2018 30th International **Conference on Microelectronics** (ICM 2018)

Sousse, Tunisia 16-19 December 2018



IEEE Catalog Number: CFP18473-POD ISBN:

978-1-5386-8168-8

Copyright \odot 2018 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:
 CFP18473-POD

 ISBN (Print-On-Demand):
 978-1-5386-8168-8

 ISBN (Online):
 978-1-5386-8167-1

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



Keynotes:	
Keynote address1: Mohamed Ismail, A Self-powered IoT SoC Platform for Wearable Health Care Keynote address2: Yong Ping Xu, Neural Signal Recording Amplifiers Keynote address3: Alyssa. B. Apsel, Flexible Radios and Flexible Networks	
Tutorials:	
Tutorial1: Eman El Mandouh, Machine Learning for EDA Tutorial2: Sofiène Tahar, Cyber-physical system design challenges Tutorial3: Ashraf Salem, Automotive Digital Twin: ADAS System verification	
Special Sessions:	
Special Session 1: Dimension Reduction Technique in Signal Processing and Machine Learning	
Design of Efficient Quantum-Dot Cellular Automata (QCA) MAC Unit	1
Performance of Spatial Modulation for Multiple- Antenna Wireless Systems Over Uncorrelated Rayleigh Fading Channel	
Abdulati Abdullah, Ibrahim Shati, Ahmed Elshoshi and Abubaker Algatlawi Modeling and Simulation Metamaterial Effects on Radiation Pattern of Microstrip Antenna Adel Emhemmed, Abdulbast Kriama, Mahmoud Almodi and Ali Rhoma	
Concentration Estimation of Industrial Gases for Electronic Nose Applications Atiq Rehman and Amine Bermak	
Intelligent Control Design for Linear Model of Active Suspension SystemAhmed Abougarair, Abdulhamid Oun and Adel Emhemmed	17
Special Session 2: Smart IoT, IoT-platforms, Embedded Systems & Industry4.0	
60GHz Voltage Controlled Load for LINC PA Analogue SCS in SiGe BiCMOS Hendrik Nel and Tinus Stander	
Solving the Total Coverage Problem using a Multiple Mobile Sensor Network Amani Lamine, Fethi Mguis, Hichem Snoussi and Khaled Ghedira	24
Cell Association for Multi Band 5G Cellular HetNets based on NBS	
Particle Swarm Optimization on FPGA	
An area-efficient hybrid high-voltage charge pump design for IoT applications Bartas Abaravicius, Sandy Cochran and Srinjoy Mitra	
Improvement of security system level in the Cyber-Physical Systems (CPS) architecture Anwer Mbiriki, Ahmed Badreddine, Chaker Katar	40
Special Session 3: Energy Efficient on Cyber Physical Systems	
DEMO: Multi-Grain Adaptivity in Cyber-Physical Systems	44
Energy Efficiency Exploration on the ZYNQ Ultrascale+	48
Architecture-aware design and implementation of CNN algorithms for embedded inference: the ALOHA pro	iect

Paolo Meloni

Mahmoud Masadeh, Osman Hasan and Sofiene Tahar

Special Session 4: New Architectures and Design for Intelligent and Connected Transportation Systems
Safe Driving : Driver Action Recognition using SURF Keypoints
Imen Jegham, Anouar Ben Khalifa, Ihsen Alouani and Mohamed Ali Mahjoub
LIDAR and Stereo-Camera fusion for reliable Road Extraction
Mohammed Yazid Lachachi, Mohamed Ouslim, Smail Niar and Abdelmalik Taleb-Ahmed
Computational and Communication Reduction Technique in Machine Learning Based Near Sensor Applications 68
Mohamed Ayoub Neggaz and Smail Niar
Wireless Sensor Network used to improve the energy efficiency in connected railway vehicles
Sylvie Baranowski and Michael Bocquet
Adaptive Channel estimation technique for ITS-G5 inter- vehicular communication systems76
Aymen Sassi, Yassin Elhillali and Atika Rivenq
Regular Papers
Digital Signal processing
Optimization of Energy Consumption and Bandwidth used in Elastic Optical Network80
Sabi Yari Moïse Bandiri, Tales Pimenta and Danilo Spadoti Khouloud
A low-cost Exp_Golomb hardware architecture for H.264/AVC entropy coder84
Asma Ben Hamida, Salah Dhahri and Abdelkrim Zitouni
Joint NIR-BIS Based Non-Invasive Glucose Monitoring System
Mariam Fouad, Duha Yasser and Mohamed Abdelghany Security and Efficiency of Feigle Networks Versus Discrete Chaos for Lightweight Speech Engraption 22
Security and Efficiency of Feistel Networks Versus Discrete Chaos for Lightweight Speech Encryption
Performance Metrics of Imprecise Multipliers Based on Proximate Compressors for IIR Filters
Lavanya Maddisetty and J.V.R. Ravindra
Hardware Speech Encryption Using a Chaotic Generator, Dynamic Shift and Bit Permutation
Mohammed F. Tolba, Wafaa S. Sayed, Ahmed G. Radwan, Salwa K. Abd-El-Hafiz and Ahmed M. Soliman
Biomedical circuits and systems
A. Ille. I D I N.: - I D I D I
An Ultra-Low-Power, Low-Noise, Linear Preamplifier with Wide Dynamic Range for Electret Microphones . 104 Lobna El-Fadali, El-Sayed Hasaneen, Ahmed Galal and Hesham Hamed
Fully automated CADx early breast cancer detection with image processing and machine learning108
Monica Gaid, Mariam Fouad, Mohamed Abd El Ghany and Klaus Hofmann
Implementation of a Pulsed-Wave Spectral Doppler Module on a Programmable Ultrasound System
Momen Abubakr, Ahmed Elnokrashy, Amr Hendy, Yasser Kadah, Ahmed Madian and Ahmed Radwan A Simple Facy to Februate Ministryized Microflyidic Cradiant Congretor for Drug Testing devices. 116
A Simple, Easy to Fabricate Miniaturized Microfluidic Gradient Generator for Drug Testing devices116 Shilpa Sivashankar, Kholod Alamoudi, Sumeyra Agambayev, Yousof Mashraei, Hend Mkaouar, Niveen M. Khashab
and Khaled Nabil Salama
Asthma Irritant Monitoring
A. Aoun, E-J. Maalouf, J. Bou Abdo, N. Marina, M. Hamad and Abdallah Kassem
Multiple Hybrid Compression Techniques for Electroencephalography Data124
Mohamed Adel, Mohamed El-Naggar, M. Saeed Darweesh and Hassan Mostafa
CAD Tools and design
Analytical and Numerical Analysis and Validation of an LTCC-based Fabricated TEG
Nesrine Jaziri and Brahim Mezghani
Framework for Developing Behavioral Models From Physical Designs
Abderaouf Kouhoul, Larbi Talbi, Tahar Haddad, Naim Benhamida, Sadok Aouini and Youssef Karmous
An Automated Light weight UVM Tool
Esraa Mohamed, Khaled Salah, Ahmed Madian and Ahmed Gomaa
Performance Enhancement of an Improved Design of 6-axis Single-Mass Piezoelectric IMU140

Hela Almabrouk, Sinda Kaziz and Brahim Mezghani Design Presentation and Induced-Stress Study of a 6-axis Single-Mass Piezoelectric IMU144 Hela Almabrouk, Sinda Kaziz and Brahim Mezghani	1
Memristive based system	_
Memristor-CNTFET based Ternary Comparator unit	3
FPGA Speech Encryption Realization Based on Variable S-Box and Memristor Chaotic Circuit	
Incremental Grounded Voltage Controlled Memristor Emulator	
A Re-configurable Memristor Array Structure for In-Memory Computing Applications160 Yasmin Halawani, Baker Mohammad and Mahmoud Al-Qutayri)
FPGA Design	
An Effective FPGA Placement Flow Selection Framework using Machine Learning	1
The Implementation of Communication Hub for EEG Active Electrodes	3
Modified Scaled Min Sum LDPC Decoder for DVB-S2/S2X/T2172	2
Fady Tadros, Hanady Issa, Saleh Eisa and Khaled Shehata	e
Accelerating Deep Neural Networks Using FPGA176 Esraa Adel, Rana Magdy, Sara Mohamed, Mona Mamdouh, Eman Elmandouh and Hassan Mostafa)
Wireless communications systems	
Passive E-textile UHF RFID Tag for Wireless Body Centric Communications)
On-body Investigation of Textile Antenna for Wearable RFID Applications	1
Optimization of Handover Problem Using Q-Learning for LTE Network188	3
Mohamed Adel, M. Saeed Darweesh, Hassan Mostafa, Hanan Kamal and Mona Elghoneimy	
Measuring QoS for Broadcasting Task in Vehicular Ad Hoc Networks based on Fuzzy Logic Projection 192 Abir Mchergui, Tarek Moulahi and Salem Nasri	2
IoT-Based Online Access Control System for Vehicles in Truck-Loading Fuels Terminals	ó
Analog and RF circuits	
Examining the Performance of Low Power – Area Efficient OTA Designs that are Based on Different Current	
Shunting Techniques	
Imtinan Attili and Soliman Mahmoud	
Low Power CMOS Digital Variable Gain Amplifier Design For WiMAX/LTE Receiver	ŀ
A Proposed Method To Correct The Delay Causing By The Path Transmission Chain With Coupled Oscillators In	
Network Antenna	
Loulou Fractional-Order Relaxation Oscillators Based on Op-Amp and OTRA212	2
Omar Elwy, Lobna Said, Ahmed Madian and Ahmed Radwan	
A subthreshold low-power NMOS LC-VCO Design for Autonomous Connected Objects216 Imen Ghorbel, Fayrouz Haddad, Wencelass Rahajandraibe and Mourad Loulou	ő
A Fully Integrated 5.8 GHz BiCMOS SiGe:C tunable active phase shifter for Beamforming220)

Mariem Kanoun, Bhanu Pratap Singh Jadav, David Cordeau, Jean-Marie Paillot, Hassen Mnif and Mourad Loulou

VLSI Circuits
DDR2 Memory Controller for Multi-core Systems with AMBA AXI interface
Esraa Ragab, Mohamed Abd El-Ghany and Klaus Hofmann
Design of Hybrid CMOS Non-Volatile SRAM Cells in 130nm RRAM Technology228
Adnan Harb, Hussein Bazzi, Mathieu Moreau and Hassen Aziza
Multi-Bit RRAM Transient Modelling and Analysis232
Essam R. Berikaa, Ahmed Khalil, Hagar Hossam, Mohamed Dessouky and Hassan Mostafa
Improved TiO2 TEAM Model Using a New Window Function236
Fakhreddine Zayer, Wael Dghais and Hamdi Belgacem
Formal Verification of AUTOSAR Watchdog Manager Using Symbolic Execution240
Mazen Ahmed and Mona Safar
A Real-Time systems and ASIC Design
Parallel Implementation for Real Time Person Matching System244
Nesrine Abid, Tarek Ouni, Kais Loukil, Ahmed Chiheb Ammari and Mohamed Abid
Real-Time Car Detection-Based Depth Estimation Using Mono Camera248
$Mohamed\ Elzayat, Mahmoud\ A.\ Saad,\ M.\ Mohamed\ Mostafa,\ Rania\ Mahmoud\ Hassan,\ Mohamed\ Saeed\ Dawrweesh,$
Hossam Abdelmunim and Hassan Mostafa
Automatic RTL coding correction Linting tool for critical issues252
Nancy Soliman, Khaled Salah and Ahmed Madian
Low Energy ASIC Design for Main Memory Data Compression/Decompression256
Mervat Mahmoud, Dalia El-Dib and Hossam Fahmy
ASIC Implementation of Energy-Optimized Successive Cancellation Polar Decoders for Internet of Things 260
Omar Alsherbini, Mohamed Wael, Eslam Fahmy, Yehea Ismail, Khaled Salah and Amr Helmy
Micro / Nancolectronics
Micro/ Nanoelectronics
Programmable Clock Delay for Hysteresis Adjustment in Dynamic Comparators264
Leila Khanfir and Jaouhar Mouine
Nonenzymatic Glucose Sensor Using MIM Pt/CuO/Pt268
Heba Abunahla, Baker Mohammad, Anas Alazzam, Maguy Abi Jaoude, Mahmoud Al-Qutayri and Said Al-Sarawi
$Simulation\ of\ p-type\ Schottky\ Diode\ Based\ on\ Al0.29Ga0.71 As\ with\ Titanium/Gold\ Schottky\ Contact272$
Walid Filali, Slimane Oussalah, Noureddine Sengouga, Mohamed Henini, David Taylor
A 0.14 - $3.5~\mathrm{GHz}$ All Digital PLL with improved fast frequency-lock and a novel TDC-based self-calibration
capability
Sehmi Saad, Mongia Mhiri, Aymen Ben Hammadi and Kamel Besbes
Design of graphene patch array antenna for 5G applications280
Aymen Hlali, Zied Houaneb and Hassen Zairi
Poster Sessions API
Design and Investigation of Configurable Source Coupled Logic283
Hossam Hassan
Seizure Detection Using Gilbert's Algorithm
Abdel-Malik M. Sabreen, Adel A. Samir, Lojaine A. Elmahdy, Mirna H. Ibrahim, Mohamed H. Tawfik, Omneia O.
Elshaer and Hassan Mostafa
Design and low-cost FPGA implementation of the Fuzzy Decision System291
Egidio Ieno Junior, Luis Manuel Garces Garcés Socarrás and Tales Cleber Pimenta
HEVC Implementation for IoT Applications
Mahmoud Salah, Bahaaeldin El-Shweky, Karim El-Kholy, Amr Helmy, Yehea Ismail and Khaled Salah
CLA based Floating-point adder suitable for chaotic generators on FPGA299 Hossam Hassan and Samar Ismail
TUSSAIII TIASSAII AIIA SAITAI ISTIAII

A Study of Authentication Encryption Algorithms(POET, Deoxys, AEZ, MORUS, ACORN, AEGIS, AES-GCM) For
Automotive Security
Sahar Sharaf and Hassan Mostafa
Exploring Hybrid NoC Architecture for Chip Multiprocessor
Sirine Mnejja, Yassine Aydi and Mohamed Abid
Compartive study of MPPT methods for PV systems : Case of Moroccan house
Asmae Chakir, Mohamed Tabaa, Fouad Moutaouakkil, Hicham Medromi and Karim Alami
A Low Power Hardware Implementation of Izhikevich Neuron using Stochastic Computing315
Aya Ismail, Zeinab Shaheen, Osama Rashad, Khaled N. Salama and Hassan Mostafa
Evaluation of the bit error rate in Classic NoCs and Optical NoC
Moez Balti and Abderrazek Jemai
Design of an Advanced System-on-Chip Architecture for Internet-Enabled Smart Mobile Devices323
Mohammed S. Bensaleh, Syed Manzoor Qasim, Abdullah A. Aljuffri and Abdulfattah M. Obeid
Design of Configurable CMOS Capacitive Fingerprint
Hossam Hassan
Modeling a Ka-Band Resonator Cavity with SIW 3-D Technology
Aloui Radhoine, Houaneb Zied and Zairi Hassen
Clustering Algorithm in wireless sensor networks based on shortest path
Salim El Khediri, Adel Thaljaoui and Adel Dallali
Fractional-Order Image Edge Detector on FPGA
Amr Helmy and Samar Ismail
Keyword index
Author index