABLE MALWARE CLASSIFIER USING LONG SHORT TERM MEMORY AND SOPHOS-REVERSINGLABS 20 MILLION DATASET</b> .....	881
<i>Julianne Alyson Diaz; Argel Bandala</i>	
<b>IDENTIFICATION OF SUITABLE FMRP USING INVERSE ANT ALGORITHM FOR CARAGA REGION</b> .....	885
<i>Jaymer M. Jayoma; Antonette A. Torres</i>	
<b>RICE PADDY DISEASE DETECTION AND DISEASE AFFECTED AREA SEGMENTATION USING CONVOLUTIONAL NEURAL NETWORKS</b> .....	891
<i>Fahim Mashroor; Ibne Farhan Ishrak; Sajan Mahmud Alvee; Afrida Jahan; Md Naimul Islam Suvon; Shahnewaz Siddique</i>	
<b>PSEUDO-CT IMAGE SYNTHESIS FROM ULTRASOUND IMAGES FOR POTENTIAL USE IN BRACHYTHERAPY TREATMENT PLANNING - INITIAL RESULTS</b> .....	897
<i>B. Anila Satheesh; S. Arvind; Reddy R. Jeba Karunya; S. Ebenezer Suman Babu; Thomas Samuel Ram; Arun K. Thittai</i>	
<b>ULTRASOUND-TO-ULTRASOUND DEFORMABLE IMAGE REGISTRATION FOR PSEUDO-CT SIMULATION FOR BRACHYTHERAPY TREATMENT PLANNING: A PRELIMINARY STUDY ON TISSUE-MIMICKING PHANTOM</b> .....	901
<i>B. Anila Satheesh; Arun K. Thittai</i>	
<b>MULTI -CLASSIFICATION BASED ALZHEIMER'S DISEASE DETECTION WITH COMPARATIVE ANALYSIS FROM BRAIN MRI SCANS USING DEEP LEARNING</b> .....	905
<i>Azmain Kabir; Farishta Kabir; Md. Abu Hasib Mahmud; Sanzida Alam Sinthia; S. M. Rakibul Azam; Emtiaz; Hussain; Mohammad Zavid Parvez</i>	
<b>MODELING TIDAL STREAMS OF THE BOQUEIRÃO CHANNEL USING DELFT3D</b> .....	911
<i>Rafael Brito De Sousa Veras; Aline Mayara Santos Costa; Diego Leonardo Santos Cosme; Osvaldo Ronald Saavedra; Anthea Carla Cziżewski; Auddálio Rebelo Torres Junior; Felipe Mendonça Pimenta</i>	
<b>BEHAVIOURAL PATTERN ANALYSIS OF FISHES FOR SMART AQUACULTURE: AN OBJECT CENTRIC APPROACH</b> .....	917
<i>S. Shreesh; P. M. M. Manohara; Ujjwal Verma; Radhika M. Pai; S. Girisha</i>	
<b>ANOMALY DETECTION USING CLASSIFICATION CNN MODELS: A VIDEO ANALYTIC APPROACH</b> .....	923
<i>S. Girisha; M. M. Manohara Pai; Ujjwal Verma; Radhika M. Pai; S. Shreesh</i>	
<b>SIMPLIFIED SOC BALANCING OF AN MMC WITH EMBEDDED STORAGE IN AN EV SYSTEM</b> .....	929
<i>Alaa Omar; Alan Wood; Hamish Laird; Paul Gaynor</i>	
<b>C3HAC: A CONTROLLER PLACEMENT APPROACH FOR SDWSN</b> .....	935
<i>Abhishek Narwaria; Arka Prokash Mazumdar; Gauransh Kalla</i>	
<b>DAISS: DESIGN OF AN ATTACKER IDENTIFICATION SCHEME IN COAP REQUEST/RESPONSE SPOOFING</b> .....	941
<i>Dipojjwal Ray; Pradeepkumar Bhale; Santosh Biswas; Sukumar Nandi; Pinaki Mitra</i>	
<b>ARTIFICIAL INTELLIGENCE APPLICATIONS IN QUALITY MANAGEMENT SYSTEM: A BIBLIOMETRIC STUDY</b> .....	947
<i>Johanna Minglana; Rogelio Ruzcko Tobias; Rachel Edita Roxas</i>	
<b>STATIC CHARACTERISATION OF GALLIUM NITRIDE HEMTS AT CRYOGENIC TEMPERATURES</b> .....	953
<i>Samuel Mora; Henry Seaton; Soren Subritzky; Dylan Toms; Andrew Laphorn; Bill Heffernan</i>	
<b>HIGH IMPACT LOW PROBABILITY WEATHERIZATION IMPACT ANALYSIS FOR ELECTRICITY INFRASTRUCTURE</b> .....	958
<i>Lakshita Lakshita; Nirmal-Kumar C. Nair</i>	
<b>MATAURANGA MAORI IN POWER ENGINEERING - ACHIEVING SUSTAINABILITY AND ZERO CARBON FUTURES WITH COUNTRIES' INDIGENOUS KNOWLEDGE IN DESIGN</b> .....	964
<i>Fraser Macconnell; Rohit Duggal; Ramesh Rayudu; Nirmal-Kumar C. Nair</i>	
<b>RESILIENCE BASED CRITICALITY ANALYSIS FOR SEISMIC PERFORMANCE ASSESSMENT OF UNDERGROUND CABLES</b> .....	969
<i>Ebad Ur Rehman; Nirmal-Kumar C. Nair</i>	
<b>REALIZING PRICE RESPONSIVE SPACE HEATING SETPOINTS USING DEGREE-DAYS ENERGY SIGNATURE</b> .....	975
<i>Alvin Yueting Li; Leoni Elizabeth Bule; Abhinav Rakesh Chopra; Nirmal-Kumar C. Nair</i>	
<b>DSHD - SMART LOAD SHEDDING ORCHESTRATOR FOR DERM OF DERMS</b> .....	980
<i>Abhinav Rakesh Chopra; Reval Verghese; Nirmal-Kumar C. Nair</i>	
<b>A NEW DISCRETE FREQUENCY CONTROL METHOD FOR AN IMPROVED SOFT-START OF INDUCTION MOTORS PART 1: CLSSR-DFC DEVELOPMENT</b> .....	986
<i>David J. Van Der Byl; Andrew C. Laphorn</i>	
<b>A NEW DISCRETE FREQUENCY CONTROL METHOD FOR AN IMPROVED SOFT-START OF INDUCTION MOTORS PART 2: SIMULATION STUDIES</b> .....	992
<i>David J. Van Der Byl; Andrew C. Laphorn</i>	
<b>NEW EFFICIENT PROCUREMENT OF EXTENDED RESERVES (AUFLS) IN NEW ZEALAND WITH HIGH PENETRATION OF DISTRIBUTED GENERATION: SYSTEMATIC REVIEW</b> .....	998
<i>Nasser Usman Faarooqui; Nirmal-Kumar C. Nair</i>	
<b>QUANTIFICATION OF EDGE EFFECTS IN CAPACITIVE BIOPOTENTIAL SENSING</b> .....	1004
<i>Gautam Anand; Andrew Lowe; Richard Jones; W. Mike Arnold; Anubha Kalra; Ray Simpkin; Ihab Sinno; David Budgett</i>	
<b>Author Index</b>	