

Preliminary Program of APCCAS 2020

Last update: 27 November 2020

Time	Virtual Room 1	Virtual Room 2
Tuesday, December 8		
09:00-09:30	O1: <i>Opening Session</i>	
09:30-10:20	K1: <i>Keynote 1</i>	
10:30-12:10	A1: <i>Analog and Mixed-Signal I</i>	D1: <i>Digital Circuits and Systems I</i>
14:00-15:40	A2: <i>Analog and Mixed-Signal II</i>	D2: <i>Digital Circuits and Systems II</i>
16:00-18:00	A3: <i>Analog and Mixed-Signal III</i>	C1: <i>Communication Circuits and Systems</i>
Wednesday, December 9		
09:00-09:50	K2: <i>Keynote 2</i>	
10:00-11:00	SI1: <i>Sensors and Interfaces</i>	PA1: <i>PrimeAsia 2020 - I</i>
11:00-12:00	D3: <i>Digital Circuits and Systems III</i>	PA2: <i>PrimeAsia 2020 - II</i>
14:00-15:40	D4: <i>Digital Circuits and Systems IV</i>	V1: <i>Visual Signal Processing and Communications</i>
16:00-18:00	N1: <i>Neural Networks and Neuromorphic Engineering</i>	CS1: <i>Circuits and Systems</i>
Thursday, December 10		
09:00-11:00	S1: <i>Digital Signal Processing</i>	M1: <i>Multimedia Systems and Applications</i>
11:00-12:00	C: <i>Closing session</i>	

Note: Time and date are in Vietnam time zone (GMT+7)

Tuesday, December 8

O1: Opening Session

9:00 Opening session

Rooms: Virtual Room 1, Virtual Room 2

K1: Keynote 1

Rooms: **Virtual Room 1, Virtual Room 2**

Session chair: Xuan-Tu Tran (Vietnam National University, Hanoi, Vietnam)

9:30 *Hardware Attack and Assurance with Machine Learning: A Security Threat to Circuits and Systems*

[Prof. Bah-Hwee Gwee](#) (Nanyang Technological University, Singapore)

A1: Analog and Mixed-Signal I

Virtual Room 1

Session chair: Yong Chen (University of Macau, Macau, China)

10:30 *A 16-channel 50MS/s 14bit Pipelined-SAR ADC for Integrated Ultrasound Imaging Systems*

[Yimin Wu](#), [Jingchao Lan](#), [Min Chen](#), [Fan Ye](#) and [Junyan Ren](#) (Fudan University, China)

10:50 *An Area-Power-Efficient AFE with NS-SAR ADC For High-Frequency Ultrasound Applications*

[Yimin Wu](#), [Shuai Li](#), [Longheng Luo](#), [Fan Ye](#) and [Junyan Ren](#) (Fudan University, China)

11:10 *A Two-step SAR ADC with Synchronous DEM Calibration Achieving Up to 15% Power Reduction*

[Zhechong Lan](#) (Xi'an Jiaotong University, China); [Li Dong](#), [Xixin Jing](#) and [Liheng Liu](#) (Xi'an Jiaotong University, China); [Ken Li](#) (Xi'an Jiaotong University, China); [Ziyan Shen](#) and [Zhiming Li](#) (Xi'an Jiaotong University, China); [Li Geng](#) (Xi'an Jiaotong University, China)

11:30 *Low power PMIC with two hybrid converters for TEG application*

[Thinh Tran-Dinh](#), [Hieu Minh Pham](#), [Bac Phuong Dao](#) and [Hien Hoang-Thi](#) (Hanoi University of Science and Technology, Vietnam); [Loan Pham-Nguyen](#) (Hanoi University of Science and Technology & School of Electronics and Telecommunications, Vietnam); [Sang-Gug Lee](#) (Korea Advanced Institute of Science and Technology (KAIST), Korea (South)); [Hanh-Phuc Le](#) (University of California San Diego, USA)

11:50 *A Spur-Free Low-Complexity Hybrid Nested Bus-Splitting/SP-MASH Digital Delta-Sigma Modulator*

[Tieu Khanh Luong](#) (Viettel High-Tech Industries Corporation, Vietnam); [Hong Hanh Hoang](#) and [Hoang-Anh Nguyen-Minh](#) (Viettel High-Tech Industries Corporation (VHT), Vietnam); [Dang Cong Bui](#) (Viettel High-Tech Industries Corporation,

Vietnam); [Viet-Son Bui](#) (Viettel High-Tech Industries Corporation (VHT), Vietnam); [Kien Nguyen](#) (Viettel IC, Vietnam)

D1: Digital Circuits and Systems I

Virtual Room 2

Session chair: Lan-Da Van (National Chiao Tung University, Taiwan)

10:30 *ECC processor over the Koblitz curves with τ -NAF Converter and Square-Square-Add Algorithm*

[Ting Wang](#) and [Tsung-Te Liu](#) (National Taiwan University, Taiwan)

10:50 *Efficient FPGA design for Convolutions in CNN based on FFT-pruning*

[Liulu He](#) (Nanjing University & School of Electronic Science and Engineering, China); [Xiaoru Xie](#) (Nanjing University & School of Electronic Science and Engineering, China); [Jun Lin](#) and [Zhongfeng Wang](#) (Nanjing University, China)

11:10 *A DLL-based Body Bias Generator for Minimum Energy Operation with Independent P-well and N-well Bias*

[Kentaro Nagai](#), [Jun Shiomi](#) and [Hidetoshi Onodera](#) (Kyoto University, Japan)

11:30 *A Lightweight AEAD encryption core to secure IoT applications*

[Nguyen Ngo Doanh](#) and [Bui Duy Hieu](#) (Vietnam National University, Hanoi, Vietnam); [Xuan-Tu Tran](#) (Vietnam National University, Hanoi, Vietnam)

A2: Analog and Mixed-Signal II

Virtual Room 1

Session chair: Do Anh Tuan (A*STAR, Singapore)

14:00 *A Low-Power Low-Noise Dynamic Comparator With Latch-Embedding Floating Amplifier*

[Ziwei Li](#), [Wenbin He](#), [Fan Ye](#) and [Junyan Ren](#) (Fudan University, China)

14:20 *Capacitive recombination calibration method to improve the performance of SAR ADC*

[Hua Fan](#) (University of Electronic Science and Technology of China, China)

14:40 *A Single-Stage Delay-Tuned Active Rectifier for Constant-Current Constant-Voltage Wireless Charging*

[Xianglong Bai](#) and [Fangyu Mao](#) (University of Macau, China); [Yan Lu](#) (University of Macau, Macao); [Chenchang Zhan](#) (Southern University of Science and Technology, China); [Rui P. Martins](#) (University of Macau, Macao)

15:00 *Design of SRAM cell using Voltage Lowering and Stacking Techniques for Low Power Applications*

[Jitendra Kumar Mishra](#) (Indian Institute of Information Technology, Allahabad, India); [Prasanna Kumar Misra](#) and [Manish Goswami](#) (Indian Institute of Information Technology, India)

15:20 Dynamic Reduction of Power Consumption in Direct-RF Sampling Receivers with Variable Decimation

Yuka Nakamatsu and Takao Kihara (Osaka Institute of Technology, Japan)

D2: Digital Circuits and Systems II

Virtual Room 2

Session chair: Chien-Ming Wu, (National Chip Implementation Center, NARL, Taiwan)

14:00 High-Performance Implementation of Adaptive IQ Mismatch Compensator in Direct-Conversion Transceiver

Toan Van Nguyen (Viettel High Technology Industries Corporation (VHT), Viettel Group, Vietnam); Viet-Son Bui (Viettel High-Tech Industries Corporation (VHT), Vietnam); Kien Nguyen (Viettel IC, Vietnam)

14:20 Stress evolution analysis of EM-induced void growth for multi-segment interconnect wires

Zaiyong Liu, Haibao Chen and Tianshu Hou (Shanghai Jiao Tong University, China)

14:40 Performance Analysis of Non-Profiled Side Channel Attacks Based on Convolutional Neural Networks

Ngoc-Tuan Do and Van-Phuc Hoang (Le Quy Don Technical University, Vietnam); Sang Van Doan (Vietnam Naval Academy, Vietnam & ICT CRC, Kumoh National Institute of Technology, Korea (South))

15:00 An Energy-Efficient Time-Domain Binary Neural Network Accelerator with Error-Detection in 28nm CMOS

Yuxuan Du, Xinchao Shang and Weiwei Shan (Southeast University, China)

15:20 Low-Power Implementation of a High-Throughput Multi-core AES Encryption Architecture

Pham- Khoi Dong (VNU University of Engineering and Technology, Vietnam); Hung K. Nguyen (VNU University of Engineering and Technology, Vietnam); Van-Phuc Hoang (Le Quy Don Technical University, Vietnam); Xuan-Tu Tran (Vietnam National University, Hanoi, Vietnam)

A3: Analog and Mixed-Signal III

Virtual Room 1

Session chair: Chun-Lin Ko (Taiwan Semiconductor Research Institute, Taiwan)

16:00 Sub-Sampling Phase-Locked Loop with Ultra-mini Dead Zone For Locking Time Reduction

Yeqing Wang and Zhouchen Ma (Shanghai Jiao Tong University, China); Lei Zhang and Zongmin Wang (Beijing Micro-electronic Technology Institute, China); Yan Liu and Jian Zhao (Shanghai Jiao Tong University, China)

16:20 Low Power Reference Voltage Buffer and High Density Unit capacitor in a 12b 200MS/s SAR ADC

Wenbin He, Ziwei Li, Fan Ye and Junyan Ren (Fudan University, China)

16:40 Open Top Socketed Evaluation Board for Bench Test and Fault Localization on GaAs RF Device

Alex Marianne A. del Castillo (Analog Devices Inc., Philippines); Ramon Garcia and Febus Reidj G. Cruz (Mapua University, Philippines)

17:00 A Self-coupled DT MASH $\Delta\Sigma$ Modulator with High Tolerance to Noise Leakage

Gaofeng Tan (Shanghai Jiao Tong University, China); Haolin Lu (Tianjin University, China); Xinyu Qin, Jiliang Zhang, Jingying Zhang and Yan Liu (Shanghai Jiao Tong University, China); Liang Qi (Shanghai Jiaotong University, China)

17:20 "Truth from Practice, Learning beyond Teaching" Exploration in teaching Analog Integrated Circuit

Hua Fan (University of Electronic Science and Technology of China, China)

C1: Communication Circuits and Systems

Virtual Room 2

Session chair: Hsu-Feng Hsiao (National Chiao Tung University, Taiwan)

16:00 100 MHz Random Number Generator Design Using Interleaved Metastable NAND/NOR Latches

Chua-Chin Wang and Shao-Wei Lu (National Sun Yat-Sen University, Taiwan)

16:20 A RISC-V SoC for Mobile Payment Based on Visible Light Communication

Xinchao Zhong, Chiu Wing Sham and Longyu Ma (The University of Auckland, New Zealand)

16:40 Digital Phase Estimation through an I/Q Approach for Angle of Arrival Full-Hardware Localization

Antonello Florio, Gianfranco Avitabile and Giuseppe Coviello (Politecnico di Bari, Italy)

17:00 Frequency-Tunable Quasi-Elliptic Filter Using Liquid Metal

Matthew D Brown and Carlos E. Saavedra (Queen's University, Canada)

> End of Day 1

Wednesday, December 9

K2: Keynote 2

Rooms: Virtual Room 1, Virtual Room 2

Session chair: Xuan-Tu Tran (Vietnam National University, Hanoi, Vietnam)

9:00 IoT and Blockchain: Technologies, Challenges, and Applications

Prof. Ren Ping Liu (University of Technology Sydney, Australia)

SI1: Sensors and Interfaces

Virtual Room 1

Session chair: Duy-Hieu Bui (Vietnam National University Hanoi, Vietnam)

10:00 Damage Position Identification of Wooden House Model Using Machine Learning

Kohei Koike, Kenta Suzuki, Mengnan Ke, Kenjiro Mori, Takumi Ito and Takayuki Kawahara (Tokyo University of Science, Japan)

10:20 A Highly Linear Amp-Less Interface Circuit for Capacitive Sensors with $\Delta\Sigma$ C-DAC

Yuya Maekawa, Shuya Nakagawa and Hiroki Ishikuro (Keio University, Japan)

PA1: PrimeAsia 2020 - I

Virtual Room 2

Session chair: Nguyen L. K. Nguyen (University of California, Davis, USA)

10:00 A High-Performance Symmetric Hybrid Form Design for High-Order FIR Filters

Jinghao Ye, Masao Yanagisawa and Youhua Shi (Waseda University, Japan)

10:20 Low-Noise Amplifier with Wideband Feedforward Linearisation for Mid-Band 5G Receivers

Sarmad Ozan, Manish Nair, Tommaso Cappello and Mark Beach (University of Bristol, United Kingdom (Great Britain))

10:40 Random Number Generator Based on Miniature Microbial Fuel Cells

Celal Erbay (TUBITAK - Informatics and Information Security Research Center, Turkey); Salih Ergun (TUBITAK - Informatics and Information Security Research Center, Turkey & ERGTECH Research Center, Switzerland)

D3: Digital Circuits and Systems III

Virtual Room 1

Session chair: Michael Conrad Meyer (Waseda University, Japan)

11:00 A Light-Weight Timing Resilient Scheme for Near-Threshold Efficient Digital ICs

[Xuemei Fan](#), [Hongwei Li](#), [Qiang Li](#), [Liu Hao](#) and [Shengli Lu](#) (Southeast University, China)

11:20 An Efficient Accelerator of the Squaring for the Verifiable Delay Function Over a Class Group

[Danyang Zhu](#), [Yifeng Song](#), [Jing Tian](#) and [Zhongfeng Wang](#) (Nanjing University, China); [Haobo Yu](#) (Snap Inc., USA)

11:40 Fast Permutation Architecture on Encrypted Data for Secure Neural Network Inference

[Xiao Hu](#), [Jing Tian](#) and [Zhongfeng Wang](#) (Nanjing University, China)

PA2: PrimeAsia 2020 - II

Virtual Room 2

Session chair: Khanh N. Dang (Vietnam National University Hanoi, Vietnam)

11:00 3D-Modeling Dataset Augmentation for Underwater AUV Real-time Manipulations

[Chua-Chin Wang](#), [Chia-Yi Huang](#), [Chu-Han Lin](#), [Chia-Hung Yeh](#), [Guan-Xian Liu](#) and [Yu-Cheng Chou](#) (National Sun Yat-Sen University, Taiwan)

11:20 Automatic Tongue Image Segmentation Based on Thresholding and an Improved Level Set Model

[Hongyu Gu](#) and [Zhecheng Yang](#) (Tsinghua University, China); [Hong Chen](#) (Tsinghua, China)

11:40 Design and manufacture power pre-amplifier module for transmitter of ground station at S-band

[Ha Thi Bui](#) (VietNam Space Center & VietNam National Satellite Center, Vietnam)

D4: Digital Circuits and Systems IV

Virtual Room 1

Session chair: Akram Ben Ahmed (National Institute of Advanced Industrial Science and Technology (AIST), Japan) and Antonello Florio (Politecnico di Bari, Italia)

14:00 An Energy Operating System Adaptive for The Sustainable And Green Energy

[Yen-Bor Lin](#), [Chih-Chieh Ma](#), [Chong-Cheng Hsu](#), [Ting-Chia Ou](#), [Tsung-Chieh Cheng](#) and [Wen-Fu Chen](#) (Institute of Nuclear Energy Research, Atomic Energy Council, Executive Yuan, Taiwan)

14:20 High Efficient Early-Complete Brute Force Elimination Method for Security Analysis of Camouflage IC

[Weng-Geng Ho](#), [Chuan-Seng Ng](#), [Nay Aung Kyaw](#), [Kyaw Zwa Lwin Ne](#) and [Kwen Siong Chong](#) (Nanyang Technological University, Singapore); [Bah Hwee Gwee](#) (NTU, Singapore)

14:40 An Efficient FPGA Accelerator Optimized for High Throughput Sparse CNN Inference

[Jiayu Wen](#), [Yufei Ma](#) and [Zhongfeng Wang](#) (Nanjing University, China)

15:00 Copper Coin over Thermal Via in PCB for Thermal Management of 12 W

[Marcus Miguel Vicedo](#) (Analog Devices Inc., Philippines); [Febus Reidj G. Cruz](#) and [Ramon Garcia](#) (Mapua University, Philippines)

V1: Visual Signal Processing and Communications

Virtual Room 2

Session chair: Teo Tee Hui (Singapore University of Technology and Design (SUTD), Singapore)

14:00 Fast Object Detection on the Road

[T. Hui Teo](#) (Singapore University of Technology and Design, Singapore); [Yi Shu Tan](#) (Singapore University of Technology & Design, Singapore)

14:20 Graph Saliency Network: Using Graph Convolution Network on Saliency Detection

[Heng-Sheng Lin](#), [Jian-Jiun Ding](#) and [Jin-Yu Huang](#) (National Taiwan University, Taiwan)

14:40 Improved Angle Freeman Chain Code Using Improved Adaptive Arithmetic Coding

[Ji-Ting Wu](#) and [Jian-Jiun Ding](#) (National Taiwan University, Taiwan)

15:00 Using Fully Connected and Convolutional Net for GAN-Based Face Swapping

[Bo-Shue Lin](#), [Ding-Wen Hsu](#), [Chin-Han Shen](#) and [Hsu-Feng Hsiao](#) (National Chiao Tung University, Taiwan)

15:20 Dilated Residual Convolutional Neural Networks for Low-Dose CT Image Denoising

[Thanh-Trung Nguyen](#) (University of Engineering and Technology, VNU & Thainguyen University of Information and Communication Technology, Vietnam); [Dinh Hoan Trinh](#) (Université de Bourgogne & ImViA, France); [Nguyen Linh Trung](#) (Vietnam National University, Hanoi, Vietnam); [Tran Thi Thuy Quynh](#) (VNU University of Engineering and Technology, Vietnam); [Luu Manh Ha](#) (AVITECH & FET, University of Technology and Engineering, VNU, Hanoi, Vietnam & Erasmus MC, Rotterdam, The Netherlands)

N1: Neural Networks and Neuromorphic Engineering

Virtual Room 1

Session chair: Charlotte Frenkel (Institute of Neuroinformatics, University of Zürich and ETH Zürich, Switzerland)

16:00 Design of an 45nm NCFET Based Compute-in-SRAM for Energy-Efficient Machine Learning Applications

[Chia-Heng Lee](#), [Ying-Tuan Hsu](#), [Tsung-Te Liu](#) and [Tzi-Dar Chiueh](#) (National Taiwan University, Taiwan)

16:20 Improvement of Generalization performance for Timber Health Monitoring using Machine Learning

[Kenta Suzuki](#), [Kohei Koike](#), [Mengnan Ke](#), [Kenjiro Mori](#), [Takumi Ito](#) and [Takayuki Kawahara](#) (Tokyo University of Science, Japan)

16:40 LBFP: Logarithmic Block Floating Point Arithmetic for Deep Neural Networks

[Chao Ni](#) (Nanjing University & School of Electronic Science and Engineering, China); [Jinming Lu](#), [Jun Lin](#) and [Zhongfeng Wang](#) (Nanjing University, China)

17:00 A Calibration Scheme for Nonlinearity of the SAR-Pipelined ADCs Based on a Shared Neural Network

[Min Chen](#), [Yimin Wu](#), [Jingchao Lan](#), [Chixiao Chen](#), [Fan Ye](#) and [Junyan Ren](#) (Fudan University, China)

17:20 A lightweight Max-Pooling method and architecture for Deep Spiking Convolutional Neural Networks

[Duy-Anh Nguyen](#); [Xuan-Tu Tran](#) ; [Khanh N. Dang](#) (Vietnam National University, Hanoi, Vietnam); [Francesca Iacopi](#) (University of Technology Sydney, Vietnam)

CS1: Circuits and Systems

Virtual Room 2

Session chair: [Tony Tae-Hyoung Kim](#) (Nanyang Technological University, Singapore)

16:00 ReRAM Device and Circuit Co-Design Challenges in Nano-scale CMOS Technology

[Lu Lu](#), [Ju Eon Kim](#), [Vishal Sharma](#) and [Tony Tae Hyoung Kim](#) (Nanyang Technological University, Singapore)

16:20 Lossless EEG Compression Algorithm Based on Semi-Supervised Learning for VLSI Implementation

[Yi-Hong Chen](#), [Yan-Ting Liu](#) and [Tsun-Kuang Chi](#) (Chung Yuan Christian University, Taiwan); [Chiung-An Chen](#) (Ming Chi University of Technology, Taiwan); [Yih-Shyh Chiou](#) (Chung Yuan Christian University, Taiwan); [Ting-Lan Lin](#) (National Taipei University of Technology, Taiwan); [Shih-Lun Chen](#) (Chung Yuan Christian University, Taiwan)

16:40 A 72-nW 440-mV Time Register Using Stacked-NMOS-Switched Gated Delay Cell in Biomedical Applications

[Guowei Chen](#), [Dang Bui](#) and [X. Yu](#) (Graduate School of Nagoya University, Japan); [Md. Zahidul Islam](#) (Graduate School of Engineering, Nagoya University, Japan); [A. Kobayashi](#) (Graduate School of Nagoya University, Japan); [Kiichi Niitsu](#) (Nagoya University, Japan)

17:00 Random Number Generator Based on Skew-tent Map and Chaotic Sampling

[Salih Ergun](#) (TUBITAK - Informatics and Information Security Research Center, Turkey & ERGTECH Research Center, Switzerland); [Sercan Tannriseven](#) (ERGTECH Research Center, Switzerland)

17:20 Experimental Cryptanalysis of No-equilibrium Chaotic System Based Random Number Generator

[Burak Acar](#) and [Tufan C. Karalar](#) (Istanbul Technical University, Turkey)

> End of Day 2

Thursday, December 10

S1: Digital Signal Processing

Virtual Room 1

Session chair: Luu Manh Ha (Vietnam National University, Hanoi, Vietnam)

9:00 *Real-Time Hardware Implementation of 3D Sound Synthesis*

Sathwik GS, Barun Kumar Acharya and Bilal Ali (National Institute of Technology Karnataka Surathkal, India); Deepu Sp (National Institute of Technology Karnataka, Surathkal, India); Sumam David S. (National Institute of Technology Karnataka, India)

9:20 *Axial Resolution Enhancement of Light Sheet Microscopy via Two Light Sheet*

VanNhu Le, MinhNghia Pham and Vandang Hoang (Le Quy Don Technical University, Vietnam)

9:40 *Revisit to Floating-Point Division Algorithm Based on Taylor-Series Expansion*

Jianglin Wei, Anna Kuwana and Haruo Kobayashi (Gunma University, Japan); Kazuyoshi Kubo (Oyama National College of Technology, Japan)

10:00 *Missing Temperature Data Recovery Methods Based on Smoothness, Bandlimitedness and Sparseness Priors*

Chien-Cheng Tseng (National Kaohsiung University of Science and Technology, Taiwan); Su-Ling Lee (Chang-Jung Christian University, Taiwan)

M1: Multimedia Systems and Applications

Virtual Room 2

Session chair: Hoang Van Xiem (Vietnam National University, Hanoi, Vietnam)

9:00 *Learning Enriched Features for Video Denoising with Convolutional Neural Network*

Xianfeng Tang and Peining Zhen (Shanghai Jiao Tong University, China); Ming Kang (Galaxycore Shanghai Limited Corporation, China); Hang Yi and Wei Wang (Beijing Institute of Astronautical Systems Engineering, China); Haibao Chen (Shanghai Jiao Tong University, China)

9:20 *Histogram of Oriented Gradients Feature Extraction Without Normalization*

Ling Zhang, Wei Zhou and Xin Lou (ShanghaiTech University, China)

C: Closing session

Rooms: Virtual Room 1, Virtual Room 2

11:00 Closing speech, Best paper award, announcements

> End of Day 3