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IEEE SOLID-STATE CIRCUITS SOCIETY

Where ICs are in IEEE

January 2018

NEWS

IEEE SSCS Young Professionals, Faculty, & Students Micro-Mentoring & Career Coaching Session

In conjunction with **ISSCC 2018**, the IEEE Solid-State Circuits Society (SSCS) will be holding a Young Professionals & Graduate Students Micro-Mentoring and Career Coaching Session. The event will be held on Tuesday, February 13, 2018 at 6 PM in the Soma Room of the San Francisco Marriott Marquis. The complementary event is open to all graduate students, early career engineers, and faculty within 15 years of their degree. Leading experts from industry, academia, SSCS executive officers & distinguished lecturers will be available at the mentoring session to talk about career coaching, entrepreneurship, publications, and answer all your questions - both in a town-hall style and one-on-one. There will be complimentary snacks and beverages available for all participants. Student participants will get 1 year complimentary SSCS membership and a free SSCS t-shirt.

Please click here to RSVP. Walk-in's are welcome.

ISSCC 2018 Workshop on Circuits for Social Good

February 11, 2018
Doors Open at 5:45 PM *(Schedule Change)*
Workshop: 6 PM - 9 PM
OPEN TO ALL

The Workshop on Circuits for Social Good highlights various ways that circuits can help address some of the most important challenges facing society today, ranging from

health care to energy conservation.

The program aims to give a broad perspective of how one can have impact. It begins with several keynotes and invited talks from industry, academia and startups followed by interactive round-table discussions on topics including machine learning, medical devices, next generation communications, security and IoT, as well as discussions on career paths in research, product development, and entrepreneurship.

KEYNOTES

- Teresa H. Meng, Professor Emeritus at Stanford, Founder of Atheros, "Winning the game in a male-dominated industry"
- Nevine Nassif, Intel Fellow, "Low power design: how can we help become green?

INVITED TALKS

- Esther Rodriguez-Villegas, Associate Professor at Imperial College London, "Pioneering ultra-low power technologies to empower personal healthcare"
- Christine Ho, Co-Founder at Imprint Energy, "Driving a Ground-Breaking Ultrathin Flexible Printed Battery to Market - My Journey From Technologist to Entrepreneur"

ROUND TABLES (ASK AN EXPERT!)

- Next-Generation Communications

Alyssa Apsel, Professor at Cornell, Ithaca, NY, USA
Azita Emami, Professor at Caltech, Pasadena, CA, USA

- Machine Learning & Multimedia Systems

Vivienne Sze, Associate Professor at MIT, Cambridge, MA, USA
Marian Verhelst, Assistant Professor at KU Leuven, Leuven, Belgium

- Medical Devices and Applications

Rikky Muller, Assistant Professor at UC Berkeley, Berkeley, CA, USA
Esther Rodriguez-Villegas, Associate Professor at Imperial College London, London, UK

- Security and IoT

Edith Beigne, Senior Scientist at CEA-LETI, Grenoble, France
Ingrid Verbauwhede, Professor at KU Leuven, Leuven, Belgium

- Careers in Industry

Andreia Cathelin, Fellow at ST Microelectronics, Crolles, France
Yildiz Sinangil, Circuit Designer at Apple, Cupertino, CA, USA
Trudy Stetzler, Engineering Project Manager at Halliburton, Houston, TX, USA
Bich-Yen Nguyen, Senior Fellow at Soitec, Austin, TX, USA
Sonia Leon, Principal Engineer at Intel, Santa Clara, CA, USA

- Careers in Academia

Terri Fiez, Professor & Vice Chancellor of Research at University of Colorado Boulder, Boulder, CO, USA
Milin Zhang, Assistant Professor, Tsinghua University, Beijing, China

- Entrepreneurship

Christine Ho, Co-Founder of Imprint Energy, Alameda, CA, USA
Teresa H. Meng, Founder of Atheros Communications, Palo Alto, CA, USA

Click here for more information

Earn Continuing Education Hours

Have you attended an SSCS webinar? Attendees of upcoming and past webinars have the opportunity to earn professional development hours. Certificates of completion are offered to participants who view a webinar. A certificate of completion confirms one hour of professional development. After you attend the webinar, you may request a certificate of completion by completing the form **HERE**.

Download the new SSCS Mobile App

VOLTA is now available for download via the Apple Store and GooglePlay

Integrated Circuits (ICs) are at the core of our hi-tech world. They are inside everything electronics. In the coming robot/IoT/AR/VR era, the application and deployment of ICs will become even more prolific and widespread. IEEE Volta is an app developed by IEEE Solid-State Circuits Society (SSCS) aiming at educating the general public about the importance and the history of ICs over the years.

The application is named after Alessandro Volta, a pioneer of electricity and power. The puzzle themes feature the most significant ICs that have changed our way of living. Through learning about these ICs, users gain the historic perspective about this fascinating field and shed some light on what the future ICs may bring for us.

- **Click here** to download via the Apple App Store
- **Click here** to download via GooglePlay

IEEE Data Port

IEEE has developed a new data repository called IEEE DataPort™ that offers the following benefits to the global technical community at large:

- Accepts and stores datasets up to 2TB in size and can accept multiple file uploads
- Full integration with AWS (Amazon Web Services) to facilitate data analysis in the Cloud
- Persistent Digital Object Identifier (DOI) for each uploaded dataset and analysis
- Retains referenceable datasets that can support research reproducibility
- Supports government or other funder mandates for open access to research data
- Hosts and manages Data Challenges/Competitions
- Provides global exposure to your datasets.

Presently, all members of all IEEE Societies, including SSCS members, are being provided with a free IEEE DataPort subscription until at least the end of 2019.

You can login to IEEE DataPort (**https://ieee-dataport.org**) using your existing IEEE login. You will automatically be subscribed and have access to all dataset files in the repository free of charge.

SSCS Resource Center

NEW! SSCS Members, IEEE Members, and Non-Members can now earn Professional Development Hours (PDH's) and Continuing Education Units (CEU's) for our CONFedu series.

In an effort to increase member benefits, SSCS has created the SSCS Resource Center. This informational hub will house technical information such as past webinar videos and slides, ISSCC tutorials and short courses, and more.

Top 3 Downloaded Products on the SSCS Resource Center:

1). Demystifying Linear Time Varying Circuits by Shanthi Pavan

2). Enabling and Exploiting Machine Learning in Ultra-low-power Devices by Naveen Verma

3). Bringing Flexibility to Ultra Low Energy IoE Circuits and Systems by Edith Beigne

Click here to visit the SSCS Resource Center.

CONFERENCES

Upcoming Conferences

2018 International Solid-State Circuits Conference (ISSCC) San Francisco, CA	**February 11 - 15, 2018**

2018 Design, Automation & Test in Europe Conference and Exhibition (DATE) Dresden, Germany	**March 19 - 23, 2018**
2018 IEEE Custom Integrated Circuits Conference (CICC) San Diego, CA	**April 8 - 11, 2018**
2018 International Symposium on VLSI Technology, Systems and Application (VLSI-TSA) Hsinchu, Taiwan	**April 16 - April 19, 2018**
2018 International Symposium on VLSI Design, Automation and Test (VLSI-DAT) Hsinchu, Taiwan	**April 16-19, 2018**
2018 IEEE Radio Frequency Integrated Circuits Symposium (RFIC) Philadelphia, PA	**June 10 - 12, 2018**
2018 IEEE Symposium on VLSI Technology Honolulu, HI	**June 18 - 22, 2018**
2018 IEEE Symposium on VLSI Circuits Honolulu, HI	**June 18 - 22, 2018**
2018 IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED) Seattle, WA	**July 23 - 25, 2018**

CALL FOR PAPERS

ISLPED 2018: Call for Papers
International Symposium on Low Power Electronics and Design

The International Symposium on Low Power Electronics and Design (ISLPED) is the premier forum for presentation of innovative research in all aspects of low power electronics and design, ranging from process technologies and analog/digital circuits, simulation and synthesis tools, system-level design and optimization, to system software and applications. Specific topics include, but are not limited to, the following three main tracks and sub-areas:

1. Technology, Circuits and Architecture

1.1. Technologies
Low-power technologies for device, interconnect, logic, memory, 2.5/3D, cooling, harvesting, sensors, optical, printable, biomedical, battery, and alternative energy storage devices.

1.2. Circuits
Low-power digital circuits for logic, memory, reliability, clocking, power gating, resiliency, near-threshold and sub-threshold, variability, and digital assist schemes; Low-power analog/mixed-signal circuits for wireless, RF, MEMS, AD/DA Converters, I/O, PLLs/DLLS, imaging, DC-DC converters, and analog assist schemes.

1.3. Logic and Architecture
Low-power logic and microarchitecture for SoC designs, processor cores (compute, graphics and other special purpose cores), cache, memory, arithmetic/Signal processing, cryptography, variability, asynchronous design, and non-conventional computing.

2. CAD, Systems, and Software

2.1. CAD Tools and Methodologies
CAD tools and methodologies for low-power and thermal-aware design addressing power

estimation, optimization, reliability and variation impact on power, and power-down approaches at all levels of design abstraction: physical, circuit, gate, register transfer, behavior, and algorithm.

2.2. Systems and Platforms

Low-power, power-aware, and thermal-aware system design including data-center power delivery and cooling, Platforms for SoCs, embedded systems, approximate and brain-inspired computing, the Internet-of-Things (IoT), wearable computing, body-area networks, wireless sensor networks, and system-level power implications due to reliability and variability.

2.3. Software and Applications

Energy-efficient, energy-aware, and thermal-aware software and application design including scheduling and management, power optimizations through HW/SW interactions, and emerging software low-power applications.

3. Industrial Design Track

ISLPED'18 solicits papers for an "Industrial Design" track to reinforce interaction between the academic research community and industry. Industrial Design track papers have the same submission deadline as regular papers and should focus on similar topics, but are expected to provide a complementary perspective to academic research by focusing on challenges, solutions, and lessons learnt while implementing industrial-scale designs. Industrial design papers that focus on any of the topics mentioned in the tracks above are welcome.

Submissions on new topics: emerging technologies, architectures/platforms, and applications are particularly encouraged.

Important Deadlines:
Technical Paper Submission Deadlines: Abstract registration by February 26, 2018 at 11:59 PST, Full paper due by March 5, 2018 at 11:59 PST
Invited Talk, Panel, and Embedded Tutorial Proposals Deadline: April 16, 2018
Notification of Paper Acceptance: May 7, 2018
Submission of Camera-Ready Papers: June 4, 2018

Submissions should be full-length papers up to 6 pages (PDF format, double column, US letter size, using the IEEE conference format).

More information can be found here: **http://www.islped.org/2018/**

BioCAS 2018: Call for Papers
Biomedical Circuits and Systems Conference

BioCAS 2018 is a premier international forum for presenting the interdisciplinary research and development activities at the crossroads of medicine, life sciences, physical sciences and engineering that shape tomorrow's medical devices and healthcare systems.
This conference brings together members of our communities to broaden their knowledge in emerging areas of research at the interface of the life sciences and the circuits and systems engineering. The three-day single-track program for BioCAS 2018 is multidisciplinary in topics including but not limited to:

Biomedical Technologies
* Assistive, Rehabilitation, and Quality of Life Technologies
* Biofeedback, Neuromodulation, and Closed-Loop Systems
* Bio-Inspired and Neuromorphic Circuits and Systems
* Biosensor Devices and Interface Circuits
* Biotelemetry and Energy Harvesting/Scavenging Circuits and Systems
* Body Area/Sensor Network and Wireless/Wearable Health Monitoring
* Electronics for Neuroscience
* Implantable Medical Electronics
* Lab-on-Chip and BioMEMS

Biomedical Applications
* Point-of-Care Technologies for Healthcare
* Biomedical Imaging and Image Processing

* Biosignal Recording, Processing, and Machine Learning
* Genomics and Systems Biology
* Human-Machine Interfaces
* Medical Information Systems and Bioinformatics

Submission Guidelines
The complete 4-page paper (in standard IEEE double-column format), including the title, authors' names, affiliations and e-mail addresses, as well as a short abstract and an optional demonstration video link (3 minute max) are requested. Papers must be submitted electronically in PDF format through **www.biocas2018.org.**

Important Dates
Monday, April 23, 2018: Special Session Proposal Deadline
Monday, June 11, 2018: Regular Paper Submission Deadline
Monday, July 16, 2018: Live Demo Session deadline
Monday, August 13, 2018: Author Notification Date
Friday, August 31, 2018: Author Registration/Final Paper Submission Deadline

PUBLICATIONS

IEEE Solid-State Circuits Letters - Officially Launches

We're happy to announce that our new publication, IEEE Solid-State Circuits Letters, has launched. We are now accepting paper submissions.

For more information, visit:
http://sscs.ieee.org/publications/ieee-solid-state-circuits-letters-ssc-l

For paper submission, visit:
https://mc.manuscriptcentral.com/ssc-l

The latest in SSCS Flagship Publications...

IEEE Journal of Solid-State Circuits

Vol. 53, Issue 2, February 2018

A Blocker-Tolerant RF Front End With Harmonic-Rejecting N-Path Filter
Yang Xu ; Jianxun Zhu ; Peter R. Kinget

A CMOS Wideband Current-Mode Digital Polar Power Amplifier With Built-In AM-PM Distortion Self-Compensation
Jong Seok Park ; Yanjie Wang ; Stefano Pellerano ; Christopher Hull ; Hua Wang

A 450 fs 65-nm CMOS Millimeter-Wave Time-to-Digital Converter Using Statistical Element Selection for All-Digital PLLs
Ahmed I. Hussein ; Sriharsha Vasadi ; Jeyanandh Paramesh

A Low-Integrated-Phase-Noise 27-30-GHz Injection-Locked Frequency Multiplier With an Ultra-Low-Power Frequency-Tracking Loop for mm-Wave-Band 5G Transceivers
Seyeon Yoo ; Seojin Choi ; Juyeop Kim ; Heein Yoon ; Yongsun Lee ; Jaehyouk Choi

A 219-to-231 GHz Frequency-Multiplier-Based VCO With ~3% Peak DC-to-RF Efficiency in 65-nm CMOS
Amir Nikpaik ; Amir Hossein Masnadi Shirazi ; Abdolreza Nabavi ; Shahriar Mirabbasi ; Sudip Shekhar

An 84.6-dB-SNDR and 98.2-dB-SFDR Residue-Integrated SAR ADC for Low-Power Sensor Applications
Seungnam Choi ; Hwan-Seok Ku ; Hyunwoo Son ; Byungsub Kim ; Hong-June Park ; Jae-Yoon Sim

A Continuous-Time Digital IIR Filter With Signal-Derived Timing and Fully Agile Power Consumption
Yu Chen ; Xiaoyang Zhang ; Yong Lian ; Rajit Manohar ; Yannis Tsividis

CHIMERA: A Field-Programmable Mixed-Signal IC With Time-Domain Configurable Analog Blocks
Yunju Choi ; Yoontaek Lee ; Seung-Heon Baek ; Sung-Joon Lee ; Jaeha Kim

A 12-Gb/s -16.8-dBm OMA Sensitivity 23-mW Optical Receiver in 65-nm CMOS
Mostafa Gamal Ahmed ; Mrunmay Talegaonkar ; Ahmed Elkholy ; Guanghua Shu ; Ahmed Elmallah ; Alexander Rylyakov ; Pavan Kumar Hanumolu

100 Gb/s Differential Linear TIAs With Less Than 10 pA/ Hz 130-nm SiGe:C BiCMOS
Iria García López ; Ahmed Awny ; Pedro Rito ; Minsu Ko ; Ahmet Cagri Ulusoy ; Dietmar Kissinger

A 1.8-pJ/b, 12.5-25-Gb/s Wide Range All-Digital Clock and Data Recovery Circuit
Marijn Verbeke ; Pieter Rombouts ; Hannes Ramon ; Bart Moeneclaey ; Xin Yin ; Johan Bauwelinck ; Guy Torfs

An Active-Matrix OLED Driver CMOS IC With Compensation of Non-Uniform Routing-Line Resistances in Ultra-Thin Panel Bezel
Hyun-Sik Kim ; Dong-Kyu Kim

Modular 128-Channel Delta - Delta Sigma Analog Front-End Architecture Using Spectrum Equalization Scheme for 1024-Channel 3-D Neural Recording Microsystems
Sung-Yun Park ; Jihyun Cho ; Kyounghwan Na ; Euisik Yoon

A 0.18- um CMOS Image Sensor With Phase-Delay-Counting and Oversampling Dual-Slope Integrating Column ADCs Achieving 1e−rms Noise at 3.8- us Conversion Time
Ha Le-Thai ; Genis Chapinal ; Tomas Geurts ; Georges G. E. Gielen

A 0.66erms-Temporal-Readout-Noise 3-D-Stacked CMOS Image Sensor With Conditional Correlated Multiple Sampling Technique
Shang-Fu Yeh ; Kuo-Yu Chou ; Hon-Yih Tu ; Calvin Yi-Ping Chao ; Fu-Lung Hsueh

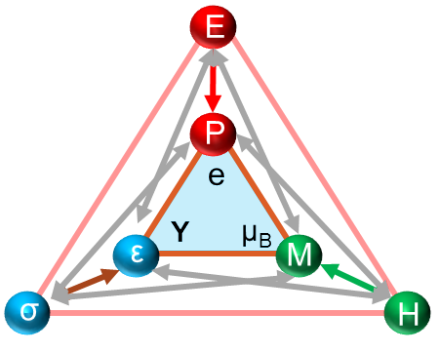
A 13.56-MHz Wireless Power Transfer System With Enhanced Load-Transient Response and Efficiency by Fully Integrated Wireless Constant-Idle-Time Control for Biomedical Implants
Cheng Huang ; Toru Kawajiri ; Hiroki Ishikuro

A Four-Phase Buck Converter With Capacitor-Current-Sensor Calibration for Load-Transient-Response Optimization That Reduces Undershoot/Overshoot and Shortens Settling Time to Near Their Theoretical Limits
Yi-Wei Huang ; Tai-Haur Kuo ; Szu-Yu Huang ; Kuan-Yu Fang

Switched-Mode-Control Based Hybrid LDO for Fine-Grain Power Management of Digital Load Circuits *Saad Bin Nasir ; Shreyas Sen ; Arijit Raychowdhury*
A High-Frequency Three-Level Buck Converter With Real-Time Calibration and Wide Output Range for Fast-DVS *Xun Liu ; Cheng Huang ; Philip K. T. Mok*
Compensator-Free Mixed-Ripple Adaptive On-Time Controlled Boost Converter *Chi-Hsiang Huang ; Hung-Hsien Wu ; Chia-Ling Wei*
DSIP: A Scalable Inference Accelerator for Convolutional Neural Networks *Jihyuck Jo ; Soyoung Cha ; Dayoung Rho ; In-Cheol Park*
iRazor: Current-Based Error Detection and Correction Scheme for PVT Variation in 40-nm ARM Cortex-R4 Processor *Yiqun Zhang ; Mahmood Khayatzadeh ; Kaiyuan Yang ; Mehdi Saligane ; Nathaniel Pinckney ; Massimo Alioto ; David Blaauw ; Dennis Sylvester*
Dynamically Adaptable Pipeline for Energy-Efficient Microarchitectures Under Wide Voltage Scaling *Saurabh Jain ; Longyang Lin ; Massimo Alioto*
A Multi-Functional In-Memory Inference Processor Using a Standard 6T SRAM Array *Mingu Kang ; Sujan K. Gonugondla ; Ameya Patil ; Naresh R. Shanbhag*
A 290-mV, 3.34-MHz, 6T SRAM With pMOS Access Transistors and Boosted Wordline in 65-nm CMOS Technology *Morteza Nabavi ; Manoj Sachdev*
Patent Abstracts

IEEE Journal on Exploratory Solid-State Computational Devices and Circuits

2018 Highlights



An Expanded Benchmarking of Beyond-CMOS Devices Based on Boolean and Neuromorphic Representative Circuits
Chenyun Pan; Azad Naeemi

JxCDC papers listed in order of popularity can be found online **HERE**.

For paper submission details, click **HERE**.

Seeking News

Please send any chapter news or happenings (Distinguished Lecturer visits, events hosted by your SSCS chapter, awards received by members, etc) to Abira Sengupta, SSCS Magazine

News Editor, for inclusion in an upcoming issue of the magazine. Please email - **Abira.Sengupta@ieee.org**. We look forward to receiving your news articles!

For more chapter news, check out the Fall 2017 issue of the Solid-State Circuits Magazine.

FEEDBACK

Place article copy here. Be sure to make the articles short and concise as people tend not to read much more than a couple of paragraphs. Place article copy here.

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