2019 3rd International Conference on Circuits, System and Simulation (ICCSS 2019)

Nanjing, China
13 – 15 June 2019

IEEE Catalog Number: CFP19IAI-POD
ISBN: 978-1-7281-3658-5

Copyright © 2019 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: CFP19IAI-POD
ISBN (Print-On-Demand): 978-1-7281-3658-5
ISBN (Online): 978-1-7281-3657-8

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

2019 3rd International Conference on Circuits, System and Simulation

ICCSS 2019

Table of Contents

Preface vii
Committees viii

Electronic Design Technology

IoT Multi-control Bionic Manipulator's Design 1
Tang Lili, Huang Qijun, Huang Wei

Modelling and Analysis of Electrical Stinger in a Silicon Metal Submerged Arc Furnace 5
Mashudu Mbedzi, Zenghui Wang

Study on CMOS Sensor Irradiation Damage and Evaluation of System Performance Degradation 11
Xiaoliang Li, Bo Mei, Hongwei Zhang, Pengwei Li, Lei Luo, Qingkui Yu

Long-Term Effect of Visual Fatigue Caused by LEDs with Modulated Light 15
Lili Wang, Yan Tu

Research on PMSM Speed Control System Based on Improved Reaching Law 19
Baochun Cui, Zhiyuan Han, Jie Li, Jianqiao Mu

Pumped Stimulated Vertical Cavity Surface Emitting Laser by Solution-processed Method 25
Jing Chen, Lixi Wang, Jiangyong Pan, Yaosheng Zheng, Wei Lei, Wei Zhang, Shuyi Ding

Design and Application of DDR3 SDRAM in LCoS Logic Control 29
Lang Qin, Qing Li, Zhong Wu, Kang Gang, Jun Chen, Kun Li

Intelligent Orthopedic Vest Based on Flexible Tactile Sensor 33
Leng Mingxin, Song Aiguo, Yi Yi, Kuang Yinghui

Carbon Dots/Graphene Hybrids for UV Photodetectors 37
Yong Fang, Zhiwei Zhao, Mengru Zhu, Zhengjin Weng, Chao Fang, Xi Jia

The Performance Analysis of Second Order Band-pass Filter 41
Wang Ling, Chen Kesong

Passively Q-Switched Nd:YVO_4 Laser Based on Silver-Plated Graphene Saturable Absorber 46
Tengfei Dai, Xiang Liu, Wei Lei, Jianhua Chang

Gas Sensor Based on Surface Acoustic Waves Using Zinc Oxide Piezoelectric Thin Films 50
Jian Luo, Chongjun He, Rong Mao

Research on Deep-UV Photodetectors Based on Carbon Dots as Reactive Layer 54
Chao Fang, Zhiwei Zhao, Yong Fang, Zhengjin Weng, Xi Jia

Integrated Circuit

A Method for Determining the Optimal Configuration Parameters of Core Wire Interconnection for the Electrical Properties of Microwave Components 58
Jun Tian, Congsi Wang

Accelerator Implementation of Lenet-5 Convolution Neural Network Based on FPGA with HLS 64
Dai Rongshi, Tang Yongming

Phase Waveform Extraction and Coupling Noise Prediction of Buck Converter in Printed Circuit Boards 68
Xiaofeng Song, Deheng Li

A Novel FPGA-Based Digital Power Controller Architecture 73
Xingwen Zhou, Yuan Cui, Wei Li, Lei Zhang, Daqing Gao, Shi Yan

Research on the Fringing-Field Effect of LCoS Devices with Opposite Pretilt Angles for Adjacent Pixels 79
Yonghao Gong, Shiyi Yang, Kang Gang, Jun Chen, Kun Li, Qing Li

Heavy ion-and Proton-induced SEU Simulation and Error Rates Calculation in 0.15um SRAM-based FPGA 84
Yi Sun, Hong-Wei Zhang, Zhi-Chao Wei, Qing-Kui Yu, Min Tang, Chen Shen, Ding Gong

Electrostatic Discharge Characteristics Simulation of Printed-Circuit-Board with Full-Wave Model 89
Lanlan Yang, Wenting Xu, Chang Yang, Xiangji Wang, Yan Tu, Wei Zhang

A High-Precision Time Delay Estimation Method Based on Fourth-Order Cumulant 93
Yabin Zhang, Shengquan Li, Jianjun Zhu, Weidong Du

Portable Circuit Design Based on SERF Atomic Magnetometer 98
Feng Yu, Yanpeng Cao, Yongming Tang

A Low Level Pulse GOA Circuit Consisted of a-IGZO TFT 103
Liuqi Zhang, Xinnan Lin, Baixiang Han, Gary Chaw

A 40-nm CMOS 90-GHz Power Amplifier 107
Lianming Li, Tianze Wu

System Performance Simulations

Control Strategy and Simulation of Tracking System under Acceleration Limit 111
Hongyun Wang, Junfeng Han, Siwang Xu

Research on Formal Modeling and Safety Analysis Method of Head-up Display System for Civil Aircraft Based on AltaRica 116
Fukai Zhang, Haiyong Dong

Research on Safety Level DCS Automated Test Method Based on Symbolic Execution 121
Yanjun Dai, Zhiqiang Wu, Jie Liu, Zhi Chen, Anhong Xiao, Zhaohui Liu

Smart Contract Defect Detection Based on Parallel Symbolic Execution 127
Zemin Tian

The Experiment and Simulation Calculation Study on SEU Hardened Effect of Flash FPGA 133
Xiaoliang Li, Hongwei Zhang, Bo Mei, Pengwei Li, Lei Luo, Qingkui Yu

A Comprehensive Modelling and Simulation Validation for Distributed PV Array System 137
Ali Omar M Baba, Guangyu Liu, Wahid Rajeh, Amer Aljaedi

Simulation and Calculation Method of Total Ionizing Dose Radiation Resistance of Aerospace Components based on in-Orbit Data 146
He Lv, Hongwei Zhang, Bo Mei, Yi Sun, Qingkui Yu

Research on Simulation Method of Cloth under the Low Velocity Flow Field 151
Yonghao Pan, Hongjie Wang, Yuanjun Ding

Radiation Hardness Design and Test Verification of Program Configuration Module Based on Commercial Devices 156
Yi Sun, ZhiChao Wei, Hongwei Zhang, Bo Mei, Qingkui Yu, Min Tang

Communication System

Frequency Splitting Analysis of Electric-Field Coupled Wireless Power Transfer System 161
Xin Chen, Zhou Yue

Fuzzy Comprehensive Evaluation of Security Maintenance Ability Base on AHP-Entropy 166
Zixian Zeng, Qingge Gong

COM Based Channel-Compliance Analysis and Its Comparison with BER-Way for 25 Gbps NRZ Serial Link 172
Yucheng Sun, Qingsheng Hu

Design of a Stored-value Card Platform Based on Smart Contract 178
Xiaoyu Ma, Jiting Zhou, Hanyue Guo, Jiaqi Wang

Development of Real-Time Style Transfer for Video System 183
Yanpeng Cao, Yongming Tang

Design of Wide Band Antenna Array for 5G Applications 188
Shengjie Wang, Liguo Sun, Gang Wang, Zipeng Xie

Research on Registration Algorithm Based on Image Mutual Information 193
Zhu Qiwen, Tang Yongming, Gong Zhipeng

An Enhanced Radio Tomographic Imaging Localization Method Based on Low-cost Wireless Sensor Networks 197
Haoran Zuo, Wei Ke, Mengling Chen, Jun Lu, Yanli Wang, Jie Jin

Real-time Video Image Super-Resolution Network for Mobile Terminals 201
Zhipeng Gong, Feng Yu, Yongming Tang

Computer Applications

The Rearch on Improved LVQ Neural Network Method 206
Biao Wang, Qingnan Chen, Zelong Wang, Yingdi Hu

Enhancement of the Diffraction Efficiency on Volume Holographic Gratings by Silver Nanoparticles 210
Xiaodie Wang, Zhuoya Zhu, Yunping Qiu, Wanli Gao, Wei Lei, Xiaobing Zhang

Rare Failure Prediction via Event Matching for Aerospace Applications 214
Evgeny Burnaev

The Effect of Luminance on Visual Perception Based on Eye Movement and ECG 221
Xin Gao, Yan Tu, Lili Wang, Yunyang Shi, Wei Zhang

A Packaging Method to Improve Monocrystalline Silicon Solar Cells with YAG:Ce Phosphors 225
Huihui Cao, Chaogang Lou, Lu Li, K. Santhosh Kumar, Han Diao, Elias E. Elemike, Damian Onwudiwe

Predicting Decision-making Using Item Response Theory 229
Li Chen, Yan Tu, Xinglong Xia, Lili Wang, Lei Bao

Performance Study of Polypyrrole-nanowires Based Microbial Fuel Cells 235
Yuan Chen, Zhiwei Zhao, Zhengjing Weng, Boai Li, Yong Fang, Helong Jiang

Cold Cathode X-ray Tube with MgO Composite Gate Structure 247
Wanli Gao, Zhuoya Zhu, Xiaodie Wang, Shunan Zhao, Wei Lei, Xiaobing Zhang

A Booting Fingerprint of Device for Network Access Control 251
Qiang Huang, Yubo Song, Junjie Yang, Ming Fan, Aiqun Hu

Fast Image Defogging Algorithm Design Based on Dark Channel Prior 255
Tianpeng Wang, Yongming Tang