

EDUCATION

University of California, Irvine

M.S. in Computer Engineering, Advisors: Mohammad Abdullah Al Faruque and Zhou Li

Irvine, CA
2018.9–Current

Sichuan University

B.S. in Electrical Engineering and Automation, GPA: 3.56/4.00

Chengdu, China
2014.9–2018.6

- Thesis: “Fault detection in power transmission system using Machine Learning”

EXPERIENCE

University of California, Irvine

Research Assistant in Embedded & Cyber-Physical Systems Lab

Irvine, CA
2018.9–Current

- Embedded and Cyber-Physical System Security, Computer Microarchitecture
- I worked with my advisor Prof. Mohammad Abdullah Al Faruque on research topics including security in Embedded & Cyber-Physical Systems and side-channel attack & defense.

University of California, Irvine

Research Assistant in Data-driven Security and Privacy (DSP) Lab

Irvine, CA
2018.9–Current

- Machine learning privacy and defense
- I worked with my advisor Prof. Zhou Li on research topics including machine learning privacy attack and hardware security.

University of California, Irvine

Teaching Assistant in Department of Electrical Engineering and Computer Science

Irvine, CA
2019.12–2020.6

- I assisted the course instructors in course website design, grading, and lecturing.

University of California, San Diego

Visiting undergraduate researcher in Adaptive Computing and Embedded Systems (ACES) Lab

San Diego, CA
2017.9–2017.12

- PUFs security
- I worked with my advisor Prof. Farinaz Koushanfar on research topics related to security of PUFs.

PUBLICATIONS

1. Wei Junyi*, **Yicheng Zhang***, Zhe Zhou, Zhou Li, and Mohammad Abdullah Al Faruque, “Leaky DNN: Stealing Deep-Learning Model Secret with GPU Context-Switching Side-Channel.”, *2020 50th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN’2020)*, Valencia, Spain, June, 2020.
*Junyi Wei and Yicheng Zhang are both first author.
2. **Yicheng Zhang**, Rozhin Yasaei, Hao Chen, Zhou Li and Mohammad Abdullah Al Faruque, “Stealing Neural Network Structure through Remote FPGA Side-channel Analysis”, *Submitted to the 29th ACM/SIGDA International Symposium on Field-Programmable Gate Arrays(Accepted as a poster in **FPGA’2021**)*

TEACHING

- **Teaching Assistant** at University of California, Irvine
EECS 150 Continuous-Time Signals and Systems Winter 2019
- **Teaching Assistant** at University of California, Irvine
EECS 111 Sytem Software Spring 2020
- **Teaching Assistant** at University of California, Irvine
EECS 40 Object Oriented System Programming Fall 2020

COMPUTER SKILLS

- **Programming:** C/C++, CUDA C, Python, Verilog, HLS, Bash Script(Linux), java
- **Assembly:** MIPS, 8051
- **CAD Tools:** Altera Quartus, Xilinx ISE, Vivado, Vivado HLS, Xilinx SDK
- **Softwares:** Matlab and Simulink, Arduino

LANGUAGES

- **English:** Fluent
- **EXAM:** TOEP 5.0
- **Chinese:** Native

PROJECTS

Machine Learning Model Stealing Attacks on GPU

- Developed a novel GPU side-channel based on context-switching penalties.
- Implementation of LSTM-based inference model to identify the structural secret.
- Extracted the fine-grained structural secret of VGG16/ZFNET/AlexNet/MLP.

Remote Side-Channel Attack on FPGA to Steal Neural Network Structure

- Developed a novel FPGA power side-channel based attack on a Machine learning models.
- Implementation of VGG16, AlexNet, and MLP models on FPGA accelerator as victim models and a ring oscillator-based circuit to extract power side-channel of victim models.
- Used NearestNeighbors, GradientBoosting, DecisionTree, RandomForest, NeuralNetwork, NaiveBayes, AdaBoost, and XGB classifiers to recover hyper-parameters of victim model from side-channel signals.

SCHOLARSHIPS AND AWARDS

- Sichuan University Scholarship (China) 2014,2015,2016,2017
- Outstanding Students Leader of Sichuan University 2016.10

EXTRACURRICULAR ACTIVITIES

- Member at University of California Irvine Cycling Club 2018–Current
- Member at Chinese Students Scholars Association at UCI (UCI-CSSA) 2018–Current
- Head of Practice Department of Sichuan University Cycling Club 2014–2018
- Volunteers at 120th Anniversary of Sichuan University 2016.9
- Volunteers at HIV Propaganda and Education 2015.10