

2023 22nd International Symposium on Communications and Information Technologies (ISCIT 2023)

**Sydney, Australia
16-18 October 2023**



**IEEE Catalog Number: CFP23830-POD
ISBN: 978-1-6654-5732-3**

**Copyright © 2023 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: | CFP23830-POD |
| ISBN (Print-On-Demand): | 978-1-6654-5732-3 |
| ISBN (Online): | 978-1-6654-5731-6 |
| ISSN: | 2643-6140 |

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

2023 22nd International Symposium on Communications and Information Technologies (ISCIT)

Special Session 1: Delay Doppler Communications and Sensing

| | |
|--|----|
| <i>Fine Doppler Resolution Channel Estimation and Offset Gradient Descent Equalization for OTFS Transmission over Doubly Selective Channels</i> Hongyang Zhang (University of Technology Sydney, Australia), Xiaojing Huang (University of Technology Sydney, Australia), J. Andrew Zhang (University of Technology Sydney, Australia) | 1 |
| <i>Data-Driven OTFS Channel Estimation Based on Gated Recurrent Convolutional Autoencoder</i> Junshen Chen (Shenzhen University, China), Qihao Yuan (Shenzhen University, China), Shiyao Zhang (Southern University of Science and Technology, China), Chang Liu (The Hong Kong Polytechnic University, Hong Kong) | 7 |
| <i>A Compressive Sensing and Denoising RCAN-Based Channel Estimation Scheme for OTFS System</i> Xinru Li (Beijing Information Science and Technology University, China), Yi Gong (Beijing Information Science and Technology University, China), Jingning Bai (Beijing Information Science and Technology University, China), Xinwen Zhang (Beijing Information Science and Technology University, China), Fanke Meng (Tianjin Yinyuan Information Technology Cooperation, China), Zhan Xu (Beijing Information Science & Technology University, China) | 13 |
| <i>Power Allocation for OTFS-Based AirComp System with Robust Precoding</i> Dongkai Zhou (Beijing Institute of Technology, China), Siqiang Wang (Beijing Institute of Technology, China), Jing Guo (Beijing Institute of Technology, China), Zhong Zheng (Beijing Institute of Technology, China), Weihao Wang (Beijing Institute of Technology, China), Fei Zesong (Beijing Institute of Technology, China), Xinyi Wang (Beijing Institute of Technology, China) | 19 |

Regular session 1: Deep Learning

| | |
|--|----|
| <i>A Novel Weights-Less Watermark Embedding Method for Neural Network Models</i> Haiyu Deng (University of Technology Sydney, Australia), Xu Wang (University of Technology Sydney, Australia), Guangsheng Yu (CSIRO, Australia), Xiaocui Dang (University of Technology Sydney, Australia), Ren Ping Liu (University of Technology Sydney, Australia) | 25 |
| <i>A Generative Adversarial Networks-Based Integer Overflow Detection Model for Smart Contracts</i> Hao Li (University of Technology Sydney, Australia), Xu Wang (University of Technology Sydney, Australia), Guangsheng Yu (CSIRO, Australia), Wei Ni (CSIRO, Australia), Ren Ping Liu (University of Technology Sydney, Australia) | 31 |
| <i>A Comparative Study of Artificial Intelligence-Based Algorithms for Bitwise Decoding of Error Correction Codes</i> Ekta Sharma (University of Southern Queensland & Office of National Intelligence, Canberra, Australia), Ismail Shakeel (Defence Science and Technology Group, Australia), Ravinesh C. Deo (University of Southern Queensland, Australia), Christopher P. Davey (University of Southern Queensland, Australia), Sancho Salcedo-Sanz (Universidad de Alcalá, Spain) | 37 |

Special Session 2 - Intelligent Non-Terrestrial Communications in 6G

| | |
|--|----|
| <i>Machine Learning-Based Cyclostationary Spectrum Sensing in Cognitive Dual Satellite Networks</i> Quynh Tu Ngo (University of Technology Sydney, Australia), Beeshanga Abewardana Jayawickrama (University of Technology Sydney, Australia), Ying He (University of Technology Sydney, Australia), Eryk Dutkiewicz (University of Technology Sydney, Australia) | 43 |
| <i>L-Band Spectral Opportunities for Cognitive GEO-LEO Dual Satellite Networks</i> Kithmini Weththasinghe (UTS, Australia), Nathan Clark (University of Technology Sydney, Australia), Quynh Tu Ngo (University of Technology Sydney, Australia), Beeshanga Abewardana Jayawickrama (University of Technology Sydney, Australia), Ying He (University of Technology Sydney, Australia), Eryk Dutkiewicz (University of Technology Sydney, Australia), Ren Ping Liu (University of Technology Sydney, Australia) | 48 |
| <i>Computing with the Internet of Flying-Things from Sky to Space</i> Seng W Loke (Deakin University, Australia), Jinho Choi (Deakin University, Australia), Bassel Al Homssi (UNSW, Australia), Sooyoung Kim (Jeonbuk National University, Korea (South)) | 52 |
| <i>Evaluation of Intelligent Resource Allocation Methods for Interference-Limited Satellite Networks</i> Satya Chan (Jeonbuk National University, Korea (South)), Gyuseong Jo (Jeonbuk National University, Korea (South)), Sooyoung Kim (Jeonbuk National University, Korea (South)), Daesub Oh (Electronics and Telecommunications Research Institute, Korea (South)) | 58 |
| <i>On Ka-Band Utilization Towards Non-Terrestrial Networks</i> Bohai Li (Deakin University, Australia), Jihong Park (Deakin University, Australia), Hee Wook Kim (Electronics and Telecommunications Research Institute, Korea (South)), Daesub Oh (Electronics and Telecommunications Research Institute, Korea (South)), Jinho Choi (Deakin University, Australia) | 64 |

Regular session 2: Image and Video Processing I

| | |
|--|----|
| <i>Video Anomaly Detection Using Self-Attention-Enabled Convolutional Spatiotemporal Autoencoder</i> Rashmiranjan Nayak (National Institute of Technology Rourkela, India), Umesh Chandra Pati (National Institute of Technology, Rourkela & NIT Rourkela, India), Santos Ku Das (National Institute of Technology Rourkela, India) | 70 |
| <i>Development of A Virtual Aerial Display Considering Interaction with 3DCG Objects</i> Hideaki Saito (Soka University, Japan), Hiroki Imamura (Soka University, Japan) | 76 |
| <i>A Novel GAN-Based Intra Prediction Mode for HEVC</i> Takafumi Katayama (Tokushima University, Japan), Tian Song (University of Tokushima & Synthesis, Japan), Takashi Shimamoto (University of Tokushima, Japan), Xiantao Jiang (Shanghai Maritime University, China) | 82 |
| <i>Change Detection in Synthetic Aperture Radar Images Using Attention-Based Siamese Network</i> V N Sujit Vudattu (National Institute of Technology Rourkela, India), Umesh Chandra Pati (National Institute of Technology, Rourkela & NIT Rourkela, India) | 88 |

Regular session 3: Language and Audio-Related AI

| | |
|---|-----|
| <i>The Recent Large Language Models in NLP</i> Ngoc Tran Khanh Le (S P Jain, Australia), Aziz Kerimzhanov (S P Jain School of Global Management, Australia), Nadia Hadiprodjo (S P Jain School of Global Management, Australia), Avtandil Teshebaev (S P Jain, Australia), Hazem El-Alfy (SP Jain School of Global Management, Australia) | 93 |
| <i>Deep Multimodal-Based Number Finger Spelling Recognizer for Thai Sign Language</i> Wuttichai Vijitkunsawat (Japan Advanced Institute of Science and Technology, Japan), Teeradaj Racharak (Japan Advanced Institute of Science and Technology, Japan), Minh Le Nguyen (Japan Advanced Institute of Science and Technology, Japan) | 99 |
| <i>Gesture Recognition Machine Vision Video Calling Application Using YOLOv8</i> Pruthvi Darshan S S (Sai Vidya Institute of Technology, India), Shantakumar B Patil (Sai Vidya Institute of Technology, India), Bhargav Shantakumar Patil (Visvesvaraya Technological University (VTU), India) | 105 |
| <i>Automatic Bengali Image Captioning Using EfficientNet-Transformer Network</i> Muhammad Khubayyeb Kabir (BRAC University, Bangladesh), Anindita Labonno (BRAC University, Bangladesh), Sofia Amin (BRAC University, Bangladesh), Fariha Tahsin (BRAC University, Bangladesh), Md. Khalilur Rhaman (BRAC University, Bangladesh), Moin Mostakim (BRAC University, Bangladesh) | 110 |
| <i>Classification of Plucking Techniques from the Audio and Video of a Classical Guitar Performance</i> Carl Timothy S. Tolentino (University of the Philippines Diliman, Philippines), Franz A De Leon (University of the Philippines, Philippines) | 116 |

Regular session 4: Circuits and Systems I

| | |
|---|-----|
| <i>Wi-Fi HaLow Internet of Things System on Chip (SoC) in Sub-1 GHz</i> Surendra Raju M (Morse Micro Pty Ltd., India), Aman Shrestha (Morse Micro Pty. Ltd., Australia), Andrew Terry (Morse Micro Pty. Ltd., Australia), Eyal Mendel (Morse Micro Pty. Ltd., Australia), Jaric Thorning (Morse Micro Pty. Ltd., Australia), Julius Baxter (Morse Micro Pty. Ltd., Australia), Mohammed M. A. Mohammed (Morse Micro Pty. Ltd., Australia), Neil Weste (Morse Micro Pty. Ltd., Australia), Rama Kishore Chikkam (Morse Micro Pty. Ltd., Australia), Yingbo Zhu (Morse Micro Pty. Ltd., Australia) | 122 |
| <i>On Improving the Critical Path Delay of PathFinder at Smaller Channel Widths</i> Umair Farooq Siddiqi (King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia), Sadiq M. Sait (King Fahd University of Petroleum & Minerals, Saudi Arabia) | 127 |
| <i>Obstacle Avoidance Rectilinear Steiner Minimal Tree Length Estimation Using Deep Learning</i> Umair Farooq Siddiqi (King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia), Sadiq M. Sait (King Fahd University of Petroleum & Minerals, Saudi Arabia) | 133 |
| <i>Power Transmission Line Component Detection Using YOLO V3 on Raspberry Pi</i> Nico Surantha (Tokyo City University, Indonesia), Yuta Sukizaki (Tokyo City University, Japan), Eiichi Yamashina (Tokyo City University, Japan), Toru Iwao (Tokyo City University, Japan) | 139 |
| <i>Combined Approximate Transforms and Approximate Computing for Low-Complexity Multibeam Arrays</i> Pathmapirian Nanthakumar (University of Queensland, Australia), Chamith K Wijenayake (University of Queensland & The University of Moratuwa, Australia), Chamira U. S. Edussooriya (University of Moratuwa, Sri Lanka), Arjuna Madanayake (Florida International University, USA) | 145 |

Regular session 5: Smart Antennas

| | |
|--|-----|
| <i>Design of Bow-Tie Antenna Loaded with Parasitic Element for Gain, Directivity and Front-To-Back Ratio Enhancement for Very High Frequency (VHF) Wireless Receiving Applications</i> Joshua Echavia Erojo, Jr. (Mindanao State University - Iligan Institute of Technology, Philippines), Najie Pandian (Mindanao State University - Iligan Institute of Technology, Philippines), Christopher Gerasta (Mindanao State University- Iligan Institute of Technology, Philippines) | 151 |
|--|-----|

| | |
|---|-----|
| <i>Comparative Study of Multiband Horn and Yagi-Uda Antenna for Spectrum Sensing Applications</i> Gil P Ramas (Mindanao State University - Iligan Institute of Technology, Philippines), Timea Lee J Dura (Mindanao State University - Iligan Institute of Technology, Philippines), Najie Pandian (Mindanao State University - Iligan Institute of Technology, Philippines), Olga Joy Gerasta (Mindanao State University-Iligan Institute of Technology, Philippines) | 156 |
| <i>Design of a Compact Fractal Dipole Antenna for GPS-GSM-Based Tracking Applications</i> Johnson E. Clamonte (Mindanao State University-Iligan Institute of Technology, Philippines), John Carlo P Guinoo (Co-Author, Philippines) | 162 |
| <i>Investigating the Impact of Soil Conditions on a Modified Bow-Tie Antenna's Radiation Characteristics Operating at 270MHz</i> Jesrey Martin S Macasero (Mindanao State University - Iligan Institute of Technology, Philippines), Najie Pandian (Research Assistant, Philippines), Olga Joy Gerasta (Mindanao State University-Iligan Institute of Technology, Philippines), Rochelle Sabarillo (MSU-Iligan Institute of Technology, Philippines), Gene Fe P. Palencia (Coventry University & University of San Carlos, United Kingdom (Great Britain)), Rovick Tarife (Mindanao State University- Iligan Institute of Technology, Philippines) | 167 |

Special Session 3 - Integrated Sensing and Communications: Advancements and Challenges

| | |
|---|-----|
| <i>Integrated Sensing and Communication for UAV-Borne SAR System</i> Ziyi Liu (Beijing Institute of Technology, China), Fei Zesong (Beijing Institute of Technology, China), Peng Liu (Beijing Institute of Technology, China), Xinyi Wang (Beijing Institute of Technology, China), Zhong Zheng (Beijing Institute of Technology, China), Dongkai Zhou (Beijing Institute of Technology, China), Weijie Yuan (Southern University of Science and Technology, China) | 173 |
| <i>Performance Bound of Joint Communication and Sensing System in Time-Varying Channels</i> Yang Sun (University of Technology Sydney, Australia), Zhitong Ni (University of Technology Sydney & Beijing Institute of Technology, Australia) | 179 |
| <i>Fundamental Limits for Dynamic Path Parameter Estimation in Asynchronous ISAC Systems</i> Jingbo Zhao (Beijing University of Posts and Telecommunications, China), Zhaoming Lu (BUPT, China), Weicai Li (Beijing University of Posts and Telecommunications, China) | 185 |
| <i>Development of an Uplink Sensing Demonstrator for Perceptive Mobile Networks</i> Kuangda Chen (University of Technology Sydney, Australia), J. Andrew Zhang (University of Technology Sydney, Australia), Zhongqin Wang (University of Technology Sydney, Australia), Y. Jay Guo (University of Technology Sydney, Australia) | 191 |
| <i>Spectral-Efficient Waveform Design for RIS-Assisted ISAC</i> Jinsong Chen (Northwest University, China), Kai Wu (University of Technology Sydney, Australia), Jinping Niu (Northwest University, China), Yanyan Li (Northwest University, China) | 197 |

Regular session 6: Image and Video Processing II

| | |
|--|-----|
| <i>Coordinate Attention-Based Convolution Neural Network for In-Loop Filter of AVS3</i> Ruotong Wu (Beijing University of Posts and Telecommunications, China), Sun Songlin (Beijing University of Posts and Telecommunications, China), Jiaqi Zou (Beijing University of Posts and Telecommunications, China), Shaokang Wang (Beijing University of Posts and Telecommunications, China), Zhilei Ling (Beijing University of Posts and Telecommunications, China) | 203 |
| <i>Deep Learning-Based Image Quality Assessment Metric for Quantifying Perceptual Distortions in Transmitted Images</i> Ijaz Ahmad (Chosun University, Korea (South)), Seokjoo Shin (Chosun University, Korea (South)) | 208 |
| <i>An Improved CTU-Level Rate Control Algorithm Based on Temporal Domain Motion Intensity</i> Shaokang Wang (Beijing University of Posts and Telecommunications, China), Sun Songlin (Beijing University of Posts and Telecommunications, China), Jiaqi Zou (Beijing University of Posts and Telecommunications, China), Ruotong Wu (Beijing University of Posts and Telecommunications, China), Zhilei Ling (Beijing University of Posts and Telecommunications, China), Xingtong Liu (Beijing Normal University, China) | 214 |
| <i>Deep Lane Detection Based on Kullback-Leibler Divergence</i> Taehyeon Kim (Korea Electronics Technology Institute, Korea (South)), Se-Ho Park (Korea Electronics Technology Institute, Korea (South)), Kyung-Taek Lee (Korea Electronics Technology Institute, Korea (South)), Myeongseop Kim (Korea Electronics Technology Institute, Korea (South)) | 219 |

Special Session 4 - AI Oriented Multi Media Information Systems

| | |
|--|-----|
| <i>Iterative Variable Threshold Method Resistant to Acoustic Reflections for Underwater Acoustic Positioning Systems</i> Yuki Yamada (Kitami Institute of Technology, Japan), Shingo Yoshizawa (Kitami Institute of Technology, Japan), Saito Takashi (Tamagawa Electronics, Japan), Hideki Sugimoto (Penta-Ocean Construction, Japan) | 224 |
| <i>Optimizing Optical Signal Quality with Deep Learning Dispersion Compensation at Various Distances</i> Muhammad Harry Bintang Pratama (Kyushu Institute of Technology, Japan), Lina Marlina (Taiwan University of Science and Technology, Taiwan), Muhammad Fajar Faliasthiunus Pradipta (Taiwan University of Science and Technology, Taiwan), Shien-Kuei Peter Liaw (National Taiwan University of Science and Technology, Taiwan), Masayuki Kurosaki (Kyushu Institute of Technology, Japan), Hiroshi Ochi (Kyushu Institute of Technology, Japan) | 226 |

| | |
|---|-----|
| <i>Power Consumption and Prototype Evaluation of IoT Devices for Environmental Monitoring Systems</i> Kota Hirai (Hokkaido University, Japan), Hiroshi Tsutsui (Hokkaido University, Japan), Ying He (University of Technology Sydney, Australia), Takeo Ohgane (Hokkaido University, Japan) | 231 |
| <i>Adaptive Drones and Federated Learning: A New Paradigm for Multimedia IoT Networks</i> Chaofeng Zhang (Advanced Institute of Industrial Technology, Japan), Mianxiang Dong (Muran Institute of Technology, Japan), Kaoru Ota (Muran Institute of Technology, Japan) | 235 |
| <i>Non-Local Technique on Deep Attentive Face Super-Resolution Network</i> Amir Hajian (Chulalongkorn University, Thailand), Hein Htet Aung (Chulalongkorn University, Thailand), Watchara Ruangsang (Chulalongkorn University, Thailand), Sovann Chen (Chulalongkorn University, Thailand), Supavadee Aramvith (Chulalongkorn University, Thailand) | 241 |

Regular session 7: AI Enabled Health Care and Virtual Reality

| | |
|---|-----|
| <i>Efficient Human Computer Interaction Pipeline for Mobile Devices</i> Myeongseop Kim (Korea Electronics Technology Institute, Korea (South)), Kyung-Taek Lee (Korea Electronics Technology Institute, Korea (South)), Se-Ho Park (Korea Electronics Technology Institute, Korea (South)), Taehyeon Kim (Korea Electronics Technology Institute, Korea (South)) | 247 |
| <i>Risky Blooms: Space-Time Chlorophyll-a Analysis and Forecasting</i> Haojiong Wang (Hokkaido University, Japan), Elroy L. M. Galbraith (Hokkaido University, Japan), Matteo Convertino (Tsinghua SIGS & TS, China) | 252 |
| <i>Prediction of Heart Disease Using Hybrid Naïve Bayes Technique</i> Shantakumar B Patil (Sai Vidya Institute of Technology, India) | 257 |
| <i>Implementation of Intuitive 3-Dimensional Manipulation for 3DCG Objects Using Monocular Camera</i> Hibiki Ito (SOKA University, Japan), Hiroki Imamura (Soka University, Japan) | 262 |
| <i>A Multi-Class Graph Convolutional Neural Network for EEG Classification and Representation</i> Abdullah Almomhamadi (Australian Artificial Intelligence Institute, University of Technology Sydney, Australia), YuKai Wang (Australian Artificial Intelligence Institute, University of Technology Sydney, Australia) | 267 |

Regular session 8: Artificial Intelligence for Communications

| | |
|--|-----|
| <i>Statistical Analysis of Least Mean Modulus Algorithm for Non-Gaussian Noise</i> Shin'ichi Koike (Consultant, Japan) | 273 |
| <i>Stock Price Prediction Using Machine Learning: A Survey of Recent Techniques</i> Abbiegael Klara Go Chu (SP Jain School of Global Management, Australia), Agnes Jade Aclan (SP Jain School of Global Management, Australia), Otabek Pardabaev (SP Jain School of Global Management, Australia), Dhruvi Maheshbhai Patel (SP Jain School of Global Management, Australia), Hazem El-Alfy (SP Jain School of Global Management, Australia) | 278 |
| <i>Consideration on a Single Input Blind Source Separation Method for Pulse Wave Extraction</i> Seiya Ogawa (Maebashi Institute of Technology, Japan), Minoru Komatsu (Maebashi Institute of Technology, Japan), Hiroki Matsumoto (Maebashi Institute of Technology, Japan) | 284 |
| <i>A Novel Deep Learning Framework for Efficient Automatic Modulation Recognition of Sub-Nyquist Sampled Signals</i> Wendi Gao (Beijing University of Posts and Telecommunications, China), Hongfu Liu (Beijing University of Posts and Telecommunications, China), Ziping Wei (Beijing University of Posts and Telecommunications, China), Bin Li (Beijing University of Posts and Telecommunications, China), Chenglin Zhao (Beijing University of Posts and Telecommunications, China) | 288 |
| <i>Privacy-Preserving Gaussian Process Latent Variable Model for Dimensional Reduction</i> Takayuki Nakachi (University of the Ryukyus, Japan), Yitu Wang (North Minzu University, China) | 294 |

Regular session 9: Next-Generation Networking

| | |
|---|-----|
| <i>Policy-Based Detection and Blocking System Against Abnormal Applications by Analyzing DNS Traffic</i> Hikaru Ichise (Tokyo Institute of Technology, Japan), Yong Jin (Tokyo Institute of Technology, Japan), Katsuyoshi Iida (Hokkaido University, Japan) | 300 |
| <i>Profile-Based Data-Driven Approach to Analyse Virtualised Network Functions Performance</i> Nasim Ferdosian (Curtin University, Australia), Shadi Moazzeni (University of Bristol, United Kingdom (Great Britain)), Pratchaya Jaisudthi (University of Bristol, United Kingdom (Great Britain)), Yifei Ren (Curtin University & Cisco Curtin Centre for Networks, Australia), Himanshu Agrawal (Curtin University & Cisco Curtin Centre for Networks, Australia), Dimitra Simeonidou (University of Bristol, United Kingdom (Great Britain)), Reza Nejabati (University of Bristol, United Kingdom (Great Britain)) | 306 |
| <i>Recursive Service Function Chain Orchestration</i> Yifei Ren (Curtin University & Cisco Curtin Centre for Networks, Australia), Himanshu Agrawal (Curtin University & Cisco Curtin Centre for Networks, Australia), Nasim Ferdosian (Curtin University, Australia), Reza Nejabati (University of Bristol, United Kingdom (Great Britain)) | 312 |

Special Session 5 - Energy Harvesting Technologies and Ultra-low power Analogue/RF IC Design for IoT, Radar/Space and 5G/6G Communication Applications

Design of Signal Enhancing Multiband Antenna Using the Second Iteration of Sierpinski-Shaped Fractal for GSM/GPS/RFID Applications
 Jade C. De Juan (Mindanao State University-Iligan Institute of Technology, Philippines), Lyriel Mae A. Desoyo (Mindanao State University - Iligan Institute of Technology, Philippines), Andrea G. Delos Santos (Mindanao State University-Iligan Institute of Technology, Philippines), Olga Joy Gerasta (Mindanao State University-Iligan Institute of Technology, Philippines), Christopher Gerasta (Mindanao State University- Iligan Institute of Technology, Philippines), Gene Fe P Palencia (Mindanao State University - Iligan Institute of Technology, Philippines) 324

A Design of High Efficiency Non-Time Division Multiplexing Battery-Less and Self-Powered Multi-Input Single-Inductor Single-Output Using 22nm FDSOI Technology
 Francis Roi Manabat (Mindanao State University- Iligan Institute of Technology, Philippines), Jom Harvy Dayondon (Mindanao State University-Iligan Institute of Technology, Philippines), Johnter Clint Fernandez (Mindanao State University-Iligan Institute of Technology, Philippines), Kriz Kevin Adviran (Mindanao State University-Iligan Institute of Technology, Philippines), Jefferson A. Hora (MSU-Iligan Institute of Technology, Australia) 330

Integration of OpenCV and Cyclone V Hybrid ARM and FPGA SoC for Face Detection Application
 Gil Michael Regalado (MSU-IIT, Philippines), Gene Fe P Palencia (Mindanao State University - Iligan Institute of Technology, Philippines), Harreez Villaruz (Mindanao State University - Iligan Institute of Technology, Philippines), Nieva Mapula (MSU-Iligan Institute of Technology, Philippines) 336

Design of Charge Pump for Low Power, Wide Range PLL in 65nm CMOS Technology
 Nieva Mapula (MSU-Iligan Institute of Technology, Philippines), Aileen Caberos (Mindanao State University-Iligan Institute of Technology, Philippines), Harreez Villaruz (Mindanao State University - Iligan Institute of Technology, Philippines) 341

Regular session 10: Signal Processing

On Sustainability of a Hospital-As-Vertical- Operator Model in the 5G Era
 Wen Hsi Chang (National Taiwan University, Taiwan), Yi-Nung Yang (Chung Yuan Christian University, Taiwan), Huei-Chen Lu (Taipei Medical University Hospital, Taiwan), Shi-Chung Chang (National Taiwan University, Taiwan) 346

Microprocessor Instruction Design Tool for RISC-V Architecture
 Jiahui Luo (Meiji University, Japan), Tomoyuki Morimoto (Meiji University, Japan), Tadahiro Ogita (Meiji University, Japan), Ryota Kawamata (Meiji University, Japan), Ziming Wang (Meiji University, Japan), Toshiyuki Tsutsumi (Meiji University, Japan) 351

Lossless Audio Compression Using DWT, DCT and Huffman-Based LZW Encoding
 Sean Kenneth B. Abu (UP Digital Signal Processing Laboratory, Philippines), Josh Rael Jorquia (UP Digital Signal Processing Laboratory, Philippines), Jose Marie A Mendoza (University of the Philippines - Diliman, Philippines), Carl Timothy S. Tolentino (University of the Philippines Diliman, Philippines), Crisron Rudolf G Lucas (University College Dublin, Ireland) 357

A Non-Uniform Quantization-Based Hardware Architecture for BP Decoding of Polar Codes
 Xinyi Gu (University of New South Wales, Australia), Mohammad Rowshan (University of New South Wales, Australia), Yixuan Xie (University of New South Wales, Australia), Jinhong Yuan (University of New South Wales, Australia) 363

Special Session 5 - Energy Harvesting Technologies and Ultra-low power Analogue/RF IC Design for IoT, Radar/Space and 5G/6G Communication Applications

4-Phase Interleaved Charge Pump Topologies with Reversion Loss Elimination Techniques for IoT Applications
 Ritt Vincent Ang Librado (Mindanao State University- Iligan Institute of Technology & Microelectronics Laboratory, Philippines), Jefferson A. Hora (MSU-Iligan Institute of Technology, Australia), Kevin Maglante (MSU-Iligan Institute of Technology, Philippines) 369

Buck Converter with Variable Output Voltage for Dynamic Voltage Scaling (DVS) Applications
 Harreez Villaruz (Mindanao State University - Iligan Institute of Technology, Philippines), Hong-Yi Huang (National Taipei University, Taiwan), Nieva Mapula (MSU-Iligan Institute of Technology, Philippines), Gene Fe P Palencia (Mindanao State University - Iligan Institute of Technology, Philippines) 375

| | |
|---|-----|
| <i>83.17% Power Conversion Efficiency, 13.5 dB Power Dynamic Range Rectifier for RF Energy Harvesting Applications in 22nm FDSOI Technology</i> Mike Martin C. Diangco (Mindanao State University - Iligan Institute of Technology, Philippines), Jefferson A. Hora (MSU-Iligan Institute of Technology, Australia), Xi Zhu (University of Technology Sydney, Australia) | 381 |
|---|-----|

Special session 6 - Millimeter-Wave and Terahertz Communications

| | |
|--|-----|
| <i>Demonstration of a 245 GHz Real-Time Wireless Communication Link</i> Ting Zhang (CSIRO, Australia), Hao Zhang (University of Technology Sydney, Australia), He Zhu (CSIRO, Australia), Xiaojing Huang (University of Technology Sydney, Australia), Hajime Suzuki (CSIRO, Australia), Joseph Pathikulangara (CSIRO, Australia), Ken Smart (CSIRO Space and Astronomy, Australia), Jia Du (CSIRO, Australia), Y. Jay Guo (University of Technology Sydney, Australia) | 387 |
| <i>Design of Terahertz All-Dielectric Antenna via Optimisation</i> Chenchu Ma (The University of Adelaide, Australia), Harrison N Lees (The University of Adelaide, Australia), Markus Wagner (Monash University, Australia), Withawat Withayachumnankul (The University of Adelaide, Australia) | 389 |
| <i>Photonics-Based D-Band Terahertz Wireless Communication System</i> Qigejian Wang (University of New South Wales, Australia), Shaghik Atakaramians (University of New South Wales Sydney, Australia) | 391 |

Regular session 11: Circuits and Systems II

| | |
|---|-----|
| <i>Investigation of Pilot-Based Compensation Scheme for Signal Distortion with Hexagonal Constellation</i> Keigo Uehara (Tokai University, Japan), Mamiko Inamori (Tokai University, Japan) | 393 |
| <i>Investigation of Data Transmission for Wireless Power Transfer System in Seawater</i> Ramadhan Nur Adabi (Tokai University, Japan), Keigo Uehara (Tokai University, Japan), Naoto Shibata (Tokai University, Japan), Mamiko Inamori (Tokai University, Japan) | 399 |
| <i>A Consideration on Higher Convergence Adaptive Equalization Method with Noises Reduction Function Using Total Least Squares Method</i> Ryusuke Kono (Maebashi Institute of Technology, Japan), Minoru Komatsu (Maebashi Institute of Technology, Japan), Hiroki Matsumoto (Maebashi Institute of Technology, Japan) | 403 |
| <i>Effect of High Frequency Noise Using DCMs in FPGA on Power Analysis Attack</i> .Tomooki Ukezono (Fukuoka University, Japan), Yui Koyanagi (Fukuoka University, Japan) | 407 |
| <i>Deep Learning Detection for Massive MIMO Systems</i> SeyedMohammadEsmail PourmohammadAzizi (National Taiwan Ocean University, Taiwan), Shyi-Chyi Cheng (National Taiwan Ocean University, Taiwan), Hoang-Yang Lu (National Taiwan Ocean University, Taiwan) | 413 |

Regular session 12: Wireless Communication

| | |
|--|-----|
| <i>Robust Semantic Communication Systems Based on Image Transmission</i> Xiaoxian Li (Beijing University of Posts and Telecommunications, China), Xuefei Zhang (Beijing University of Posts and Telecommunications, China), Qimei Cui (Beijing University of Posts and Telecommunications, China), Xiaofeng Tao (Beijing University of Posts and Telecommunications, China) | 419 |
| <i>Performance Analysis of DNN-PCA for DOA Estimation with Three Radio Wave Sources</i> Daniel Akira Ando (Hokkaido University, Japan), Toshihiko Nishimura (Hokkaido University, Japan), Takanori Sato (Hokkaido University, Japan), Takeo Ohgane (Hokkaido University, Japan), Yasutaka Ogawa (Hokkaido University, Japan), Junichiro Hagiwara (Hokkaido University, Japan) | 424 |
| <i>An Optimization Method for Shadow Profile Retrieval with Forward Scatter Shadow Ratio</i> Xi Shen (The University of Western Australia, Australia), Defeng Huang (University of Western Australia, Australia) | 430 |