

Jingjie Li

PH.D. CANDIDATE · UNIVERSITY OF WISCONSIN-MADISON

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Education

University of Wisconsin-Madison (UW-Madison)

Madison

PH.D. COMPUTER ENGINEERING

09.2017-05.2023 (Expected)

- Department of Electrical and Computer Engineering
- Major Area: Computer Engineering, Minor Area: Computer Science
- Advisors: Prof. Younghyun Kim and Prof. Kassem Fawaz
- Research Interest: Usable Security and Privacy, Human-Centered Computing, Augmented/Virtual Reality, Internet of Things

University of Wisconsin-Madison (UW-Madison)

Madison

M.SC. COMPUTER ENGINEERING

09.2017-05.2019

- Department of Electrical and Computer Engineering

Australian National University (ANU)

Canberra

B.ENG. (RESEARCH AND DEVELOPMENT) (HONOURS)

07.2015-07.2017

- Research School of Engineering
- Major: Electronic and Communication Systems | First Class Honours

Beijing Institute of Technology (BIT)

Beijing

B.SC. (JOINT DEGREE WITH ANU)

09.2013-07.2015

- IT Advanced Class, School of Information and Electronics
- Major: Electronic Information Engineering

Professional Experience

2017-Present **Research Assistant**, UW-Madison, USA

2022 **Research Intern**, Visa Research – Security, USA

2021 **Visiting Ph.D. Scholar**, Max Planck Institute for Security and Privacy (MPI-SP), Germany (Virtual)

2016-2017 **Undergraduate Scholar**, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

2015-2017 **Research Student**, ANU, Australia

Awards & Honors

2022 **CPS (Cyber-Physical Systems) Rising Star**, CPS-VO@National Science Foundation

Norton Labs Graduate Fellowship Finalist, NortonLifeLock

2021 **IEEE Micro Top Picks from the Computer Architecture Conferences**, IEEE

Qualcomm Innovation Fellowship Finalist, Qualcomm

2020 **Chancellor's Opportunity Fellowship**, UW-Madison

'Smart Cities - Smart Futures' Competition Finalist, Foxconn

2019 **Chancellor's Opportunity Fellowship**, UW-Madison

'Smart Cities - Smart Futures' Competition Final Winner, Foxconn

Qualcomm Innovation Fellowship Finalist, Qualcomm

ACM CHI Best Paper Award, ACM

2018 **ACM/IEEE ISLPED Low-Power Design Contest Award**, ACM/IEEE

A. Richard Newton Young Student Fellowship, Design Automation Conference (DAC)

2016 **Undergraduate International Partnership Scholarship**, ANU

2015 **Undergraduate International Partnership Scholarship**, ANU

Publications

SECURITY AND PRIVACY

Jingjie Li, Kaiwen Sun, Brittany Huff, Anna Bierley, Younghyun Kim, Florian Schaub, Kassem Fawaz. **“It’s up to the Consumer to be Smart”: Understanding the Security and Privacy Attitudes of Smart Home Users on Reddit**. Accepted at IEEE Symposium on Security and Privacy (S&P), 2023.

Kaiwen Sun, **Jingjie Li**, Yixin Zou, Florian Schaub and Chris Brooks. **The Portrayal of Children in Smart Home Marketing**. Workshop on Kids’ Online Privacy and Safety (KOPS)@Symposium on Usable Privacy and Security, 2022.

Jingjie Li, Amrita Roy Chowdhury, Kassem Fawaz, Younghyun Kim. **Kaleido: Real-Time Privacy Control for Eye-Tracking Systems**. USENIX Security Symposium, 2021. (Acceptance Rate: 18.8%)

Yongwoo Lee, **Jingjie Li**, Younghyun Kim. **MicPrint: Acoustic Sensor Fingerprinting for Spoof-Resistant Mobile Device Authentication**. EAI MobiQuitous (International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services), 2019.

Jingjie Li, Kassem Fawaz, Younghyun Kim. **Velody: Nonlinear Vibration Challenge-Response for Resilient User Authentication**. ACM CCS (Conference on Computer and Communications Security), 2019. (Acceptance Rate: 16%)

AFFECTIVE COMPUTING

Roneel V. Sharan, Shlomo Berkovsky, Ronnie Taib, Irena Koprinska, **Jingjie Li**. **Detecting Personality Traits Using Inter-Hemispheric Asynchrony of the Brainwaves**. IEEE EMBC (Conference of Engineering in Medicine and Biology Society), 2020.

Ronnie Taib, Shlomo Berkovsky, Irena Koprinska, Eileen Wang, Yucheng Zeng, **Jingjie Li**. **Personality Sensing: Detection of Personality Traits Using Physiological Responses to Image and Video Stimuli**. ACM TIIS (Transactions on Interactive Intelligent Systems), 2020.

Shlomo Berkovsky, Ronnie Taib, Irena Koprinska, Eileen Wang, Yucheng Zeng, **Jingjie Li**, Sabina Kleitman. **Detecting Personality Traits Using Eye-Tracking Data**. ACM CHI (Conference on Human Factors in Computing Systems), 2019. (Best Paper)

POWER-EFFICIENT DESIGN

Di Wu, **Jingjie Li**, Zhewen Pan, Younghyun Kim, Joshua San Miguel. **A Unary Brain Computer Interface**. International Symposium on Computer Architecture (ISCA), 2022. (Acceptance Rate: 16%)

Di Wu, **Jingjie Li**, Hsuan Hsiao, Younghyun Kim, Joshua San Miguel. **uGEMM: Unary Computing for GEMM Applications**. IEEE Micro (Special Issue on IEEE Micro Top Picks), 2021.

Di Wu, **Jingjie Li**, Setareh Behroozi, Younghyun Kim, Joshua San Miguel. **UNO: Virtualizing and Unifying Nonlinear Operations for Emerging Neural Networks**. ACM/IEEE ISLPED (International Symposium on Low Power Electronics and Design), 2021.

Di Wu, **Jingjie Li**, Hsuan Hsiao, Younghyun Kim, Joshua San Miguel. **uGEMM: Unary Computing Architecture for GEMM Applications**. ACM/IEEE ISCA (International Symposium on Computer Architecture), 2020. (Acceptance Rate: 18%)

Hanwook Chung, **Jingjie Li**, Younghyun Kim, Jennifer M.C. Van Os, Sabrina H. Brounts, and Christopher Y. Choi. **Using Implantable Biosensors and Wearable Scanners to Monitor Dairy Cattle’s Core Body Temperature in Real-Time**. Computers and Electronics in Agriculture, 2020.

Younghyun Kim, Joshua San Miguel, Setareh Behroozi, Tianen Chen, Kyuin Lee, Yongwoo Lee, **Jingjie Li**, Di Wu. **Approximate Hardware Techniques for Energy-Quality Scaling Across the System**. ICEIC (International Conference on Electronics, Information, and Communication), 2020.

Jackson Melchert, Setareh Behroozi, **Jingjie Li**, Younghyun Kim. **SAADI-EC: A Quality-Configurable Approximate Divider for Energy Efficiency**. IEEE TVLSI (Transactions on Very Large Scale Integration Systems), 2019.

Setareh Behroozi, **Jingjie Li**, Jackson Melchert, Younghyun Kim. **SAADI: A Scalable Accuracy Approximate Divider for Dynamic Energy-Quality Scaling**. ASP-DAC (Asia South Pacific Design Automation Conference), 2019.

Hanwook Chung, **Jingjie Li**, Younghyun Kim, Christopher Y. Choi. **Continuous and Wireless Skin Contact and Ear Implant Temperature Measurements and Relations to the Core Body Temperature of Heat Stressed Dairy Cows**. ASABE ILES (International Livestock Environment Symposium), 2018.

Selected Research Projects

Understanding Smart Device Users' Security and Privacy Considerations via Online Media

UW-Madison & UMich

- Leveraged Reddit to study smart home consumers' attitudes on security and privacy through their online discussion
- Analyzing the implications in smart home marketing materials regarding children's privacy, security, and safety

Usable Privacy Nudging for Smart Device Users

UW-Madison

- Designing communication interfaces for smart device users to facilitate privacy decision by machine learning and mixed reality
- Building natural language model for privacy document comprehension and user communication
- Leading a team of six pre-law students in building up an annotated dataset of smart home companies' privacy documents

Human Factors in Hardware Reverse Engineering

UW-Madison & MPI

- Studying the psychological factors and cognitive processes that contribute to hardware reverse engineering
- Conducted eye-tracking studies to understand human behaviors in hardware reverse engineering under a gamified setting

User Experience of Payment in Virtual Reality

Visa Research

- Designed payment interfaces and conducted user studies to study user experience of payment in a virtual reality game context

Privacy Enhancing Technologies for Augmented/Virtual Reality

UW-Madison

- Contributing to Meta's award project on "Trustworthy Products in AR, VR, and Smart Devices"
- Designed Kaleido, a privacy-utility control knob to protect real-time eye gaze data by local differential privacy
- Integrated Kaleido as a Unity plugin for an eye-tracking game

Balancing Usability, Security, and Privacy for Biometric Authentication

UW-Madison

- Exploring biometric modalities to balance usability, security, and privacy of user authentication in various interactive contexts
- Designed Velody, a system that uses nonlinear vibration biometrics to generate cancelable authentication challenge-responses

Power-Efficient Design for Emerging Intelligent Systems

UW-Madison

- Designing low power systems of emerging computing and interactive applications such as brain-computer interfaces

Industrial Internet of Things in Precision Agriculture and Dairy Industry

UW-Madison

- Developed low-power wearable/implantable sensing and communication systems to monitor dairy cattle's health

Automated Detection of Personality Traits Using Physiological Signals

ANU & CSIRO

- Researched on classifying users' personality traits using multiple physiological signals (eye gaze, EEG, skin conductance, etc.) during multi-media experience and driving simulation

Indoor Localization by Software Defined Radio (SDR)

ANU

- Designed a received signal strength-based indoor localization scheme that reduces the calibration effort on SDR platform

Teaching & Mentoring Experience

2021-Present **NSF Research Experiences for Undergraduates Program**, Research Mentor, UW-Madison

2021-2022 **ECE 399 Independent Study**, Research Mentor, UW-Madison

2020-2021 **Undergraduate Research Scholars Program**, Research Mentor, UW-Madison

Spring 2019 **CS 354 Machine Organization and Programming**, Teaching Assistant, UW-Madison

Services

PEER REVIEW

IEEE Pervasive Computing, Reviewer

IEEE Transactions on Computers, Reviewer

USENIX Security Symposium, External Reviewer

IEEE Symposium on Security & Privacy, External Reviewer

ACM Conference on Computer and Communications Security, External Reviewer

Design Automation Conference, External Reviewer

Asia and South Pacific Design Automation Conference, External Reviewer

International Symposium on Low Power Electronics and Design, External Reviewer

Symposium on Applied Computing, External Reviewer
International Conference on VLSI Design, External Reviewer

EXTRACURRICULAR ACTIVITIES

2016-2017 **Robogals**, Student Volunteer
2014-2015 **Student Union at School of Information and Electronics, BIT**, Director of Publicity

Skills

PROGRAMMING LANGUAGE

Python, MATLAB, C, C#, Verilog, HTML

DESIGN TOOL

PyTorch, Unity, Altium Designer, Xilinx, GNU Radio, Multisim, LTspice