SESSION 1A

Wednesday March 25

PUF and Security in Emerging Systems

Chair: Jiliang Zhang, Hunan University
Co-Chair: Nima Karimian, San Jose State University

10:25AM
1A.1
Efficient Transfer Learning on Modeling Physical Unclonable Functions
Qian Wang¹, Omid Aramoon¹, Pengfei Qiu², Gang Qu³
¹University of Maryland, ²Research Institute of Information Technology & TNList, Tsinghua University, Beijing, China, ³Univ. of Maryland, College Park

10:45AM
1A.2
SeqL: Secure Scan-Locking for IP Protection
Seetal Potluri¹, Aydin Aysu¹, Akash Kumar²
¹North Carolina State University, ²Technical University of Dresden

11:05AM
1A.3
A Survey of DMFBs Security: State-of-the-Art Attack and Defense
Chen Dong and Lingqing Liu
Fuzhou University

11:25AM
1A.4
How to retrieve PUF response from a fabricated chip securely?
Aijiao Cui
Harbin Institute of Technology
SESSION 1B

Wednesday March 25

Artificial Intelligence for Hardware Security

Chair: Hassan Salmani, TBD
Co-Chair: Amey Kulkarni and Abhilash Goyal, TBD

10:25AM
1B.1
Code-Bridged Classifier (CBC): A Low or Negative Overhead Defense for Making a CNN Classifier Robust Against Adversarial Attacks
Farnaz Behnia
Sharif Univeristy of Technology

10:45AM
1B.2
Impacts of Machine Learning on Counterfeit IC Detection and Avoidance Techniques
Omid Aramoon¹ and Gang Qu²
¹University of Maryland, ²Univ. of Maryland, College Park

11:05AM
1B.3
LASCA: Learning Assisted Side Channel Delay Analysis for Hardware Trojan Detection
Ashkan Vakil
George Mason University

11:25AM
1B.4
Rethinking FPGA Security in the New Era of Artificial Intelligence
Xiaolin Xu
University of Illinois at Chicago
SESSION 1C

Wednesday March 25

Reliable Electronics: From EM to Approximate Computing

Chair: Raviprakash Rao, Texas Instruments
Co-Chair: Marshnil Dave, Lion Semiconductor

10:25AM
1C.1
CDS-RSRAM: a Reconfigurable SRAM Architecture to Reduce Read Power with Column Data Segmentation
Han Xu1, Ziru Li1, Fei Qiao2, Qi Wei1, Xinjun Liu1, Huazhong Yang1
1Tsinghua University, 2Dept. of Electronic Engineering in Tsinghua University, Beijing National Research Center for Information Science and Technology (BNRist)

10:45AM
1C.2
RARA: Dataflow Based Error Compensation Methods with Runtime Accuracy- Reconfigurable Adder
Shujuan Yin1, Zheyu Liu2, Guihong Li3, Fei Qiao2, Qi Wei1, Yuanfeng Wu5, Lianru Gao5, Xinjun Liu6, Huazhong Yang2
1Baotou Teachers' College, Inner Mongolia University of Science & Technology, Baotou, China; Tsinghua University, Beijing, China; Beijing National Research Center for Information Science and Technology, 3University of Texas at Austin; Tsinghua University, Beijing, China, 4Tsinghua University, Beijing, China, 5Key Laboratory of Digital Earth Science, Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, China, 6Tsinghua University, Beijing, China;

11:05AM
1C.3
Low-power Accuracy-configurable Carry Look-ahead Adder Based on Voltage Overscaling Technique
Hassan Afzali-Kusha1, Mehdi Kamal2, Massoud Pedram1
1USC, 2University of Tehran

11:25AM
1C.4
Design Space Exploration Driven by Lifetime Concerns due to Electromigration
Frank Wolff1, Daniel Weyer1, Chris Papachristou1, William Clay2
1Case Western Reserve University, 2C.W. Consultants
SESSION 1D

Wednesday March 25

Magnets and Spins for Better Memory

Chair: TBD, TBD
Co-Chair: TBD, TBD

10:25AM
1D.1
Integrated CAM-RAM Functionality using Ferroelectric FETs
Sumitha George1, Nicolas Jao2, Akshay Krishna Ramanathan2, Xueqing Li3, Sumeet Kumar Gupta4, John Sampson2, Vijaykrishnan Narayanan2
1Pennsylvania State University, 2PSU, 3Tsinghua University, 4Purdue University

10:45AM
1D.2
Statistical Analysis of Temperature Variability on the Write Efficiency of Spin-Orbit Torque MRAM using Polynomial Chaos Metamodels
Sonal Shreya1, Surila Guglani1, Brajesh Kumar Kaushik2, Sourajeet Roy1
1Indian Institute of Technology Roorkee, 2I.I.T-Roorkee

11:05AM
1D.3
Multi-Bit Read and Write Methodologies for Diode-MTJ Crossbar Array
Mohammad Nasim Imtiaz Khan and Swaroop Ghosh
Pennsylvania State University
SESSION 2A

Wednesday March 25

Logic Obfuscation and Fault Attacks

Chair: Gang Qu, University of Maryland
Co-Chair: Samah Saeed, City University of New York

4:10PM
2A.1
Strong Anti-SAT: Secure and Effective Logic Locking
Yuntao Liu¹, Michael Zuzak¹, Yang Xie¹, Abhishek Chakraborty², Ankur Srivastava¹
¹University of Maryland, College Park, ²University of Maryland College Park

4:30PM
2A.2
EM Fault Injection on ARM and RISC-V
Mahmoud A. Elmohr, Haohao Liao, Catherine Gebotys
University of waterloo

4:50PM
2A.3
On Securing Scan Obfuscation Strategies Against ScanSAT Attack
RAJIT KARMAKAR¹ and Santanu Chattopadhyay²
¹INDIAN INSTITUTE OF TECHNOLOGY KCHARAGPUR, ²IIT Kharagpur

5:10PM
2A.4
Fault Attack Detection in AES by Monitoring Power Side-Channel Statistics
Ahish Shylendra¹, Priyesh Shukla¹, Swarup Bhunia², Amit Ranjan Trivedi¹
¹University of Illinois at Chicago, ²University of Florida
SESSION 2B

Wednesday March 25

Reliability and Physical Design

Chair: Siddartha Nath, Synopsys Inc.
Co-Chair: Shipla Pendyala, Intel Corp.

4:10PM
2B.1
Accurate Estimation of Dynamic Timing Slacks using Event-Driven Simulation
Dimitrios Garyfallou¹, Ioannis Tsiokanos², Nestor Evmorfopoulos¹, Georgios Stamoulis¹, Georgios Karakonstantis²
¹University of Thessaly, ²Queen's University Belfast

4:30PM
2B.2
A Layout-Based Soft Error Rate Estimation and Mitigation in the Presence of Multiple Transient Faults in Combinational Logic
Christos Georgakidis, Georgios Ioannis Paliaroutis, Nikolaos Sketopoulou, Pelopidas Tsoumanis, Christos Sotiriou, Nestor Evmorfopoulos, Georgios Stamoulis
University of Thessaly - Department of Electrical and Computer Engineering

4:50PM
2B.3
Stress-Induced Performance Shifts in Flexible System-in-Foils Using Ultra-Thin Chips
Tengtao Li and Sachin S. Sapatnekar
University of Minnesota

5:10PM
2B.4
A Methodology for Reusable Physical Design
Edward Wang, Colin Schmidt, Adam Izraelevitz, John Wright, Borivoje Nikolic, Elad Alon, Jonathan Bachrach
University of California, Berkeley
SESSION 2C

Wednesday March 25

Novel System Design Techniques

Chair: Rajesh Berigei or Giorgios Keramidas, MathWorks, Inc.
Co-Chair: TBD, TBD

4:10PM
2C.1
Error Coverage, Reliability and Cost Analysis of Fault Tolerance Techniques for 32-bit Memory in Space Applications
david freitas¹, david moto¹, Daniel Simões¹, Clailton Lopes¹, roger goerl², César Marcon³, Jarbas Silveira⁴, João Mota¹
¹ufc, ²PUC-RS, ³PUCRS, ⁴Universidade Federal do Ceará

4:30PM
2C.2
Vulnerability-aware Dynamic Reconfiguration of Partially Protected Caches
Yuanwen Huang and Prabhat Mishra
University of Florida

4:50PM
2C.3
Alleviating Bottlenecks for DNN Execution on GPUs via Opportunistic Computing
Xianwei Cheng¹, Hui Zhao², Mahmut Kandemir³, saraju mohanty¹, Beilei Jiang²
¹University of North Texas, ²UNT, ³PSU

5:10PM
2C.4
Learning-Enabled NoC Design for Heterogeneous Manycore Systems
Ryan Kim
Colorado State University
SESSION 2D

Wednesday March 25

Analog, Nanotube, and Quantum Relevance of Machine Learning

Chair: TBD, TBD
Co-Chair: TBD, TBD

4:10PM
2D.1
Improving Reliability of Quantum True Random Number Generator using Machine Learning
Abdullah Ash-Saki, Mahabubul Alam, Swaroop Ghosh
Pennsylvania State University

4:30PM
2D.2
Degradation of Classification Accuracy due to Imperfections and Limited Precision and their Mitigation Approaches in Mixed-signal Neuromorphic Image Classifiers
Dmitri Strukov
UC Santa Barbara

4:50PM
2D.3
Reducing Impact of CNFET Process Imperfections on Shape of Activation Function by Using Connection Pruning and Approximate Neuron Circuit
Kaship Sheikh and Lan Wei
University of Waterloo
SESSION PW1

Wednesday March 25

Posters & WIP Session 1

Chair: TBD, TBD
Co-Chair: TBD, TBD

2:00PM
PW1.1
Compression or Corruption? A Study on the Effectsof Transient Faults on BNN Inference Accelerators
Navid Khoshavi1, Connor Broyles1, Yu Bi2
1Florida Polytechnic University, 2University of Rhode Island

2:05PM
PW1.2
A Low-Power LSTM Processor for Multi-Channel Brain EEG Artifact Detection
Hasib-Al- Rashid1, Nitheesh Kumar Manjunath1, Hirenkumar Paneliya1, Morteza Hosseini1, W. David Hairston2, Tinoosh Mohsenin1
1University of Maryland Baltimore County, 2Human Research and Engineering Directorate, US Army Research Lab

2:10PM
PW1.3
Formal Verification of a Fully Automated Out-of-Plane Cell Injection System
Iram Tariq Bhatti and Osman Hasan
School of Electrical Engineering and Computer Science (SEECS), National University of Sciences and Technology (NUST)

2:15PM
PW1.4
An NBTI-aware Task Parallelism Scheme for Improving Lifespan of Multi-core Systems
Yu-Guang Chen1, Yu-Yi Lin2, Ing-Chao Lin3
1National Central University, 2Yuan Ze University, 3National Cheng Kung University
2:20PM
PW1.5
Synthesis and Generalization of Parallel Algorithms Considering Communication Constraints
Akihiro Goda¹, Yukio Miyasaka², Amir Masoud Gharehbaghi³, Masahiro Fujita²
¹1-4-18, ²University of Tokyo, ³The University of Tokyo

2:25PM
PW1.6
Optimal choice of waveform for library characterization for accurate delay calculation
Ajoy Mandal and Saily Shete
Texas Instruments

2:30PM
PW1.7
Spintronics-based Reconfigurable Ising Model Architecture
Ankit Mondal and Ankur Srivastava
University of Maryland

2:35PM
PW1.8
A Statistical Methodology for Post-Fabrication Weight Tuning in a Binary Perceptron
Elham Azari¹, Ankit Wagle¹, Sunil Khatri², Sarma Vrudhula¹
¹Arizona State University, ²Texas A&M University

2:40PM
PW1.9
Analytical Estimation and Localization of Hardware Trojan Vulnerability in RTL Designs
Sheikh Ariful Islam, Love Kumar Sah, Srinivas Katkoori
University of South Florida

2:45PM
PW1.10
SATConda: SAT to SAT-Hard Clause Translator
Rakibul Hassan, Gaurav Kolhe, Setareh Rafatirad, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao
George Mason University
2:50PM
PW1.11
Entropy-Shield: Side-Channel Entropy Maximization for Timing-based Side-Channel Attacks
Abhijitt Dhavlle¹, Raj Mehta², Setareh Rafatirad², Houman Homayoun², Sai Manoj Pudukotai Dinakarrao²
¹George Mason University, VA, USA, ²George Mason University

SESSION PW2

Wednesday March 25

Posters & WIP Session 2

Chair: TBD, TBD
Co-Chair: TBD, TBD

3:00PM
PW1.1
Integrated Implantable Electrode Array and Amplifier Design for Single-chip Wireless Neural Recordings
Hengying Shan¹, Nathan Conrad¹, Shabnam Ghotbi², John Peterson¹, Saeed Mohammadi¹
¹Purdue University, ²Purdue University

3:05PM
PW1.2
IMU-based Smart Knee Pad for Walking Distance and Stride Count Measurement
Teng-Chia Wang¹, Yan-Ping Chang¹, Chun-Jui Chen¹, Yun-Ju Lee¹, Chia-Chun Lin¹, Yung-Chih Chen², Chun-Yao Wang³
¹National Tsing Hua University, ²Yuan Ze University, ³Dept. CS, National Tsing Hua University

3:10PM
PW1.3
Secure, Scalable and Low-Power Junction Temperature Sensing for Multi-Processor Systems-on-Chip
GANAND KUMAR
TEXAS INSTRUMENTS INDIA PVT LTD
3:15PM
PW1.4
Saving Time and Energy Using Partial Flash Memory Operations in Low-Power Microcontrollers
Prawar Poudel and Aleksandar Milenkovic
The University of Alabama in Huntsville

3:20PM
PW1.5
Variation-Aware Heterogeneous Voltage Regulation for Multi-Core Systems-on-a-Chip with On-Chip Machine Learning
Joseph Riad¹, Jianhao Chen¹, Edgar Sánchez-Sinencio¹, Peng Li²
¹Texas A&M University, ²UC Santa Barbara

3:25PM
PW1.6
Performance Boost Scheme with Activated Dummy Fin in 12-nm FinFET Technology for High-Performance Logic Application
Motoi Ichihashi, Jia Zeng, Youngtag Woo, Xuelian Zhu, Chenchen Wang, James Mazza
GLOBALFOUNDRIES

3:30PM
PW1.7
A Morphable Physically Unclonable Function and True Random Number Generator using a Commercial Magnetic Memory
Mohammad Nasim Imitiaz Khan¹, Chak Yuen Cheng², Sung Hao Lin², Abdullah Ash-Saki¹, Swaroop Ghosh¹
¹Pennsylvania State University, ²The Pennsylvania State University

3:35PM
PW1.8
Extracting Power Signature from Low Dropout Voltage Regulator for IoT Security
David Thompson and Haibo Wang
Southern Illinois University Carbondale

3:40PM
PW1.9
Design of Environmental Monitoring System Based on NB-IoT
Hui Nie and Haifeng Chen
Xi'an University of Posts and Telecommunications
3:45PM  
**PW1.10**  
Accurate, Scalable, and Low-Cost Calibration of Sensing Devices  
*Chelsey Li*  
Santa Clara University  

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**SESSION PW**  

**Wednesday March 25**  

**Posters & WIP**  

Chair: TBD, TBD  
Co-Chair: TBD, TBD  

5:30PM  
**PW.1**  
Compression or Corruption? A Study on the Effects of Transient Faults on BNN Inference Accelerators  
*Navid Khoshavi*, *Connor Broyles*, *Yu Bi*  
1Florida Polytechnic University, 2University of Rhode Island  

5:30PM  
**PW.2**  
A Low-Power LSTM Processor for Multi-Channel Brain EEG Artifact Detection  
*Hasib-Al- Rashid*, *Nitheesh Kumar Manjunath*, *Hirenkumar Paneliya*, *Morteza Hosseini*, *W. David Hairston*2, *Tinoosh Mohsenin*1  
1University of Maryland Baltimore County, 2Human Research and Engineering Directorate, US Army Research Lab  

5:30PM  
**PW.3**  
Formal Verification of a Fully Automated Out-of-Plane Cell Injection System  
*Iram Tariq Bhatti* and *Osman Hasan*  
School of Electrical Engineering and Computer Science (SEECS), National University of Sciences and Technology (NUST)
5:30PM
PW.4
An NBTI-aware Task Parallelism Scheme for Improving Lifespan of Multi-core Systems
Yu-Guang Chen¹, Yu-Yi Lin², Ing-Chao Lin³
¹National Central University, ²Yuan Ze University, ³National Cheng Kung University

5:30PM
PW.5
Synthesis and Generalization of Parallel Algorithms Considering Communication Constraints
Akihiro Goda¹, Yukio Miyasaka², Amir Masoud Gharehbaghi³, Masahiro Fujita²
¹1-4-18, ²University of Tokyo, ³The University of Tokyo

5:30PM
PW.6
Optimal choice of waveform for library characterization for accurate delay calculation
Ajoy Mandal and Saili Shete
Texas Instruments

5:30PM
PW.7
Spintronics-based Reconfigurable Ising Model Architecture
Ankit Mondal and Ankur Srivastava
University of Maryland

5:30PM
PW.8
A Statistical Methodology for Post-Fabrication Weight Tuning in a Binary Perceptron
Elham Azari¹, Ankit Wagle¹, Sunil Khatri², Sarma Vrudhula¹
¹Arizona State University, ²Texas A&M University

5:30PM
PW.9
Analytical Estimation and Localization of Hardware Trojan Vulnerability in RTL Designs
Sheikh Ariful Islam, Love Kumar Sah, Srinivas Katkoori
University of South Florida

5:30PM
PW.10
SATConda: SAT to SAT-Hard Clause Translator
Rakibul Hassan, Gaurav Kolhe, Setareh Rafatirad, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao
George Mason University
5:30PM
PW.11
Entropy-Shield: Side-Channel Entropy Maximization for Timing-based Side-Channel Attacks
Abhijitt Dhavlle¹, Raj Mehta², Setareh Rafatirad³, Houman Homayoun², Sai Manoj Pudukotai Dinakarrao²
¹George Mason University, VA, USA, ²George Mason University

5:30PM
PW.12
Integrated Implantable Electrode Array and Amplifier Design for Single-chip Wireless Neural Recordings
Hengying Shan¹, Nathan Conrad¹, Shabnam Ghotbi², John Peterson¹, Saeed Mohammadi¹
¹Purdue University, ²Purdue University

5:30PM
PW.13
IMU-based Smart Knee Pad for Walking Distance and Stride Count Measurement
Teng-Chia Wang¹, Yan-Ping Chang¹, Chun-Jui Chen¹, Yun-Ju Lee¹, Chia-Chun Lin¹, Yung-Chih Chen², Chun-Yao Wang³
¹National Tsing Hua University, ²Yuan Ze University, ³Dept. CS, National Tsing Hua University

5:30PM
PW.14
Secure, Scalable and Low-Power Junction Temperature Sensing for Multi-Processor Systems-on-Chip
G ANAND KUMAR
TEXAS INSTRUMENTS INDIA PVT LTD

5:30PM
PW.15
Saving Time and Energy Using Partial Flash Memory Operations in Low-Power Microcontrollers
Prawar Poudel and Aleksandar Milenkovic
The University of Alabama in Huntsville

5:30PM
PW.16
Variation-Aware Heterogeneous Voltage Regulation for Multi-Core Systems-on-a-Chip with On-Chip Machine Learning
Joseph Riad¹, Jianhao Chen¹, Edgar Sánchez-Sinencio¹, Peng Li²
¹Texas A&M University, ²UC Santa Barbara
5:30PM  
PW.17  
Performance Boost Scheme with Activated Dummy Fin in 12-nm FinFET Technology for High-Performance Logic Application  
Motoi Ichihashi, Jia Zeng, Youngtag Woo, Xuelian Zhu, Chenchen Wang, James Mazza  
GLOBALFOUNDRIES

5:30PM  
PW.18  
A Morphable Physically Unclonable Function and True Random Number Generator using a Commercial Magnetic Memory  
Mohammad Nasim Imtiaz Khan¹, Chak Yuen Cheng², Sung Hao Lin², Abdullah Ash-Saki¹, Swaroop Ghosh¹  
¹Pennsylvania State University, ²The Pennsylvania State University

5:30PM  
PW.19  
Extracting Power Signature from Low Dropout Voltage Regulator for IoT Security  
David Thompson and Haibo Wang  
Southern Illinois University Carbondale

5:30PM  
PW.20  
Design of Environmental Monitoring System Based on NB-IoT  
Hui Nie and Haifeng Chen  
Xi'an University of Posts and Telecommunications

5:30PM  
PW.21  
Accurate, Scalable, and Low-Cost Calibration of Sensing Devices  
Chelsey Li  
Santa Clara University
SESSION 3A

Thursday March 26

Smart Sensors

Chair: Pradeep Chawda, Apple, Inc.
Co-Chair: TBD, TBD

10:20AM
3A.1
Rehabilitation System for Limbs using IMUs
Chun-Jui Chen¹, Yi-Ting Lin¹, Chia-Chun Lin¹, Yung-Chih Chen², Yun-Ju Lee¹, Chun-Yao Wang³
¹National Tsing Hua University, ²Yuan Ze University, ³Dept. CS, National Tsing Hua University

10:40AM
3A.2
Piezoelectric CMOS Charger: Highest Output Power Design
Siyu Yang and Gabriel Rincon-Mora
Georgia Institute of Technology

11:00AM
3A.3
Highest Wireless Power: Inductively Coupled Or RF?
Nan Xing and Gabriel Rincón-Mora
Georgia Institute of Technology

11:20AM
3A.4
Self-Powered IOT System for Edge Inference
Dileep Kurian¹, Tanay Karnik², Mukesh Bhartiya¹, saransh Chhabra², Saksham Soni², Jaykant Timbadiya², Suhwan Kim², Krishnan Ravichandran³, Ankit Gupta², Angela Nicoara³
¹Intel technologies, ²Intel, ³HSLU

11:40AM
3A.5
WiFi for the Internet of Things: Towards Enhancing Energy Efficiency and Timeliness
Behnam Dezfooli
Santa Clara University
SESSION 3B

Thursday March 26

Artificial Intelligence for Hardware Acceleration

Chair: Amey Kulkarni, TBD
Co-Chair: Abhilash Goyal and Xiaosen Liu, TBD

10:20AM
3B.1
Optimization using Machine Learning for Heterogeneous Systems
Madhavan Swaminathan
Georgia Tech

10:40AM
3B.2
Pruning Binary Neural Network Guided by Weight Flipping Frequency
Yixing Li and Fengbo Ren
Arizona State University

11:00AM
3B.3
CSCMAC - Cyclic Sparsely Connected Neural Network Manycore Accelerator
Hirenkumar Paneliya¹, Morteza Hosseini¹, Avesta Sasan², Houman Homayoun², Tinoosh Mohsenin¹
¹University of Maryland Baltimore County, ²George Mason University

11:20AM
3B.4
FeFET-Based Neuromorphic Architecture with On-Device Feedback Alignment Training
Sumin Jo¹, Abdullah Zyarah², Santoch Kurinec², Kai Ni², Fatima Tuz Zohora¹, Dhireesha Kudithipudi¹
¹University of Texas at San Antonio, ²Rochester Institute of Technology

11:40AM
3B.5
An Efficient Deep Reinforcement Learning Framework for UAVs
Shanglin Zhou¹, Bingbing Li¹, Caiwu Ding², Lu Lu², Caiwen Ding¹
¹University of Connecticut, ²New Jersey Institute of Technology
SESSION 3C

Thursday March 26

Circuits and Systems for Quantum Computing

Chair: Pravin Kumar Venkatesan, TBD
Co-Chair: Abhilash Goyal and Amey Kulkarni, TBD

10:20AM
3C.1
Integration and Evaluation of Quantum Accelerators for Data-Driven User Functions
Thomas Hubregtsen¹, Christoph Segler², Josef Pichler³, Aritra Sarkar⁴, Thomas Gabor³, Koen Bertels⁴
¹BMW Research, ²BMW Group Research, New Technologies, Innovations, ³Ludwig Maximilian University of Munich, ⁴Delft University of Technology

10:40AM
3C.2
Hierarchical Improvement of Quantum Approximate Optimization Algorithm for Object Detection
Junde Li, Mahabubul Alam, Abdullah Ash-Saki, Swaroop Ghosh
Pennsylvania State University

11:00AM
3C.3
Cryo-CMOS IC Design and Simulation for Quantum Computing
Jeroen van Dijk¹, Pascal 't Hart¹, Rosario Incandela¹, Bishnu Patra¹, Masoud Babaie¹, Edoardo Charbon², Fabio Sebastiani¹, Andrei Vladimirescu³
¹TU Delft, ²EPFL, Intel Corp, Kavli Institute Delft, ³University of California at Berkeley/ISEP

11:20AM
3C.4
Efficient Training of Deep Convolutional Neural Networks by Augmentation in Embedding Space
Mohammad Saeed Abrishami
University of Southern California
SESSION 3D.1

Thursday March 26

Machine Learning in Conventional and Emerging Platforms

Chair: Sicheng Li, TBD
Co-Chair: Navid Khoshavi Najafabadi, Florida Polytechnic University

10:20AM
3D.1.1
Memory-efficient and Fast Sensing-time Frequency-domain based Spectrum Sensor for Cognitive Radio Network
Rahul Shrestha\textsuperscript{1} and Shubham Telgote\textsuperscript{2}
\textsuperscript{1}Indian Institute of Technology Mandi, \textsuperscript{2}IIT Mandi

10:40AM
3D.1.2
TS-EFA: Resource-efficient High-precision Approximation of Exponential Functions Based on Template-scaling Method
Jeeseon Kim, Vladimir Kornijcuk, Doo Seok Jeong
Hanyang University

SESSION 3D.2

Thursday March 26

Neuromorphic Computing and Cognitive Computing in Hardware

Chair: TBD, TBD
Co-Chair: TBD, TBD

11:00AM
3D.2.1
Accurate and Efficient Quantized Reservoir Computing System
Shiya Liu, Yibin Liang, Victor Gan, Lingjia Liu, Yang Yi
Virginia Tech
11:20 AM
3D.2.2
A Scalable FPGA Engine for Parallel Acceleration of Singular Value Decomposition
Yu Wang¹, Jeong-Jun Lee², Yu Ding¹, Peng Li³
¹Texas A&M University, ²University of California at Santa Barbara, ³University of California, Santa Barbara

11:40 AM
3D.2.3
Deep Neural Network Based Speech Recognition Systems under Noise Perturbations
Yifang Liu
Smule Inc

SESSION 4A.1

Thursday March 26

3D Integration & Advanced Packaging

Chair: Ali Arabi, Global Foundries
Co-Chair: TBD, TBD

3:10 PM
4A.1.1
Electrostatic Discharge Physical Verification of 2.5D/3D Integrated Circuits
Dina Medhat¹, Mohamed Dessouky¹, DiaaEldin Khalil²
¹Mentor, a Siemens Business / ECE Department, Faculty of Engineering, Ain Shames University, ²ECE Department, Faculty of Engineering, Ain Shames University
SESSION 4A.2

Thursday March 26

Circuit and System Diagnosis and Validation

Chair: TBD, TBD
Co-Chair: TBD, TBD

3:30PM
4A.2.1
Mining Message Flow Specifications using Recurrent Neural Network for System-on-Chip Designs
Yuting Cao\textsuperscript{1}, Mahesh Ketkar\textsuperscript{2}, Parijat Mukherjee\textsuperscript{2}, Hao Zheng\textsuperscript{1}, Jin Yang\textsuperscript{3}
\textsuperscript{1}University of South Florida, \textsuperscript{2}Intel Corporation, \textsuperscript{3}Intel Corporation

3:50PM
4A.2.2
Diagnostic Circuit for Latent Fault Detection in SRAM Row Decoder
Shivendra Singh\textsuperscript{1}, Varshita Gupta\textsuperscript{1}, Anuj Grover\textsuperscript{1}, Kedar Janardan Dhori\textsuperscript{2}
\textsuperscript{1}Indraprastha Institute of Information Technology Delhi, \textsuperscript{2}STMicroelectronics Pvt. Ltd., Greater Noida,

4:10PM
4A.2.3
Signal Selection Heuristics for Post-Silicon Validation
Suprajaa Tummala, Xiaobang Liu, Ranga Vemuri
University of Cincinnati
SESSION 4B

Thursday March 26

Energy Oriented System Design

Chair: Sourav Das, Intel Corp.
Co-Chair: TBD, TBD

3:10PM
4B.1
DOVA: A Dynamic Overwriting Voltage Adjustment for STT-RAM L1 Cache
Jinbo Chen¹, Keren Liu¹, Xiaochen Guo², Patrick Girard³, Yuanqing Cheng¹
¹Beihang University, ²Lehigh University, ³CNRS, LIRMM

3:30PM
4B.2
Energy-Efficient Edge Detection using Approximate Ramanujan Sums
Archisman Ghosh¹, Gaurav Kumar K¹, Debaprasad De², ARNAB RAHA³, Mrinal Kanti Naskar¹
¹Jadavpur University, ²Techno India, ³Intel Corporation

3:50PM
4B.3
Comparative Framework for the Analysis of Thermal and Resource Management Algorithms for Multi-Core Architectures
Moeez Akmal¹, Muhammad Sarmad Saeed¹, Muhammad Usama Sardar², Hareem Shaﬁ¹, Osman Hasan¹, Heba Khd³, Jorg Henkel³
¹National University of Sciences and Technology, Islamabad, Pakistan, ²Technische Universität Dresden, ³Karlsruhe Institute of Technology, Karlsruhe, Germany

4:10PM
4B.4
Energy-aware Scheduling of Jobs in Heterogeneous Cluster Systems Using Deep Reinforcement Learning
Amirhossein Esmaili¹ and Massoud Pedram²
¹University of Southern California, ²USC
SESSION 4C

Thursday March 26

Energy Efficient Designs for Future Computing

Chair: **TBD**, TBD
Co-Chair: **TBD**, TBD

3:10PM
4C.1
Two-Graph Approach to Temperature Dependent Skew Scheduling
*Mineo Kaneko*
Japan Advanced Institute of Science and Technology

3:30PM
4C.2
Spintronics Enabled Neuromorphic Computing: Hardware-Algorithm Co-Design
*Kezhou Yang\(^1\), Sen Lu\(^1\), Abhronil Sengupta\(^2\)*
\(^1\)Penn State University, \(^2\)The Pennsylvania State University

3:50PM
4C.3
EGAN: A Framework for Exploring the Accuracy vs. Energy Efficiency Trade-off in Hardware Implementation of Error Resilient Applications
*Marzieh Vaeztourshizi\(^1\), Mehdi Kamal\(^2\), Massoud Pedram\(^1\)*
\(^1\)USC, \(^2\)University of Tehran

4:10PM
4C.4
Insulator-Metal Transition Material Based Artificial Neurons: A Design Perspective
*Ahmedullah Aziz\(^1\) and Kaushik Roy\(^2\)*
\(^1\)University of Tennessee, Knoxville, \(^2\)Purdue University
SESSION 4D

Thursday March 26

Reliability and Physical Design

Chair: Shipla Pendyala, Intel Corp.
Co-Chair: Siddartha Nath, Synopsys Inc.

3:10PM
4D.1
A Neural Network Method for Parallelizing Current Source Model Based Circuit Simulation
Mohammad Saeed Abrishami¹, Hao Ge¹, Justin Calderon¹, Massoud Pedram², Shahin Nazarian¹
¹University of Southern California, ²USC

3:30PM
4D.2
Layout Capacitance Extraction Using Automatic Pre-Characterization and Machine Learning
Zhixing Li and Weiping Shi
Texas A&M University

3:50PM
4D.3
Asynchronous Design flow for Neuromorphic Chips
Prasad Joshi
Intel Corporation

4:10PM
4D.4
Heterogeneous Integration Platform for AI Applications
Madhavan Swaminathan
Georgia Institute of Technology