

# AsianHOST 2019 Technical Program

## AsianHOST 2019 Program Highlights

- 4 Featured Invited Speakers showcasing some of the world's leading innovative thinkers in hardware security! It includes 2 Keynote Talks and 2 Visionary Talks.
- 22 Technical Papers (16 Oral Presentations and 6 Poster Presentations)
- Invited speakers:
  - Massimo Alioto – Nanyang Technological University, Singapore
  - Bernhard Lippmann - Infineon Technologies AG
  - Yu Yao – Northeastern University, China
  - Zhongyao Wen – Synopsys, USA
- A Student Poster Session
- A Panel on Counterfeit Chip Detection

---

### Sunday, December 15, 2019

**5:30 - 7:30 PM**      **Welcome Reception @ 5<sup>th</sup> Floor Conference Room**

### Monday, December 16, 2019

**8:00 - 9:00 AM**      **Registration**

**9:00 - 9:15 AM**      **Opening Remarks: AsianHOST 2019 General and Program Chairs**

**9:15 - 10:00 AM**      **KEYNOTE 1**

**Session Chair:** Chip Hong Chang, Nanyang Technological University, Singapore

**Speaker:** Massimo Alioto, National University of Singapore

**Title:** *Ubiquitous Always-On Hardware Security: Trends, Perspectives and Directions*

**10:00 - 10:30 AM**      **COFFEE BREAK**

**10:30 - 11:50 AM**      **PAPER SESSION 1: HARDWARE ROOT OF TRUST**

**Session Chair:** Sheng Wei, Rutgers University, USA

- *VoltJockey: Breaking SGX by Software-Controlled Voltage-Induced Hardware Faults\**  
**Pengfei Qiu, Dongsheng Wang, Yongqiang Lyu** – Tsinghua Univ., China  
**Gang Qu** – Univ. of Maryland, USA
- *Locking Secret Data in the Vault Leveraging Fuzzy PUFs\**  
**Shuai Chen** – Fiberhome Telecommunication Technologies Co. Ltd, China  
**Yuan Cao** – Hohai Univ., China  
**Xiaojin Zhao** – Shenzhen Univ., China  
**Leilei Zhang** – Fiberhome Telecommunication Technologies Co. Ltd, China

**Fan Zhang** – Zhejiang Univ., China

- *Identification of State Registers of FSM Through Full Scan by Data Analytics\**  
**Chengkang He, Aijiao Cui** – Harbin Institute of Technology (Shenzhen), China  
**Chip-Hong Chang** – Nanyang Technological Univ., Singapore
- *RERTL: Finite State Transducer Logic Recovery at Register Transfer Level*  
**Jason Portillo, Travis Meade, John Hacker, Shaojie Zhang** – Univ. of Central Florida, USA  
**Yier Jin** – Univ. of Florida, USA

\*Best Paper Award Candidate

**11:50 AM - 1:15 PM LUNCH**

**1:15 PM - 1:45 PM Visionary Talk 1**

**Session Chair:** Wei Hu, Northwestern Polytechnical University, China

**Speaker:** Zhongyao Wen, Synopsys, USA

**Title:** (TBD)

**1:45 PM - 3:15 PM POSTER SESSION**

**Session Chair:** Jiliang Zhang, Hunan University, China

#### **SHORT PAPER POSTERS**

- *Density-based Clustering Method for Hardware Trojan Detection Based on Gate-level Structural Features*  
**Pengyong Zhao and Qiang Liu** – Tianjin Univ., China
- *Leveraging Unspecified Functionality in Obfuscated Hardware for Trojan and Fault Attacks*  
**Wei Hu, Yixin Ma, Xinmu Wang and Xingxin Wang** – Northwestern Polytechnical Univ., China
- *An Orthogonal Algorithm for Key Management in Hardware Obfuscation*  
**Wang Jiawei, Zhang Yuejun** – Ningbo Univ., China  
**Wang Pengjun** – Wenzhou Univ., China  
**Luan Zhicun** – Ningbo Univ., China  
**Xue Xiaoyong, Zeng Xiaoyang** – Fudan Univ., China  
**Yu Qiaoyan** – Univ. of New Hampshire, USA
- *Attack on a Microcomputer-Based Random Number Generator Using Auto-synchronization*  
**Salih Ergun** – TÜBİTAK-Informatics and Information Security Research Center, Turkey
- *Low-Latency Pairing Processor Architecture Using Fully-Unrolled Quotient Pipelining Montgomery Multiplier*  
**Junichi Sakamoto, Yusuke Nagahama, Daisuke Fujimoto, Yota Okuaki and Tsutomu Matsumoto** – Yokohama National Univ., Japan

- *Sweep to the Secret: A Constant Propagation Attack on Logic Locking*  
**Abdulahman Alaql, Domenic Forte and Swarup Bhunia – Univ. of Florida, USA**

## STUDENT POSTERS

- *A Novel PUF Circuit Design Based on Slice for Autonomous Vehicles ECUs Authentication*
- *True Random Number Generator in 65nm CMOS Based on Chaotic System*
- *Portable Power Tracer for USIM*
- *RRAM based Flip-Flop Design for Secure Crypto Hardware*
- *Set-based Obfuscation for Strong PUFs against Machine Learning Attacks*
- *Design and Implementation of Leakage-Based PUF with High Reliability and Low-Cost*
- *Scan Chain based Aging Sensor for Detection of Recycled ICs*
- *A secure external IC metering scheme with low overhead*
- *Joint Gain Complement and Clustering-based Double-threshold Quantization for Physical Layer Key Generation*
- *A New Design of FSM State Register to Resist Fault Injection Attack*

**3:15 PM - 3:45 PM    COFFEE BREAK**

**3:45 PM - 4:15 PM    Visionary Talk 2**

**Session Chair:** Xiaojin Zhao, Shenzhen University, China

**Speaker:** Yu Yao, Northeastern University, China

**Title:** *"Detecting" Cyberspace Situation in Industrial Control Networks*

**4:15 PM - 5:35PM    PAPER SESSION 2: SIDE CHANNEL AND PROBING ATTACKS**

**Session Chair:** Fan (Terry) Zhang, Zhejiang University, China

- *Side-Channel-Attack Resistant Dual-Rail Asynchronous-Logic AES Accelerator Based on Standard Library Cells*  
**Kwen-Siong Chong, Aparna Shreedhar, Ne Kyaw Zwa Lwin, Nay Aung Kyaw, Weng-Geng Ho – Nanyang Technological Univ., Singapore**  
**Chao Wang – Huazhong Univ. of Science and Technology, China**  
**Jun Zhou – Univ. of Electronic Science and Technology of China**  
**Bah-Hwee Gwee, Joseph Chang – Nanyang Technological Univ., Singapore**
- *CAD4EM-P: Security-Driven Placement Tools for Electromagnetic Side Channel Protection*  
**Haocheng Ma – Tianjin Univ., China**  
**Jiaji He – Tsinghua Univ., China**  
**Yanjiang Liu, Yiqiang Zhao – Tianjin Univ., China**  
**Yier Jin – Univ. of Florida, USA**
- *Contact-to-Silicide Probing Attacks on Integrated Circuits and Countermeasures*  
**Qihang Shi, Haoting Shen and Domenic Forte – Univ. of Florida, USA**

- *Fluctuating Power Logic: SCA Protection by VDD Randomization at the Cell-level*  
**Fan Zhang, Bolin Yang, Bojie Yang, Yiran Zhang** – Zhejiang Univ., China  
**Shivam Bhasin** – Nanyang Technological Univ., Singapore  
**Kui Ren** – Zhejiang Univ., China

**6:30 PM - 9:00PM BANQUET AND AWARD CEREMONY**

---

**Tuesday, December 17, 2019**

**8:00 AM - 9:15 AM Registration**

**9:15 AM - 10:00 AM KEYNOTE 2**

**Session Chair:** Yier Jin, University of Florida, USA

**Speaker:** Bernhard Lippmann, Infineon Technologies AG

**Title:** *Physical Verification of Advanced Semiconductor Products*

**10:00 AM - 10:30 AM COFFEE BREAK**

**10:30 AM - 11:50 PM PAPER SESSION 3: DEEP LEARNING AND APPROXIMATE COMPUTING**

**Session Chair:** Yuan Cao, Hohai University

- *Runtime Hardware Security Verification Using Approximate Computing: A Case Study on Video Motion Detection*  
**Mengmei Ye, Xianglong Feng and Sheng Wei** – Rutgers Univ., USA
- *Vulnerability Analysis on Noise-Injection Based Hardware Attack on Deep Neural Networks*  
**Wenye Liu, Si Wang, and Chip-Hong Chang** – Nanyang Technological Univ., Singapore
- *Detecting Adversarial Examples for Deep Neural Networks via Layer Directed Discriminative Noise Injection*  
**Si Wang, Wenye Liu, and Chip-Hong Chang** – Nanyang Technological Univ., Singapore
- *Multi-label Deep Learning based Side Channel Attack*  
**Libang Zhang, Xinpeng Xing** – Tsinghua Shenzhen International Graduate School, China  
**Junfeng Fan, Zongyue Wang, Suying Wang** – Open Security Research, Inc., China

**11:50 AM- 1:30 PM LUNCH**

**1:30 PM - 2:50 PM PAPER SESSION 4: PHYSICAL UNCLONABLE FUNCTION**

**Session Chair:** Xiaolin Xu, University of Illinois at Chicago

- *A Modeling Attack Resistant Deception Technique for Securing PUF based Authentication*  
**Chongyan Gu** – Queen Univ. Belfast, United Kingdom  
**Chip Hong Chang** – Nanyang Technological Univ., Singapore

**Weiqiang Liu** – Nanjing Univ. Aeronautics and Astronautics, China  
**Shichao Yu** – Queen Univ. Belfast, United Kingdom  
**Qingqing Ma** – Nanjing Univ. Aeronautics and Astronautics, China  
**Maire O'Neill** – Queen Univ. Belfast, United Kingdom

- *A Highly-Reliable and Energy-Efficient Physical Unclonable Function Based on 4T All-MOSFET Subthreshold Voltage Reference*  
**Peizhou Gan, Yiheng Wu** – Shenzhen Univ., China  
**Yuan Cao** – Hohai Univ., China  
**Xiaojin Zhao** – Shenzhen Univ., China
- *Design of a Chaotic Oscillator based Model Building Attack Resistant Arbiter PUF*  
**Venkata Sreekanth Balijabudda, Dhruv Thapar, Pranesh Santikellur, Rajat Subhra Chakraborty and Indrajit Chakrabarti** – India Institute of Technology Kharagpur, India
- *A Computationally Efficient Tensor Regression Network based Modeling Attack on XOR Arbiter PUF*  
**Pranesh Santikellur, Lakshya Lakshya, Shashi Ranjan Prakash and Rajat Subhra Chakraborty** – India Institute of Technology Kharagpur, India

**2:05 PM – 3:50PM**     **PANEL**

**Topic:** *Hardware Anti-counterfeiting and Counterfeit Detection: State-of-the-art and Future Directions of Research*

**Panel Moderator:** Gang Qu - University of Maryland, USA

**Panelists:**     Yier Jin - University of Florida, USA  
                    Bernhard Lippmann - Infineon Technologies AG, Germany  
                    Zhongyao Wen - Synopsys, USA  
                    Junfeng Fan - Open Security Research, China

**3:50 PM - 4:00M**     **Closing Remarks**

# Sponsors:

