

# **2023 IEEE 66th International Midwest Symposium on Circuits and Systems (MWSCAS 2023)**

**Tempe, Arizona, USA  
6-9 August 2023**

**Pages 1-570**



**IEEE Catalog Number: CFP23MID-POD  
ISBN: 979-8-3503-0211-0**

**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:	CFP23MID-POD
ISBN (Print-On-Demand):	979-8-3503-0211-0
ISBN (Online):	979-8-3503-0210-3
ISSN:	1548-3746

**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

Mini-YOLOX: A Lightweight Network for Real-Time Embedded Applications.....	1
<i>Ahmed N. El-Zeiny, Adham Hassan, Hassan Mostafa, Ahmed H. Khalil</i>	
Improving Flight of Crazyflie Quadcopters Using Online Reinforcement Learning .....	6
<i>Steven Comandini, Drew Shambaugh, Yufeng Lu, Jing Wang</i>	
An Efficient Meta-Reinforcement Learning Approach for Circuit Linearity Calibration Via Style Injection.....	10
<i>Chao Rong, Jeyanandh Paramesh, L. Richard Carley</i>	
Neuromorphic Dendritic Synapse Integrating Gated-RRAM.....	15
<i>Siddharth Barve, Rashmi Jha</i>	
Unsupervised IC Security with Machine Learning for Trojan Detection .....	20
<i>Ashutosh Ghimire, Fathi Amsaad, Tamzidul Hoque, Kenneth Hopkinson, Md Tauhidur Rahman</i>	
An Optimal Methodology for EM-Based Hardware Trojan Placement on Clock Tree Networks.....	25
<i>Alexandra Takou, Olympia Axelou, George Floros, Nestor Evmorfopoulos, George Stamoulis</i>	
Identification of Stealthy Hardware Trojans Through On-Chip Temperature Sensing and an Autoencoder-Based Machine Learning Algorithm.....	30
<i>Thomas Gourousis, Ziyue Zhang, Mengting Yan, Millin Zhang, Ankit Mittal, Aatmesh Shrivastava, Francesco Restuccia, Yunsi Fei, Marvin Onabajo</i>	
Ring Oscillator PUF and Blockchain: A Way of Securing Post Fabrication FPGA Supply Chain.....	35
<i>Akshay Kulkarni, Noor Ahmad Hazari, Mohammed Niamat</i>	
Analysis of Molecular MUX PUFs with Stochastic Challenges .....	40
<i>Carl Anderson, Xingyi Liu, Keshab K. Parhi</i>	
SiC MOSFET High Side Gate Driver Design Using HV CMOS Process.....	45
<i>Oliver Lexter July A. Jose, Jui-Min Kuo, Venkata Naveen Kolakaluri, Chua-Chin Wang</i>	
A 37nW, All-In-One Trim-Free Voltage/Current Reference Without Using Resistors and Amplifiers.....	50
<i>Chetan Mittal, Arnab Dey, Ashfakh Ali, Khanh M Le, Zia Abbas</i>	
Design of Wideband Multiplierless Compensators for Sharpened CIC Filters .....	55
<i>Gordana Jovanovic Dolecek, Jose M. De La Rosa</i>	
An Improved Single-Temperature Trim Technique for 1st Order-Compensated Bandgap References.....	59
<i>Daniel Adjei, Bryce Gadogbe, Degang Chen, Randall Geiger, Shravan K. Chaganti, Dhyey Desai, Jerry Doorenbos, Jim Todsén</i>	
Parasitic Extraction Modeling for Standard Cell Library on Intel 4 Technology .....	64
<i>Digvijay Rajurkar, Vidya Sagar Reddy Gopala, Srimathi Govindan</i>	
A 10-Bit 250-KS/s 1.24-uW SAR ADC for IoT Sensors with Energy-Efficient Comparator .....	69
<i>Xiaowei Zhang, Zhengxue Shi, Jianxiang Xi, Lenian He</i>	
A Two-Step SAR Capacitance-to-Digital Converter .....	74
<i>Alexander Castro, Pamela Abshire</i>	

A High-Speed Low-Power Two-Stage Comparator with Regeneration Enhancement and Through Current Suppression Techniques .....	79
<i>Chia-Wei Pai, Hiroki Ishikuro</i>	
PLL-SAR: A New High-Speed Analog to Digital Converter Architecture.....	84
<i>Vladimir Vesely, Calvin Yoji Lee, Tejasvi Anand, Un-Ku Moon</i>	
ADC-Less 3D-NAND Compute-in-Memory Architecture Using Margin Propagation .....	89
<i>Aswin Chowdary Undavalli, Gert Cauwenberghs, Arun Natarajan, Shantanu Chakrabarty, Aravind Nagulu</i>	
Design Space Exploration of Analog CAM for Tree-Based Models .....	93
<i>Aishwarya Natarajan, Luca Buonanno, Todd Richmond, David Vickers, Xia Sheng, John Moon, Darrin Miller, Giacomo Pedretti, Cat Graves, Jim Ignowski</i>	
Challenges in Circuits of Nonvolatile Compute-In-Memory for Edge AI Chips .....	98
<i>Hung-Hsi Hsu, Tai-Hao Wen, Ping-Chun Wu, Chuan-Jia Jhang, De-Qi You, Ping-Cheng Chen, Meng-Fan Chang</i>	
Modeling and Analysis of Analog Non-Volatile Devices for Compute-In-Memory Applications .....	103
<i>Carl Brando, Minseong Park, Sayma Nowshin Chowdhury, Matthew Chen, Kyusang Lee, Sahil Shah</i>	
Cross-Layer Optimizations for Ferroelectric Neuromorphic Computing.....	108
<i>A N M Nafiul Islam, Kai Ni, Abhronil Sengupta</i>	
A high-Sensitivity G3-PLC SoC with OpenCPU .....	113
<i>Shuai Zhou, Junjie Hong, Nianxiong Tan</i>	
Predictive LSB-First Successive Approximation for SAR Analog-to-Digital Converters .....	118
<i>Jiayi Chen, Xiaoming Liu, Chao Yang, Jing Jin, Zhongyuan Chang, Jianjun Zhou</i>	
A High Energy Efficiency Discrete-Time $\Sigma \Delta$ Modulator Based on Floating Inverter Amplifier.....	123
<i>Zirui Wang, Youze Xin, Bing Zhang, Yiyun Xie, Pengfei Hu, Qidi Li, Li Geng</i>	
A 0.4-11-GHz Active-Feedforward-Noise-Canceling LNA in Stacked n/pMOS Configurations .....	133
<i>Runwu Fan, Benqing Guo, Huifen Wang, Haishi Wang</i>	
An Energy Efficient 7.59-ENOB 50 MS/s Flash-SAR ADC in 65- CMOS .....	138
<i>Sanghyun Lee, Youngmin Kim</i>	
Very Compact Temperature Sensor for Power/Thermal Management .....	142
<i>Bryce Gadogbe, Ruohang Yang, Kwabena Oppong Banahene, Pallavi Ebenezer, Randall Geiger, Degang Chen</i>	
Electrical and Physical Evaluation of Logic Network Generation Methods for SCCG .....	147
<i>Jair Pérez Ramírez, Carlos Silva Cárdenas</i>	
A 250pA, Gate-Leakage Based Trimming Free Current Reference, from $-55^{\circ}\text{C}$ to $150^{\circ}\text{C}$ for Lower Power IoT Applications.....	152
<i>Abhinav Vajrala, Dheekshith Akula, Arnab Dey, Khanh M Le, Zia Abbas</i>	
A $+0.35^{\circ}\text{C} / -0.22^{\circ}\text{C}$ Inaccuracy CMOS-Based Temperature Sensor for IoT Applications .....	157
<i>Yanhan Zeng, Jie Cheng, Jianhua Chen, Wenjian Huang</i>	
Low-Power Mixed-Signal System for Processing Electric Network Frequency in IoT Devices .....	162
<i>Charana Sonnadara, Mudi Zhang, Min Wu, Sahil Shah</i>	

A Single-Event Transient (SET) Tolerant Dynamic Bias Comparator in 65- CMOS.....	167
<i>Andrew Ash, John Hu</i>	
A 1-1.7 GHz Cryogenic Fractional-N CP-PLL for Quantum Computing Applications .....	172
<i>Wenqiang Huang, Yanshu Guo, Yaoyu Li, Zhihua Wang, Yuanjin Zheng, Tiefu Li, Hanjun Jiang, Wen Jia</i>	
An Oscillator with Inductively Coupled Resonators for Readout of Stretchable Resistive Strain Sensor .....	177
<i>Billy Mårtensson, Hinata Mitomo, Baktash Behmanesh, Naoji Matsuhisa, Hiroki Ishikuro</i>	
Three-Dimensional Environmentally Sustainable Neuromorphic Computing System Based on Natural Organic Memristor .....	182
<i>Jinhui Wang, Feng Zhao, Mohammed Rafeeq Khan, Md Mehedi Hasan Tanim, Zoe Templin</i>	
Efficient and Scalable MIV-Transistor with Extended Gate in Monolithic 3D Integration.....	187
<i>Madhava Sarma Vemuri, Umamaheswara Rao Tida</i>	
Detection of Counterfeit Accelerometer ICs Using Clustering and Unsupervised Machine Learning of Allan Variance .....	192
<i>Leonard Maceachern</i>	
A Low-Cost Inkjet-Printed Heart Sound Sensor for Telehealth Application .....	197
<i>Muklasur R. Opu, Steven D. Gardner, Mohammad R. Haider</i>	
Design Space Exploration in the Physical-Design of an AI-Processor at 12 Using Relative-Placement Methodology .....	202
<i>Mohit Sharma, Pavel Sinha, Doni Dattani, Mohammed Khalid</i>	
Dynamic MAC Unit Pruning Techniques in Runtime RTL Simulation for Area-Accuracy Efficient Implementation of Neural Network Accelerator .....	207
<i>Jisu Kwon, Heuijee Yun, Daejin Park</i>	
Challenges on Design and Technology Co-Optimization: Design Automation Perspective .....	212
<i>Taewhan Kim</i>	
Challenge-Response Pair Space Enhancement for Imager-Based Physically Unclonable Functions.....	217
<i>Md Sakibur Sajal, Marc Dandin</i>	
Schmitt-Trigger Based Physically Unclonable Function with Variable $V_t$ .....	222
<i>Sesibhushana Rao Bommana, Srihari Veeramachaneni, Srinivas Mb</i>	
SRAM Vmin Scaling Via Negative Wordline .....	227
<i>Anoop Gopinath, Trond Ytterdal, Avinash Yadav, John Lee, Maher Rizkalla, Mukesh Kumar</i>	
FPGA-Based Hardware-in-the-Loop Real-Time Simulation Implementation .....	232
<i>Farshideh Kordi, Christian Barnard, Paul Fortier, Amine Miled</i>	
Doubly-Block Circulant Kernel Matrix Exploitation in Convolutional Accelerators.....	236
<i>Lucas Ferreira, Steffen Malkowsky, Patrik Persson, Karl Åström, Liang Liu</i>	
A 99.6 % Duty Cycle High-Resolution DPWM Using Reconfiguring Decoder .....	241
<i>Venkata Naveen Kolakaluri, Oliver Lexter July A. Jose, Chua-Chin Wang</i>	
A New Power Efficient, Wide-Range PWM-Based MPPT Circuit for Ultra-Low Power Energy Harvesters.....	245
<i>Mostafa Abedi, Aatmesh Shrivastava</i>	

Variable Clock Frequency for Incremental Conductance MPPT Performance.....	250
<i>Muhammad Ulum Burhani, Jayandi Soriasi Panggabean, Trio Adiono, Infall Syafalni, Nana Sutisna</i>	
Spur-Free Switch-Mode Power Supplies.....	255
<i>Tanner Tengberg, Hua Zhang, Ayman Fayed</i>	
RF Energy Harvester with Constant Off-Time Charger for Batteryless Devices .....	259
<i>Mahmoud Gshash, Vishak Narayanan, Henry Duwe, Nathan M. Neihart</i>	
A Baseline Comparison of Linear and Exponential Charge Pumps .....	264
<i>Masoud Askariraad, Stefano Gregori</i>	
Design of an Error-Tolerant Nonvolatile Register for Energy-Aware Intermittent Computing.....	269
<i>Kaede Sakai, Masanori Natsui, Takahiro Hanyu</i>	
Predictive Storage Management for Cloud-Based Video Streaming Using ML ARIMA Model.....	274
<i>Mahmoud Darwich, Kasem Khalil, Yasser Ismail, Magdy Bayoumi</i>	
On the Trustworthiness of FHIR-Based Internet-of-Things Digital Health Systems .....	279
<i>Tia Pope, Ahmad Patooghy, Abdolhossein Sarrafzadeh</i>	
A Method for Measuring Liquid Weight Using a Hilbert Transformer .....	284
<i>Jun Obara, Naoyuki Aikawa</i>	
Flexible EEG Headband with Artifact Reduction and Continuous Electrode Skin Impedance Monitoring for Neurological Disorders .....	288
<i>Muhammad Sheeraz, Atif Innayat, Muhammad Usman Nadeem, Carson Failor, Nadeem Ahmad Khan, Wala Saadeh, Muhammad Awais Bin Altaf</i>	
Long-Term Performance Evaluation of Microfluidic Check Valves Using a Flow Control Setup.....	293
<i>Yuna Jung, Daniel Gulick, Jennifer Blain Christen</i>	
Artifacts Removal Techniques for the European iEEG Dataset .....	298
<i>Shiva Maleki Varnosfaderani, Ian McNulty, Nabil J. Sarhan, Mohammad Alhawari</i>	
Practical Implementation of Instantaneous Frequency Mass Spectrometry .....	303
<i>Sasha Smith, Steven Sandoval, Tanner Schaub, Phillip L. De Leon</i>	
A Very Sensitive NO <sub>2</sub> Gas Monitoring System Based on MoS <sub>2</sub> Nanosheet.....	308
<i>You Zhou, Sheng Wang, Sichen Xin, Yuhang Wang, Zhenyu Li, Mona Zaghloul</i>	
Sensor Fusion Image Processing for Autonomous Robot Blimps .....	312
<i>Aaron Mendoza, Andrew Lovelace, Steven Potter, Scott Koziol</i>	
Spectral Responsivity and Photoresponse Non-Uniformity of a Perimeter-Gated Single-Photon Avalanche Diode Imager .....	317
<i>Fahimeh Dehghandehnavi, Md Sakibur Sajal, Kai-Chun Lin, Marc Dandin</i>	
A Low Cost Physical Stimulus Emulator for Motion and Pressure Sensors.....	322
<i>Ishaan Bassi, Sule Ozev</i>	
Analytical Array-Level Comparison of Read/Write Performance Between Voltage Controlled-MRAM and STT-MRAM.....	326
<i>Haris Suhail, Jiyue Yang, Haoran He, Kang L Wang, Sudhakar Pamarti</i>	

Quantum Anomalous Hall Effect-Based Variation Robust Binary Content Addressable Memory .....	331
<i>Md Mazharul Islam, Jack Hutchins, Shamiul Alam, Md Shafayat Hossain, Akhilesh Jaiswal, Ahmedullah Aziz</i>	
A Reconfigurable Monolithic 3D Switched-Capacitor DC-DC Converter with Back-End-of-Line Oxide Channel Transistor .....	336
<i>Jungyoun Kwak, Wantong Li, Shimeng Yu</i>	
A Fully Passive Selectorless ReRAM Array .....	341
<i>Abdulaziz Alshaya, Adil Malik, Andrea Mifsud, Christos Papavassiliou</i>	
Hardware Implementation of Digital Memcomputing on Small-Size FPGAs .....	346
<i>Dyk Chung Nguyen, Yuan-Hang Zhang, Massimiliano Di Ventra, Yuriy V. Pershin</i>	
Tidal Current Fundamental Frequency Determination Algorithm for Integer Arithmetic Units .....	351
<i>Juan Montiel-Caminos, Javier Sosa, Juan A. Montiel-Nelson</i>	
Energy-Efficient Unified Multi-Hash Coprocessor for Securing IoT Systems Integrating Blockchain.....	355
<i>Pham Hoai Luan, Thi Sang Duong, Vu Trung Duong Le, Thi Hong Tran, Yasuhiko Nakashima</i>	
A RISC-V Instruction Set Extension for Flexible Hardware/Software Protection of Cryptosystems Masked at High Orders.....	360
<i>Fabrice Lozachmeur, Arnaud Tisserand</i>	
Design of a 15-Bit 160-MS/s Sigma-Delta DAC for BIST Generation in Automotive RADAR Systems.....	365
<i>Pablo Cruz-Dato, Miguel Chanca-Martín, José M. De La Rosa</i>	
Feedback Stochastic ADC .....	370
<i>Takashi Miki</i>	
A Highly Multi-Bit Continuous-Time Delta-Sigma Modulator ADC with 9-Bit Feedback.....	375
<i>Jun-Yi Wu, Hsin-Shu Chen</i>	
Quadrature Control-Bounded ADCs .....	380
<i>Hampus Malmberg, Fredrik Feyling, Jose M De La Rosa</i>	
Memorial Contributions of Graham Jullien to Emerging Residue Number System Technologies During the Evolution of Digital Signal Processing and Computer Arithmetic .....	385
<i>W. Kenneth Jenkins</i>	
Design and Implementation of Full Adder Circuit Based on VTM-Logic Gates .....	389
<i>Farzad Mozafari, Majid Ahmadi, Arash Ahmadi</i>	
Wheeled Mobile Robot Modeling for Local Navigation Using System Identification .....	394
<i>Cheng-Lung Lee, Mark J. Paulik, Mohan Krishnan</i>	
High-Efficiency Wideband Envelope-Tracking Power Amplifier Module with GaN PA for 5G NR Base-Station Applications .....	399
<i>Chin Hsia</i>	
Salvaging Gate-Drive Power in Switched Power Supplies .....	404
<i>Guillaume Guérin, Gabriel A. Rincón-Mora</i>	
Maximum Power-Point Theory for Thermoelectric Harvesters .....	409
<i>Xi Li, Gabriel A. Rincón-Mora</i>	

An Efficient Switched Capacitor DC-DC Converter for Body Heat Energy Harvesting .....	414
<i>Linran Zhao, Yaoyao Jia</i>	
Maximum DC–DC Conversion in Switched-Inductor Power Supplies.....	419
<i>Qiwei Chen, Gabriel A. Rincón-Mora</i>	
Invited: An Active Filter Balun and Frequency Doubler for Parametric Phase Noise Reduction Systems.....	424
<i>Thomas Gourousis, Mengting Yan, Hussein M. E. Hussein, Cristian Cassella, Matteo Rinaldi, Marvin Onabajo</i>	
On Body Characterization of Flexible Electrodes for Human-Body Communication .....	429
<i>Amr N. Abdelrahman, David Lago-Cachón, Mohammed E. Fouda, Ahmed M. Eltawil</i>	
A Planar Coil Design Using Deep Learning.....	434
<i>Ali Nezaratizadeh, Sultan Mahmud, Adam Khalifa</i>	
Invited: Ring-Oscillator Physical Unclonable Function (RO-PUF) Based PRBS Generation as a Device Signature in Distributed Brain Implants.....	439
<i>Ovishake Sen, Baibhab Chatterjee</i>	
Invited: IoB: the Vision of the Internet of Bodies.....	444
<i>Arunashish Datta, Shreyas Sen</i>	
Toward Biorealistic Silicon Neural Circuits on Reconfigurable Platforms .....	449
<i>Swagat Bhattacharyya, Pranav O. Mathews, Praveen Raj Ayyappan, Jennifer O. Hasler</i>	
Efficient Implementation of a Fully Analog Neural Network on a Reconfigurable Platform .....	454
<i>Afolabi Ige, Jennifer Hasler</i>	
Autoencoder-Based Features Extraction for the Health Monitoring in the Space Domain .....	458
<i>Silvia Onofri, Andriy Enttsel, Livia Manovi, Alex Marchioni, Salvatore Cognetta, Francesco Corallo, Carlo Ciancarelli, Mauro Mangia, Riccardo Rovatti, Gianluca Setti</i>	
Spike-Timing-Dependent Plasticity for a Hafnium-Oxide Memristive Synapse.....	463
<i>Nishith N. Chakraborty, Hritom Das, Garrett S. Rose</i>	
A Cyclic Vernier Digital-To-Time Converter for Time-Mode Successive Approximation TDC.....	468
<i>Daniel Junehee Lee, Fei Yuan, Yushi Zhou</i>	
A 3.97 $\mu$ W 11.2b 500 kS/s Hybrid SAR ADC Via Time-Mode Signal Processing .....	472
<i>Ian Perczak, Fei Yuan</i>	
Small Area, High Accuracy Sub-Radix Resistive Current Mode Digital-To-Analog Converter with Novel Calibration Algorithm .....	477
<i>Isaac Bruce, Michael Sekyere, Emmanuel Nti Darko, Ekaniyere Oko Odion, Kushagra Bhatheja, Degang Chen</i>	
A Fully Synthesizable Dynamic Voltage Comparator with Time-Domain Offset Calibration .....	482
<i>Shunyan Wang, Yuekang Guo, Qiang Pan, Xiaoming Liu, Shan Wang, Jing Jin</i>	
Extrema-Triggered Analog-Digital Conversion for Low-Power Wireless Sensor Nodes.....	486
<i>Swagat Bhattacharyya, Jennifer O. Hasler</i>	
AutoHLS: Learning to Accelerate Design Space Exploration for HLS Designs.....	491
<i>Md Rubel Ahmed, Toshiaki Koike-Akino, Kieran Parsons, Ye Wang</i>	



System-On-Chip Message Flow Mining with Masked-Language Models.....	496
<i>Md Rubel Ahmed, Bardia Nadimi, Hao Zheng</i>	
An Energy Efficient Sorting Architecture with Cell-Gating for Top-K Sorting on FPGA .....	501
<i>Jaehyeon So, Yongsoo Kim, Chanwook Hwang, Jong Hwan Ko</i>	
Novel Fence Generation Methods for Accelerating Reconfigurable Exact Synthesis.....	506
<i>Liuting Shang, Sheng Lu, Sungyong Jung, Chenyun Pan</i>	
RELUT-GNN: Reverse Engineering Data Path Elements from LUT Netlists Using Graph Neural Networks .....	511
<i>Kishore Pula, Aparajithan Nathamuni Venkatesan, Ram Venkat Narayanan, Sundarakumar Muthukumar, Ranga Vemuri, John Emmert</i>	
Hessian-Based Parameter Quantization Method for BERT .....	516
<i>Woohong Byun, Saibal Mukhopadhyay</i>	
EARB: An Edge-Assisted Residual Block for Image Retrieval .....	521
<i>Farzad Sabahi, M. Omair Ahmad, M. N. S. Swamy</i>	
A Hierarchical Communication Algorithm for Distributed Deep Learning Training .....	526
<i>Jiayu Zhang, Shaojun Cheng, Feng Dong, Ke Chen, Yong Qiao, Zhigang Mao, Jianfei Jiang</i>	
QuickNN: Python Toolbox for Training and Optimizing ANN for Hardware Implementation .....	531
<i>Khaled Humood, Alex Serb, Shiwei Wang, Themis Prodromakis</i>	
In-Memory-Computing (IMC) Technique in Local Difference Decision Block of an On-Board Satellite Hyperspectral Data Compression Algorithm.....	536
<i>Vijay Joshi, Sheeba Rani J</i>	
A 64Gbps 1.36 V <sub>ppd</sub> 1.44pJ/b Fully CMOS-Style Transmitter with Active Hybrid Driver in 28 CMOS.....	541
<i>Da Fu, Danyu Wu, Xuan Guo, Hanbo Jia, Jie Fu, Shan Lu, Xinyu Liu</i>	
Power and Memory Efficient High-Speed RL Based Run Time Power Manager for Edge Computation .....	546
<i>Ratnala Vinay, Kartik Laad, Chandrajit Pal, Pradip Sasmal, Toshihisa Haraki, Chirag Juyal, Mohamed Amir Gabir Elbakri, Amit Acharyya</i>	
Digital Twin Based Fault-Tolerance Framework for RRAM Based Neural Computing Systems.....	551
<i>Chandrasekhara Srinivas Vatti, Sai Dinesh Y V, Anagha Nimbekar, Amit Acharyya</i>	
Granular Transistor-Level Approaches for QDI Asynchronous Crossbar Switches .....	556
<i>Shahzad Haider, Song Chen</i>	
FORSA: Exploiting Filter Ordering to Reduce Switching Activity for Low Power CNNs.....	561
<i>Yasmin Halawani, Huruy Tesfai, Baker Mohammad, Hani Saleh</i>	
Energy-Efficient Pose-Estimation FPGA-Accelerator for Real-Time Mobile V-SLAM Robot.....	566
<i>Cheng Nian, Weiyi Zhang, Liting Niu, Yiyang Wang, Chaoyang Ding, Fei Shao, Chun Zhang</i>	
Wireless Sensor Node System to Monitor Pig Activities for Behavior Classification .....	571
<i>Brandon Cheung, Yuezong Xu, Dong Sam Ha</i>	
Design of a Sensor Network for Deep-Water Current Monitoring in Aquaculture Facilities .....	576
<i>Nieves G. Hernandez-Gonzalez, Juan Montiel-Caminos, Javier Sosa, Juan A. Montiel-Nelson</i>	

A Single Camera Vision-Based Pose Tracking and Control System .....	580
<i>Hunter Stuckey, Nicholas Grijalva, Luis Rodolfo Garcia Carrillo, Wei Tang</i>	
A Custom ASIC for Impedance Sensing Systems .....	585
<i>Andalib Nizam, Shaghayegh Aslanzadeh, Jaime Campos, Bathiya Senevirathna, Pamela Abshire, Brian Thompson, Abhishek Motayed, Nicole McFarlane</i>	
SPAD Based CMOS Monolithic PPG Sensor .....	590
<i>Shante Hicks, Sajid Hasan, Mst Shamim Ara Shawkat</i>	
A Compact and Accurate MOS-Based Temperature Sensor for Thermal Management .....	594
<i>Ruohan Yang, Bryce Gadogbe, Randall L. Geiger, Degang Chen</i>	
A 15 $\mu$ W Low Cost CMOS Smart Temperature Sensor .....	599
<i>Bryce Gadogbe, Randall Geiger</i>	
Ultra-Small Area, Highly Linear Sub-Radix R-2R Digital-To-Analog Converters with Novel Calibration Algorithm.....	604
<i>Michael Sekyere, Emmanuel Nti Darko, Isaac Bruce, Ekaniyere Oko Odion, Kushagra Bhatheja, Degang Chen</i>	
A Non-Linearity Digital Background Calibration Algorithm with Piece-Wise Linear Functions .....	609
<i>Ke Wu, Yuekang Guo, Xiaoming Liu, Jing Jin, Howard C. Yang, Jianjun Zhou</i>	
Reference Clock Jitter Immunity by Accurate DPLL Bandwidth Control in a Multiple-Link Die-to-Die Interface .....	614
<i>Ping Lu, Bupesh Pandita, Minhan Chen</i>	
Mismatch Driven Systematic Design Methodology for Transistor Based Active Resistors .....	619
<i>Andreas Tsioungkos, Alkis Hatzopoulos, Vasilis F. Pavlidis</i>	
A High-Speed Comparator Using a New Regeneration Latch .....	624
<i>Hamid Karrari, Pietro Andreani, Siyu Tan</i>	
Multiply-And-Max/min Neurons at the Edge: Pruned Autoencoder Implementation .....	629
<i>Philippe Bich, Luciano Prono, Mauro Mangia, Fabio Pareschi, Riccardo Rovatti, Gianluca Setti</i>	
A Novel Approach for PV Cell Fault Detection Using YOLOv8 and Particle Swarm Optimization .....	634
<i>Quoc Bao Phan, Tuy Tan Nguyen</i>	
Integrating Gstreamer with Xilinx's ZCU 104 Edge Platform for Real-Time Intelligent Image Enhancement .....	639
<i>Jonathan Sanderson, Syed Rafay Hasan, Besma Abidi, Mongi Abidi</i>	
Spike-Driven Synaptic Plasticity for a Memristive Neuromorphic Core .....	644
<i>Nishith N. Chakraborty, Hritom Das, Garrett S. Rose</i>	
Q-Learning Algorithm with Double-Agent Reinforcement Learning for Smart Traffic Controller .....	649
<i>Jalu Reswara, Nana Sutisna, Infall Syafalni, Trio Adiono</i>	
Analysis of Dual-Row and Dual-Array Crossbars in Mixed Signal Deep Neural Networks .....	654
<i>Melvin D. Edwards, Nabil J. Sarhan, Mohammad Alhawari</i>	
Investigating R(t) Functions for Spike-Timing-Dependent Plasticity in Memristive Neural Networks .....	659
<i>Farhana Afrin, Kurtis D. Cantley</i>	

A Digitally Configurable Outphasing Switched-Capacitor-Based RF Transmitter .....	664
<i>Ajmal Vadakkan Kayyil, Bo Qiao, David Allstot</i>	
A 180 - 200 GHz CMOS Carrier Generator for Broadband Sensing and Communication Transmitter Systems .....	669
<i>N/A</i>	
RF Power Amplifier Control System with Dynamic Load Conditions .....	674
<i>T. Walpita, M. N Mahmoud, A. Eroglu</i>	
Design and Analysis of Low Power 20 GHz Colpitts VCO with FoM of 196.26 dBc/Hz .....	679
<i>Srayan Sankar Chatterjee, Arpit Sahni, Harikrishna Kambham, Zia Abbas, Abhishek Srivastava</i>	
A 60 GHz and 2.08 mW Active Quasi-Circulator in 22 FDSOI Technology .....	684
<i>Sujan Chowdhury, Arindom Chakraborty, Upal Barna Joy, Abrar Fahim, Muhtasim Alam Chowdhury, Mehedi Hasan</i>	
A Linear Ratioed Impedance and Driver-Based True Full-Duplex IO with Background Self- Interference Cancellation.....	689
<i> Ganpat Anant Parulekar, Sandeep Goyal, Nikhil Ajith, Ishan Mishra, Shalabh Gupta</i>	
Multi-Probability Hash-based Random Number Generator for Post-Quantum Cryptography.....	694
<i>Aobo Li., Jiahao Lu, Dongsheng Liu, Ang Hu, Xiang Li, Shuo Yang, Tianze Huang</i>	
A Hardware-In-the-Loop Simulator for mmWave Massive MIMO Using PYNQ Framework.....	698
<i>Sijia Cheng, Ozan Alp Topal, Mustafa Ozger, Cicek Cavdar, Ove Edfors, Liang Liu</i>	
Privacy-Preserving and Hardware Acceleration-Based Authentication Scheme for Data Collection in E-Health Applications .....	703
<i>Kasem Khalil, Ahmed Sherif, Mohammad M. R. K. Mamun, Mohamed Elersy, Ahmad Abdel- Aliem Imam, Muhammad Hataba, Mohamed Mahmoud</i>	
Randomized Bulk-Voltages: A Countermeasure to Mask Side-Channel Leakage of CMOS Logic Gates.....	708
<i>Magnus Amble, Snorre Aunet, Dag T. Wisland, Kristian G. Kjelgård</i>	
Time-Based Optical Receiver Featuring a Linear Current-to-Time Conversion with Equalization .....	713
<i>Mohamed Ahmed, Tawfiq Musah</i>	
A 2- $\mu$ W, 0.64- $\mu$ Vrms ECG Recording Chopper Amplifier with Digital-Current DSL .....	718
<i>Yanhan Zeng, Yongsen Chen, Yuchen Bao, Weijian Chen</i>	
Preliminary Testing of Minimally Invasive pH and Carbon Dioxide Sensors for Infant Monitoring.....	723
<i>Karl Ernsberger, Daniel Gulick, Sritharini Radhakrishnan, Ahmed Al Sultani, Ian Akamine, Mark I Evans, Jennifer Blain Christen</i>	
Field Uniformity Optimization for Integrated Capacitance Sensing of Tumor Treating Field-Treated Cancer Cell Cultures.....	728
<i>Yann Gilpin, Joseph Yankel, Marc Dandin</i>	
Biologically Plausible Learning on Neuromorphic Hardware Architectures .....	733
<i>Christopher Wolters, Brady Taylor, Edward Hanson, Xiaoxuan Yang, Ulf Schlichtmann, Yiran Chen</i>	
Homeostatic Plasticity in a Leaky Integrate and Fire Neuron Using Tunable Leak .....	738
<i>Nishith N. Chakraborty, Hritom Das, Garrett S. Rose</i>	

Review of Hardware Implementation of SNN .....	743
<i>Mst Shamim Ara Shawkat, Sajid Hasan</i>	
Synaptic Scaling and Optimal Bias Adjustments for Power Reduction in Neuromorphic Systems .....	748
<i>Cory Merkel</i>	
A Resistive Sensor Interface IC with Inductively Coupled Wireless Energy Harvesting and Data Telemetry for Implantable Pressure Sensing .....	753
<i>Zehua Lan, Jiahua Shi, Yaoyu Li, Jiayue Hao, Yanshu Guo, Zhihua Wang, Hanjun Jiang, Wen Jia</i>	
Cardiac Arrhythmias Classification Using Machine Learning and Single-Lead ECG .....	758
<i>Muhammad Ali Nauman, Carson Faylor, Wala Saadeh</i>	
A 128-Ch Neurochemical Microchip with Highly-Scalable Low-Noise Resistive Feedback Amplifiers.....	763
<i>Kevin A. White, Jinwoo Park, Brian N. Kim</i>	
Wireless Stimulation of Motor Cortex Using an Ultra-Thin Implant Fabricated on Parylene/PDMS.....	768
<i>Abed Benbuk, Daniel Gulick, Diogo Moniz-Garcia, Shiyi Liu, Alfredo Quinones-Hinojosa, Jennifer Blain Christen</i>	
COMSOL Modeling of ISFET for pH Sensing and Antigen-Antibody Detection .....	773
<i>Utku Noyan, Glenn Ray, Avery Snow Cobb, Pamela Abshire, Sahil Shah</i>	
A 1.5 mW, 28 GHz Noise-Cancelling LNA in 65- CMOS .....	778
<i>Abdullah Kurtoglu, Hossein M. Lavasani</i>	
High IIP3 and Low Power Upconversion Mixer Utilizing Backgate Input in 22 FDSOI .....	783
<i>Sutton Hathorn, Saeed Mohammadi</i>	
CMOS Adaptive Optical Wireless Receiver for Ultra-Low-Power IoT Applications .....	787
<i>Sasan Nikseresht, Daniel Fernández, Jordi Cosp, Jordi Madrenas</i>	
Optimization of DCO Using Latch-Based Varactor Cells for a Cell-Based PLL .....	792
<i>Yi-Sheng Wang, Hsiang-Kai Teng, Shi-Yu Huang</i>	
Comparative Study of Low Bit-Width DNN Accelerators: Opportunities and Challenges .....	797
<i>Deepak Vungarala, Mehrdad Morsali, Sepehr Tabrizchi, Arman Roohi, Shaahin Angizi</i>	
Bottlenecks in Secure Adoption of Deep Neural Networks in Safety-Critical Applications .....	801
<i>Sanjay Das, Shamik Kundu, Kanad Basu</i>	
Integrated Photonic AI Accelerators Under Hardware Security Attacks: Impacts and Countermeasures .....	806
<i>Felipe G. De Magalhaes, Mahdi Nikdast, Gabriela Nicolescu</i>	
Hardware-Optimized Hyperdimensional Computing for Real-Time Learning .....	811
<i>Hanning Chen, Hamza Errahmouni Barkam, Mohsen Imani</i>	
Security of Hardware Generators: Enabling Assurance in High-Level Synthesis .....	816
<i>Md Rafid Muttaki, Zahin Ibnat, Shang Shi, Hadi M Kamali, Farimah Farahmandi</i>	
Securing AI Hardware: Challenges in Detecting and Mitigating Hardware Trojans in ML Accelerators.....	821
<i>Kevin Immanuel Gubbi, Inderpreet Kaur, Abdallah Hashem, Sai Manoj P D, Houman Homayoun, Avesta Sasan, Soheil Salehi</i>	

Adaptive Fault Tolerance Inherently Included in Bio-Inspired Adaptive Digital Filtering .....	826
<i>W. K. Jenkins, C. Radhakrishnan</i>	
American Multinomial Option Pricing on FPGA Using OneAPI .....	831
<i>Aidan O Mahony, Gil Zeidan, Bernard Hanzon, Emanuel Popovici</i>	
FPGA Implementation of Dehazing Model Based Low-Light Image Enhancement Algorithm .....	836
<i>Bharat Bhushan Upadhyay, Kishor P. Sarawadekar</i>	
Practical Markov Chain and Von Neumann Based Post-Processing Circuits for True Random Number Generators .....	841
<i>Ruilin Zhang, Haochen Zhang, Xingyu Wang, Ye Ziyang, Kunyang Liu, Hirofumi Shinohara</i>	
Low Voltage CMOS Class AB Current Mirror/Precision Rectifier .....	846
<i>Anindita Paul, Jaime Ramirez-Angulo, Manaswini Gangineni, Jesus Huerta-Chua</i>	
An Architectural Framework for On-Line Health Monitoring of Integrated Circuits .....	850
<i>Kushagra Bhatheja, Degang Chen</i>	
A High-Performance Digitally Programmable FVF-Based LDO for Efficient Power Management in Driving Distributed Loads Using a Shared Power Grid .....	855
<i>Ashish Papreja, Rakesh K. K., Aravind Polkampally, Syed Azeemuddin</i>	
A High-PSR Wide-Load Capacitor-Less LDO with Back-Gate Control Technique in 22- FD-SOI .....	860
<i>Alper Kurt, Muhammed Mustafa Kizmaz, Ahmet Tekin</i>	
A 0.6-1.2V-Input and 10 $\mu$ -Load LDO Based on Voltage-Difference-to-Time Converter with Adaptive-Power Transistors .....	865
<i>Qianhui Ge, Yuting Zhang, Yanhan Zeng</i>	
Modeling of Bias-Dependent Single Event Transients for Circuit Sensitivity Calculation .....	870
<i>Chandru Ramamurthy, Zachary Giorno, Marek Turowski, Esko Mikkola</i>	
Pulsed ToF LiDAR-Based Depth Imaging: SPAD Circuit Considerations and Simulation Study .....	875
<i>Utku Noyan, Sheung Lu, Abdullah Al-Shabli, Marc Dandin, Stanley H. Chan, Pamela Abshire</i>	
A Multi-Stage Zero-Crossing-Based Amplifier Using Floating-Inverter Amplifier with Background Offset Calibration and Self-Timed Loop .....	880
<i>Taylor Barton, Yen-Cheng Kuan, Shiuh-Hua Wood Chiang</i>	
Ultra-Low I <sub>Q</sub> Fully Integrated OS LDO with Enhanced Load Regulation and Startup for RF Energy Harvesting Sensors .....	885
<i>Puyang Zheng, Xiao Sha, Dyumaan Arvind, Yang Xie, Milutin Stanacevic</i>	
Dynamic Averager Based Sub-1V Bandgap Voltage Reference .....	890
<i>Rakesh Kumar Palani, Rajasekhar Nagulapalli, Srikar Bhagavatula</i>	
A 28GHz Low Jitter, Low Power Fully Differential Self-Biased Clock Buffer with Embedded Low Pass Filter Utilizing Enable Switch in 16 FinFET .....	895
<i>Shun Nagata, Ewout Martens, Adam Cooman, Jan Craninckx</i>	
Investigating a Quantum Cloud Paradigm with Quantum Neural Networks.....	900
<i>Maxwell Yarter, Glen Uehara, Andreas Spanias</i>	
Design of a Tunable Astrocyte Neuromorphic Circuitry with Adaptable Fault Tolerance .....	904
<i>M. L. Varshika, Sarah Johari, Jayanth Dubey, Anup Das</i>	

A 701.7 TOPS/W Time-Domain Spiking Neural Network Compute-in-Memory Processor with 9T1C Bitcell .....	909
<i>Keonhee Park, Hoichang Jeong, Kyuho Lee</i>	
A Tunable Morris-Lecar Spiking Neuron in CMOS.....	914
<i>Jack Ou, Pietro M. Ferreira</i>	
Energy Efficient and High-Performance Synaptic Operating Point Evaluation for SNN Applications .....	918
<i>Nishith N. Chakraborty, Snb Tushar, Hritom Das, Garrett S. Rose</i>	
Efficient PAPR Reduction for Discrete Multi-Tone Signalling in High-Speed Wireline Applications .....	924
<i>Jeremy Cosson-Martin, Miad Laghaei, Hossein Shakiba, Ali Sheikholeslami</i>	
A Sub-Sampling Phase Detector for Low-Power PAM4 Clock Recovery Circuit .....	929
<i>Alok Kumar, Shalabh Gupta</i>	
Design and Implementation of Certificateless Cryptography for IoT Applications .....	933
<i>Neam Fares, Bo Wang, Spiridon Bakiras</i>	
Channel Modeling and Characterization of EQS Capacitive Coupling Human Body Communication .....	938
<i>Qi Huang, Abdelhay Ali, Abdulkadir Celik, Ahmed Eltawil</i>	
Denoising Method for R Signals Based on Two Domain Sparse Representation.....	943
<i>Satoru Kubota, Kazumori Uruma, Toshihiro Furukawa, Hiroyuki Yashima</i>	
A pH Sensing System with Security Enhanced Cryptographic System.....	947
<i>Mohammad Farhan, Atik Yasir Rahman, Nicole McFarlane</i>	
Single Photon LiDAR Compression: An Overview .....	952
<i>Abdullah H Al-Shabli, Hashan K Weerasooriya, Harshana Weligampola, Prateek Chennuri, Pamela Abshire, Stanley Chan</i>	
Many-Core Display Stream Compression Decoders with Simplified Pixel Prediction.....	957
<i>Shifu Wu, Bevan Baas</i>	
LTM-GAN: A Light-Weight Generative Adversarial Net for Tone Mapping .....	962
<i>Di Li, Susanto Rahardja</i>	
A Floating-Point $16 \times 16$ SVD Accelerator for Beyond-5G Large Intelligent Surfaces.....	967
<i>Mohammad Attari, Jesús Rodríguez Sánchez, Liang Liu</i>	
Energy-Efficient High-Speed Architecture for Vehicle Speed Prediction Using Microcontrollers .....	972
<i>Mohammed Rafi Shaik, Dubacharla Gyaneshwar, Dheeraj Chellu, Shikari Sriker, Pabitra Das, Karthikeyan Mohanraj, Tejas Arya, Amit Acharyya</i>	
Hardware-Efficient Accurate and Approximate FPGA Multipliers for Error-Tolerant Applications.....	977
<i>Haonan Wang, Ke Chen, Chenggang Yan, Bi Wu, Weiqiang Liu</i>	
A High Accuracy and Hardware Efficient Adaptive Filter Design with Approximate Computing .....	982
<i>Wenzhuo Xie, Chenggang Yan, Hanghang Wang, Ke Chen, Bi Wu, Chenghua Wang, Weiqiang Liu</i>	
A 400-MS/s 10-Bit SAR-Assisted Two-Step Digital-Slope ADC .....	987
<i>Hao Deng, Runxi Zhang, Jinghong Chen</i>	

Common-Mode Drift Resilient Ring-Oscillator-Based Time-Domain Filter for Next-Generation Wireless .....	991
<i>Qiuyan Xu, Chung-Ching Lin, Huan Hut, Subhanshu Gupta</i>	
A VCO Linearization Technique Using Dual-VCO and Interpolation for Time-Based ADCs.....	996
<i>Shea Smith, Armin Tajalli, Shiuh-Hua Wood Chiang</i>	
A Technique to Increase the Linearity of the Bootstrapped Switch.....	1001
<i>Hamid Karrari, Pietro Andreani, Siyu Tan</i>	
An 8-GHz Octa-Phase Clock Corrector with Phase and Duty-Cycle Correction in 40- CMOS .....	1005
<i>Jung-Woo Sull, Minkyoo Shim, Jung-Hun Park, Sanghee Lee, Deog-Kyoon Jeong</i>	
Optimization of CMOS Voltage Reference with Blended Distribution Estimation Based on Parameter Evolutionary Algorithms .....	1010
<i>Yanhan Zeng, Chenglin Li, Xiaofei Yu, Yanshen Luo, Jiahui Zhao, Jintao Lit</i>	
Evaluation of a Primary-Side Parameters-Agnostic Power Regulation Method on Different WPT Topologies .....	1015
<i>Andrea Celentano, Carmine Paolino, Fabio Pareschi, Riccardo Rovatti, Gianluca Setti</i>	
Structured Pruning in Deep Neural Networks with Trainable Probability Masks .....	1020
<i>F. Martinini, A. Enttsel, A. Marchioni, M. Mangia, R. Rovatti, G. Setti</i>	
AI-Enhanced Codesign of Neuromorphic Circuits.....	1025
<i>Douglas C. Crowder, J. Darby Smith, Suma G. Cardwell</i>	
Hardware-Friendly Block Variable-Length Sampling Pruning for Graph Neural Networks.....	1030
<i>Jing Zhang, Gengsheng Chen, Lingyun Ke, Luchang Ding, Xin Fan, Zehao Wu, Lei Shen, Chang Cai</i>	
Design Space Exploration Tool for Mixed-Signal Spiking Neural Network.....	1035
<i>Sayma Nowshin Chowdhury, Sahil Shah</i>	
A Hardware-Friendly Quantization and Model Fine Tuning with STEBC for Object Detection.....	1040
<i>Chia-chi Tsai</i>	
Behavior Analysis of the Binary Hyperbolic Tangent (Btanh) Algorithm.....	1045
<i>Seth Shively, Eugene Chabot, John Dicecco, Scott Koziol</i>	
Targeted Background Removal Creates Interpretable Feature Visualizations .....	1050
<i>Ian E. Nielsen, Erik Grundeland, Joseph Snedeker, Ravi P. Ramachandran, Ghulam Rasool</i>	
Indoor Localization System Based on Bluetooth Low Energy Beacons and Spiking Neural Networks .....	1055
<i>Baejah, Nur Ahmadi, Trio Adiono</i>	
SpectroNet: A Low Complexity CNN-LSTM Architecture for Keyword Spotting Application .....	1060
<i>Clarence Amadeus, Infall Syafalni, Nana Sutisna, Trio Adiono</i>	
Applicability of Hyperdimensional Computing for Seizure Prediction Using LBP and PSD Features from iEEG .....	1065
<i>Lulu Ge, Keshab K. Parhi</i>	
Vibration Frequency Detection of Stepping Motors Using a Finite-Order Hilbert Transformer by a Variable FIR Filter with Transmission Zeros.....	1070
<i>Teppeï Ota, Masayoshi Nakamoto, Kei Kozakai, Kohei Terashima, Naoyuki Aikawa</i>	

Enviroental Characterization of a Fluorescence Detecting Point of Care System.....	1075
<i>Vi T. Nguyen, Jennifer Blain Christen</i>	
Flexible Textile Based Electrooculogram Wearable Eye Tracking System for Human-Machine Interface.....	1079
<i>Wenxin Zeng, Ruben Del-Rio-Ruiz, Sameer Sonkusale</i>	
Split Manufacturing Based Secure Hardware Design by BEOL Signal Selection in High Level Synthesis.....	1083
<i>Haimanti Chakraborty, Ranga Vemuri</i>	
Benchmarking for Hardware Security: Types, Design Levels, and Limitations.....	1088
<i>Niraj Prasad Bhatta, Harshdeep Singh, Fathi Amsaad</i>	
Multi-Criteria Hardware Trojan Detection: A Reinforcement Learning Approach .....	1093
<i>Amin Sarihi, Peter Jamieson, Ahmad Patooghy, Abdel-Hameed A. Badawy</i>	
Mitigation of Rowhammer Attack on DDR4 Memory: A Novel Multi-Table Frequent Element Algorithm Based Approach .....	1098
<i>Samuel Sylvester, Jonathan Sanderson, Syed Rafay Hasan</i>	
Hybrid Shielding: Amplifying the Power of Camouflaging and Logic Encryption .....	1103
<i>Nikhil Saxena, Ranga Vemuri</i>	
Joint Software-Hardware Design for Green AI .....	1108
<i>Md Rubel Ahmed, Toshiaki Koike-Akino, Kieran Parsons, Ye Wang</i>	
On the Discretization of Fractional-Order Laplacian Operators.....	1113
<i>Reyad El-Khazali, Nabil Tawalbeh, Ali Al-Hayajneh</i>	
Leveraging a Novel Two-Level Priority Encoder for High-Precision Integer Multiplication .....	1118
<i>Maxwell Phillips, Firas Hassan, Ahmed Ammar, Nathan Hagerdorn</i>	
A Technology/Circuit Co-Design Framework for Emerging Reconfigurable Devices.....	1123
<i>Sheng Lu, Zhenlin Pei, Liuting Shang, Sungyong Jung, Chenyun Pan</i>	
Towards No Penalty Control Hazard Handling .....	1128
<i>Linknath Surya Balasubramanian, Maher Rizkalla, John J. Lee, Trond Ytterdal, Mukesh Kumar</i>	
Diode-Triode Current Mirror Inverter PUF: A Novel Mixed-Signal Low Power Analog PUF.....	1132
<i>C. G. Gisha, Ananda Sankar Chakraborty, Rajat Subhra Chakraborty, Bijoy Antony Jose, Jimson Mathew</i>	

## **Author Index**