

2024 IEEE East-West Design & Test Symposium (EWDTS 2024)

**Yerevan, Armenia
13-17 November 2024**



**IEEE Catalog Number: CFP24DTW-POD
ISBN: 979-8-3315-1577-5**

**Copyright © 2024 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:	CFP24DTW-POD
ISBN (Print-On-Demand):	979-8-3315-1577-5
ISBN (Online):	979-8-3315-1576-8
ISSN:	2373-826X

Additional Copies of This Publication Are Available From:

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

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Automatic Deburring of 3D-Printed Parts Using a Delta Robot and Augmented Reality	1
<i>Philipp Heinrich, Mobayode O. Akinsolu, Shafiul Monir, Yuriy Vagapov</i>	
Weight-Based Sum Codes Apply Coefficients from Leading Digits with Which the Powers of Two Begin for Calculations Control Organization in Discrete Systems.....	6
<i>Dmitry V. Efanov, Yeseniya I. Yelina</i>	
Analysis of the Efficiency of Using Computers with an Array-Parallel Architecture for Processing Spectral Data of Astronomical Objects.....	14
<i>Olesia Barkovska, Dmytro Nikolaienko, Patrik Rusnak, Vitalii Tkachov, Anton Havrashenko</i>	
Sense Amplifier Design Considering Reliability Issues	21
<i>Gurgen Grigoryan, Tigran Grigoryan, Kang Li, Xuefeng Zheng, Shavarsh Melikyan, Gevorg Harutyunyan</i>	
Aging-Aware Design Method for Reliable Analog Integrated Circuits Combining Reliability-Aware Circuit Architectures, Transistor's Threshold Voltage and Operating Point-Dependent Degradation.....	25
<i>Vazgen Melikyan, Gurgen Grigoryan, Xuefeng Zheng, Kang Li, Shavarsh Melikyan, Tigran Grigoryan</i>	
Efficient Vision Transformer Deployment on Google Coral Through Knowledge Distillation	29
<i>Vazgen Melikyan, Tigran Khachatryan, Davit Galstyan, Eduard Harutyunyan</i>	
FPGA/ARM Design of Multibeam Adaptive Array for GNSS Receiver	32
<i>Vladimir I. Tsarik, Dmitrii A. Bitsulia, Victor I. Djigan</i>	
First Steps Towards Unified Low-Power IoT Design: The “DYNAMIC” Framework.....	37
<i>Jakub Lojda, Josef Strnadel, Pavel Smrz, Vaclav Simek</i>	
Prompt-Testing of Logic.....	43
<i>Vladimir Hahanov, David Devadze, Ivan Hahanov, Svetlana Chumachenko, Eugenia Litvinova, Volodymyr Obrizan, Pashkov Dmytro, Alexander Mishchenko, Nataliya Maksymova</i>	
Enhancing TTS Performance for Noisy and Low-Resource Languages Using Advanced Noise Removal Techniques.....	48
<i>Sargis Simonyan, Karen Nikoghosyan</i>	
Fully Integrated Resistance Calibration Method Using Reference Frequency and MOSFET Capacitance	55
<i>Oleg Petrosyan, Razmik Sghomonyan, Hrayr Sahakyan, Vahan Sahakyan, Arman Galstyan, Garnik Voskanvan, Anush Melikyan</i>	
Novel Adaptive Crossover Mechanism for Genetic Algorithm on Integrated Circuit Cell Placement.....	59
<i>Vazgen Melikyan, Vachagan Davtyan, Ashot Harutyunyan, David Revazyan, David Marukhyan</i>	
Multiparametric Optimization and Penalty System in Integrated Circuit Component Placement.....	63
<i>Vazgen Melikyan, David Revazyan, Ashot Harutyunyan, Vachagan Davtyan, Elen Ghazaryan</i>	
Hamming Codes with Check Bits that Are Described by Self-Dual and Self-Quasidual Boolean Functions	67
<i>Dmitry V. Efanov, Tatiana S. Pogodina</i>	

Efficient Implementation of a Lightweight AI Classification Model for Handwriting Detection on FPGA.....	77
<i>Mahdi Chavoshi, Mina Zolfy Lighvan, Leili Mohammadkhanli</i>	
Enhancing K-Means Clustering Efficiency on FPGA: A Three-Design Approach to Parallel Implementation.....	81
<i>Saeed Shokrane, Mina Zolfy Lighvan, Mohammad Asadpour</i>	
Minimizing Grid Dependency and EV Charging Costs with PSO-Based Microgrid Energy Management	86
<i>Abdul Moeed Khan, Mehdi Bagheri</i>	
TRRR: Accelerated Online Error Detecting and Correcting Fault Tolerant Architecture.....	91
<i>Raghunandana K K, Yogesh Prasad K R, M. Sonza Reorda, Virendra Singh</i>	
Cybersecurity Maturity of Smart Home IoT Devices.....	97
<i>Jiri Dostal, Martin Sutovsky</i>	
Mathematical Modeling of Exciting a Wideband Semitransparent Antenna with Longitudinal Slots by a Concentrated Source.....	103
<i>Volodymyr O. Doroshenko, Nadiia P. Stognii, Olha V. Zhyla, Elena A. Strelnikova, Maxim V. Sidorov, Olha O. Remayeva</i>	
Construction of a Quasi-Linear Ensemble of Algorithms for Diagnosing Tumors Detected from Mammography Images.....	107
<i>Sh. Kh. Fazilov, Kh. S. Abdiyeva, O. R. Yusupov, Erali Eshonqulov, Ziyodullo Malikov</i>	
Revolutionizing Industrial IoT with LoRaWAN for Smarter and Greener Industries	112
<i>Palanichamy Manikandan, Ramesh Patel, Sundar Gopalakrishnan, Karthikeyan Palaniswamy</i>	
Reliable All PMOS Voltage Doublers for Low-Voltage Applications	117
<i>Hovhannes Gomtsyan, Hrayr Sahakyan, Razmik Soghomonyan, Vahan Sahakyan, Garnik Voskanyan, Anush Melikyan, Sergo Harutyunyan</i>	
Harmonic Balance Modeling and Simulation of Nonlinear Memristors	121
<i>Dani Tannir, Reem Haddara</i>	
Embedded Parallel K-Means Algorithm Evaluation on ESP32 Across Various Memory Allocations	127
<i>Anja Tanovic, Ivan Mezei</i>	
Compact 2.45 GHz RFID Reader Antenna for IoT Networks.....	134
<i>Khushi Sahay, Sonu Sharma, Aryan Gupta, Ansh Makker, Chandni Bajaj, Dharmendra Kumar Upadhyay</i>	
High-Speed Continuous Time Linear Equalizer for Multi-Purpose SerDes Applications.....	138
<i>Artur Mkhitarian, Lyudvig Hakobyan, Albert Gevorgyan</i>	
Mitigation of IR Drop Through Power Delivery Network (PDN) Reinforcement in Critical Zones	143
<i>Armen Danielyan</i>	
Advanced Path Delay Fault Testing Strategies in High-Performance Digital Circuits.....	147
<i>Palanichamy Manikandan, Ramesh Patel, Sundar Gopalakrishnan, Karthikeyan Palaniswamy</i>	

Comparative Analysis of Noise Reduction Filters for the Quality Enhancement of Mammography Images	152
<i>Sh. Kh. Fazilov, O. R. Yusupov, Kh. S. Abdiyeva, M. S. Abduraxmonov, A. A. Qodirov</i>	
Code Generation for Ablation Technique	157
<i>Samat Rakimbekulu, Kanatbek Shambetaliev, Gulzada Esenalieva, Al Khan</i>	
Vector-Logical In-Memory Simulation of Faults as Truth Table Addresses	164
<i>Vladimir Hahanov, Eugenia Litvinova, Hanna Hahanova, Svetlana Chumachenko, Zaza Davitadze, Irina Hahanova, Heorhii Kulak, Veronika Ponomarova, Vugar Hacimahmud Abdullayev</i>	
Practical Investigation on the Distinguishability of Longa's Atomic Patterns	170
<i>Sze Hei Li, Zoya Dyka, Alkistis Aikaterini Sigourou, Peter Langendoerfer, Ievgen Kabin</i>	
Revisiting UVM	177
<i>Khaled Salah</i>	
A Fast RTL-Based Test Generation Framework	181
<i>Khaled Salah</i>	
Aging Protected Precision CMOS Current Reference with Process, Supply Voltage and Temperature Compensation	185
<i>Vahan Sahakyan, Razmik Soghomonyan, Sergo Harutyunyan, Hrayr Sahakyan, Arman Galstyan, Ashot Katayan</i>	
Physical-Design Aware Scan Cell Reordering for Low Power Testing	189
<i>Rohit Badjatya, Vinay, Rahul Kumar, Jaynarayan T Tudu, Masahiro Fujita, Virendra Singh</i>	
NOVLI-ISA: A Novel Optimized Variable-Length Inclusive Instruction Set Architecture for RV32I/E Architecture	195
<i>Amer Dyab, H. Fatih Ugurdag</i>	
Field Measurements and Energy Performance Modelling of Water Side Free Cooling System for Datacenters	201
<i>Hande Ilkor, Gül Nihal Gügöl, Mustafa Kemerci, Tuggba Günes</i>	
Analysis of the Application of Type B Correlation in Measurement Uncertainty Evaluation	205
<i>Igor Zakharov, Olesia Botsiura, Oleh Novoselov, Iryna Zadorozhna, Alona Taranovska, Anna Yefimenko</i>	
Power Gating Switch Turn on Time Adjustment to Reduce Possible Impact in Power Integrity	209
<i>Sevak Ghukasyan, Roman Ivanyan, Edgar Papyan</i>	
Real-Time Automotive Accident Detection Using Unsupervised Machine Learning	213
<i>Reza Baharvand, Mahsa Jamshidi, Mozhgan Rezaie Manavand, Rezag Sadeghi, Zainalabedin Navabi</i>	
Sharing AES Engine for RISC-V Custom Instructions Performing Encryption and Decryption	219
<i>Zahra Hojati, Zahra Jahanpeima, Maryam Rajabalipanah, Hossein Ta'Ati, Atefe Rabiei, Zainalabedin Navabi</i>	
LBIST Configuration and Golden Signature Extraction of Black Box IP Cores	225
<i>Fatemeh Mohammadzadeh, Zeynab Sanati Najar, Zainalabedin Navabi</i>	

A Hierarchy of Machine Learning Processing Elements with Joint Micro Programmable Computation and Indexing	232
<i>Sepideh Kheirollahi, Sinatra Babele Khanshan, Zainalabedin Navabi</i>	
Configurable DRAM Access for Neural Network Accelerators: A SystemC Virtual Platform Approach	238
<i>Tina Hashemi, Rezgar Sadeghi, Maryam Rajabalipanah, Zahra Hojati, Zainalabedin Navabi</i>	
Repair of Resistive Open Defects on Word-Lines and Bit-Lines of SRAMs	244
<i>Karen Amirkhanyan, Valery Vardanian, Samvel Shoukourian, Yervant Zorian</i>	
AZMA: A Zynq-Based Monitoring and Fault Injection Framework for Processor Assessment	250
<i>Zahra Mahdavi, Rezgar Sadeghi, Ali Shayanpour, Amirhosein Yazdanpanah, Zainalabedin Navabi</i>	
A Step-By-Step Noise Figure Debug Methodology	256
<i>Prakhar Agrawal, Meghna Agrawal, Radhika Juluri, Debapriya Sahu, Srinivas Venkata Veeramreddi, Harikrishna P, Ashlesha Yerramsetty</i>	
A Comprehensive Approach for Testing EDA Tools in Linux Environment.....	260
<i>Tigran Shahinyan</i>	
An Approach for Increasing Memory Repair Efficiency	264
<i>K. Amirkhanyan, A. Babayan, S. Shoukourian, V. Vardanian, Y. Zorian</i>	
Results of Validation Analysis for Multi-Memory Bus BIST Engines	270
<i>Armen Babayan, Samvel Shoukourian</i>	
Real-Time Crosswalk Segmentation Using FPGA Based Spiking Neural Networks: A Comparison of Integrate-And-Fire and Izhikevich Hardware Neural Models.....	273
<i>Amirhesam Jafari Rad, Arista Monazzam, Amirhosein Reyhani Showkatabad, Saeed Safari</i>	
Deterministic Jitter Reduction Technique in Ultra High Speed Frequency Dividers	279
<i>Gegham Petrosyan, Ani Martoyan, Sargis Ghulyan, Siranush Sargsyan, Sargis Khachatryan</i>	
Advanced Edge Detection for Noisy SEM Images: A Hybrid Approach for Enhanced Precision	283
<i>Sepuh Melikyan, Gurgen Melikian</i>	
Enhanced Homomorphic Encryption Scheme for Cloud Technology Security.....	287
<i>Elza Jintcharadze, Lika Khinkiladze, Tsitsino Sarajishvili</i>	
Autonomous FPGA Reconfigurability in Embedded Systems	292
<i>Hugo Boulissière, Adrien Prost-Boucle, Elena-Ioana Vatajelu, Giorgio Di Natale</i>	

Author Index