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Tuesday, September 3

Tuesday, September 3 9:00 - 10:30

Tutorial 1A: Design of ultra-low power SRAM for IoT, security and computation-in-memory

Tony Kim Tae Hyoung, Nanyang Technological University, Singapore

Tutorial 1B: AI Chip Technologies and DFT Methodologies

Yu Huang and Rahul Singhal, Mentor Graphics, USA

Tuesday, September 3 10:30 - 10:50

Tea Break (Melati Main Foyer)

Tuesday, September 3 10:50 - 12:20

Tutorial 1A: Design of ultra-low power SRAM for IoT, security and computation-in-memory

Tony Kim Tae Hyoung, Nanyang Technological University, Singapore

Tutorial 1B: AI Chip Technologies and DFT Methodologies

Yu Huang and Rahul Singhal, Mentor Graphics, USA

Tuesday, September 3 12:20 - 13:40

Lunch (Melati Main Foyer)

Tuesday, September 3 13:40 - 15:10

Tutorial 2A: Internet of Things (IoT): Signals, Communications, Applications, Challenges, and Future Research

Ahmed Abelgawad, Central Michigan University, USA

Tutorial 2B: Offset Mitigation in Low-Voltage Sense Amplifiers and Its Implication on SRAM Design and Test

Manoj Sachdev, University of Waterloo, Canada

Tuesday, September 3 15:10 - 15:30

Tea Break (Melati Main Foyer)

Tuesday, September 3 15:30 - 17:00

Tutorial 2A: Internet of Things (IoT): Signals, Communications, Applications, Challenges, and Future Research

Ahmed Abelgawad, Central Michigan University, USA

Tutorial 2B: Offset Mitigation in Low-Voltage Sense Amplifiers and Its Implication on SRAM Design and Test

Manoj Sachdev, University of Waterloo, Canada

Wednesday, September 4

Wednesday, September 4 9:00 - 9:10

Opening Remarks

Magdy Bayoumi, Gwee Bah Hwee, Conference General Chairs

Wednesday, September 4 9:10 - 9:20

Technical Program Overview

Danella Zhao, Arindam Basu, Technical Program Chairs

Wednesday, September 4 9:20 - 10:10

Wednesday Keynote: The Memory Wall: Challenges and Solutions

Prof. Dr.-Ing. Norbert Wehn, Technische Universität Kaiserslautern, Germany
Chair: Juergen Becker (Karlsruhe Institute of Technology, Germany)

Wednesday, September 4 10:10 - 10:30

Tea Break (Melati Main 4102-4104)

Wednesday, September 4 10:30 - 12:10

W1A: RF, Analog & Mixed Signal Circuits I

Chair: Anh Tuan DO (Institute of Microelectronics, A*STAR, Singapore)

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Chair: Ram Krishnamurthy (Intel Corporation, USA)

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Wednesday, September 4 12:10 - 13:30

Lunch (Melati Main 4102-4104)

Wednesday, September 4 13:30 - 14:20

Wednesday Plenary: Machine Learning and Hardware Security Technologies for the Nanoscale era: Challenges & Opportunities

Dr. Ram Kumar Krishnamurthy, Senior Research Director and Senior Principal Engineer, Intel Labs, USA
Chair: Danella Zhao (Old Dominion University, USA)

Wednesday, September 4 14:20 - 14:40

Tea Break (Melati Main 4102-4104)

Wednesday, September 4 14:40 - 15:55

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Thursday, September 5

Thursday, September 5 9:00 - 9:50

Thursday Keynote: Survival of The Fittest: Circuits and Architectures for Computation with Wide Power-Performance Adaptation Beyond Voltage Scaling

Prof. Massimo Alioto, National University of Singapore, Singapore
Chair: Magdy Bayoumi (University of Louisiana at Lafayette, USA)

Thursday, September 5 9:50 - 10:40

Thursday Plenary: Anchoring Security in the Connected World

Jerome Tija, Senior Director, Head of Development Centre Infineon Technologies Asia Pacific Pte Ltd

Thursday, September 5 10:40 - 11:00

Tea Break (Melati Main 4102-4104)

Thursday, September 5 11:00 - 12:15

T1A: Intelligent Design for Edge Computing

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Thursday, September 5 12:20 - 13:30

Lunch (Melati Main 4102-4104)

Thursday, September 5 13:30 - 15:10

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Thursday, September 5 15:10 - 15:30

Tea Break (Melati Main 4102-4104)

Thursday, September 5 15:30 - 17:00

Panel Discussion: Machine Learning & IoT: Which is the Enabler?

Jurgen Becker (KIT) , Massimo Alioto (NUS), Jerome Tjia (Infineon Tech), Mircea Stan (Virginia Tech)
Chair: Magdy Bayoumi (University of Louisiana at Lafayette, USA)

Thursday, September 5 18:00 - 21:00

Banquet Dinner with Show

Friday, September 6

Friday, September 6 9:00 - 10:40

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Chair: Thomas Buechner (IBM Germany Research & Development, Germany)

9:00 ***Scalable Physical Design Approach for Many-core Neuromorphic System-on-Chip...N/A***
Aarthy Mani (Institute of Microelectronics, Singapore); Vishnu P. Nambiar and Anh Tuan DO (Institute of Microelectronics, A*STAR, Singapore); Bin Zhao (IME, Singapore)

9:20 ***14.5 GHz Clock Custom Digital Design Methodology Utilizing Back Bias Tuning Capability in 22Nm FD-SOI CMOS Technology...N/A***
Renju Raju Thomas, Nanko Verwaal, Jan Sundermeyer and Conrad Zerna (Fraunhofer IIS, Erlangen)

9:40 ***Early Diagnoses of Alzheimer Using EEG Data and Deep Neural Networks Classification...N/A***
Mohamed Ismail (TU-Darmstadt, Germany); Mohamed Abd El Ghany (German University in Cairo & TU Darmstadt, Egypt); Klaus Hofmann (TU Darmstadt, Germany)

10:00 ***Integration of Safety Related IP's into SoC's - Challenges and Mitigations...N/A***
Shivakumar Chonnad (Synopsys Inc, USA); Vladimir Litovtchenko (Synopsys GmbH, Germany)

10:20 ***Embedded 6-T SRAM with Novel Self-Adaptive Write Enhance Scheme for Improved Fmax...N/A***
Vijit Gadi (Synopsys Inc, India); Kunjan Bhatt and Sanjay Yadav (Synopsys, India)

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Chairs: Kwen Siong Chong (Nanyang Technological University, Singapore), Lan-Da Van (National Chiao Tung University, Taiwan)

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9:25 ***Efficient Overlapped and Interleaved Successive Cancellation List Polar Decoders for IoT...N/A***
Qiang Liu and Xiaofeng Zhou (Southeast University, P.R. China); Shunqing Zhang (Shanghai University, P.R. China); Zaichen Zhang (National Mobile Communications Research Laboratory, Southeast University, P.R. China); Xiaohu You (National Mobile communication Research Lab., Southeast University, P.R. China); Yifei Shen (Southeast University, P.R. China); Chuan Zhang (National Mobile Communications Research Laboratory, Southeast University, P.R. China)

9:50 ***A Neural-Network-Based Non-linear Interference Cancellation Scheme for Wireless IoT Backhaul with Dual-Connectivity...444***
Huiliang Zhang and Zhonglong Wang (Peking University, P.R. China); Fei Qin (vivo Mobile Communication Technology Co., Ltd, Beijing, P.R. China); Meng Ma and Jianhua Zhang (Peking University, P.R. China)

10:15 ***High-Efficiency Step-Down Multi-Mode Switching DC-DC Converter for IoT Devices...449***
Hsiang-Ming Yen (National Chiao Tung University, Taiwan); Chia-Ling Wei (National Cheng Kung University, Taiwan); Chi-Shi Chen (National Chip Implementation Center, Taiwan)

Friday, September 6 10:40 - 11:00

Tea Break

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F2A: RF, Analog and Mixed-signal Circuits II

Chair: Andrew Marshall (University of Texas at Dallas, USA)

11:00 ***Cell-based Coherent Design Methodology for Linear and Non-linear Analog Circuits...455***
Debanjana Datta (IIEST, Shibpur, India); Mousumi Bhanja (CVRCE, Bhubaneswar, India); Anirban Chaudhuri (IIEST, Shibpur, India); Baidyanath Ray (Indian Institute of Engineering, Science and Technology, Shibpur, India); Ayan Banerjee (Indian Institute of Engineering Science and Technology, India)

11:25 ***A Digitally Controllable Passive Variable Slope Gain Equalizer for Wideband Radio Frequency System-on-Chip Applications...461***
Sreekesh Lakshminarayanan and Klaus Hofmann (Technische Universität Darmstadt)

11:50 ***A 100-mVpp Input Range 10-kHz BW VCO-based CT-DSM Neuro-Recording IC in 40-Nm CMOS...466***
Wei Zhou and Wang Ling Goh (Nanyang Technological University, Singapore); Yi Chen (Beijing Academy of Edge Computing, P.R. China); Tan Tan Zhang (Institute of Microelectronics, Agency of Science, Technology and Research (A*STAR), Singapore); Yuan Gao (Institute of Microelectronics, A*STAR, Singapore)

Friday, September 6 11:00 - 12:20

F2B: Special Session VII: Integrated Wearable Electromagnetic-Acoustics Sensing Circuits and Systems Towards SoC Chip Integration

Chair: Ramalingam Sridhar (University at Buffalo, USA)

11:00 ***Radar Transceivers for Inverse Synthetic Aperture Radar (ISAR) Imaging of Human Activity in 65Nm CMOS…471***
Liheng Lou and Zhongyuan Fang (Nanyang Technological University, Singapore)

11:20 ***Mixed-Signal Circuits and Architectures for Energy-Efficient In-Memory and In-Sensor Computation of Artificial Neural Networks…475***
Bongjin Kim (Nanyang Technological University, Singapore)

11:40 ***AxC-CS: Approximate Computing for Hardware Efficient Compressed Sensing Encoder Design…479***
Wenfeng Zhao (University of Minnesota, USA); Biao Sun (Tianjin University, P.R. China); Jian Chen (ShanghaiTech University, P.R. China); Yajun Ha (Shanghaitech University, P.R. China)

12:00 ***A Low Power Analog Front-end for Ultrasound Receiver…484***
Chuanshi Yang and Zhongyuan Fang (Nanyang Technological University, Singapore)

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Closing Remarks

Magdy Bayoumi, Gwee Bah Hwee, Conference General Chairs