Kyuin Lee

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EDUCATION

University of Wisconsin–Madison *Madison, WI*
Ph.D. in Electrical and Computer Engineering — May 2022

Carnegie Mellon University *Pittsburgh, PA*
M.S. in Electrical and Computer Engineering — May 2017
B.S. in Electrical and Computer Engineering — May 2016

EMPLOYMENT

University of Houston *Houston, TX* — Sep 2022–Present
Assistant Professor, Department of Information Science Technology

Samsung Research America *Mountain view, CA* — May 2016–Aug 2016
Software Engineering Internship, KNOX Security team

AWARDS & HONORS

CPS (Cyber-Physical Systems) Rising Star, CPS-VO @ National Science Foundation — 2022
ECE Fall Dissertator Travel Award, UW-Madison — 2021
Student Research Grants Competition, UW-Madison — 2019
Richard Newton Young Fellow Award, Design Automation Conference — 2019
NSF Travel Grant, International Conference on Computer Design — 2018
Best Demonstration Award in SIGDA University Demo, Design Automation Conference — 2018
ECE Wisconsin Distinguished Graduate Fellowship, UW-Madison — 2017
Osher Lifelong Learning Institute Award, Meeting of the Minds Research Symposium — 2017

RESEARCH INTERESTS

Embedded systems, Security and privacy, Mobile computing, Internet-of-Things

PUBLICATIONS

[13] Myeongseop Kim, Kim Taehyeon, Jean Oh, **Kyuin Lee**, and Kyung-Taek Lee, **"Ground-Relative Positioning in 3D Pose Estimation: A Novel Approach for Real-World Alignment of Skeleton Data,"** To be appeared in *Proceedings of the IEEE International Conference on Ubiquitous Robots (**UR**)*, New York, NY, 2024

[12] Isaac Ahlgren, Jack West, **Kyuin Lee**, George K Thiruvathukal, and Neil Klingensmith, **"A Signal Injection Attack Against Zero Involvement Pairing and Authentication for the Internet of Things "** To be appeared in *Proceedings of the ACM/IEEE Workshop on Design Automation for CPS and IoT (**DESTION**)*, Hong Kong, China, 2024

[11] Isaac Ahlgren, Jack West, **Kyuin Lee**, George K Thiruvathukal, and Neil Klingensmith, **"SyncBleed: A Realistic Threat Model and Mitigation Strategy for Zero-Involvement Pairing and Authentication (ZIPA),"** in *arXiv preprint arXiv:2311.04433*, 2023

[10] Jakob Veselsky, Jack West, Isaac Ahlgren, Abhinav Goel, Wenxin Jiang, **Kyuin Lee**, Younghyun Kim, James Davis, George K. Thiruvathukal, and Neil Klingensmith, **"Establishing Trust in Vehicle-to-Vehicle Coordination: A Sensor Fusion Approach,"** in *Proceedings of the IEEE Workshop on Data-Driven and Intelligent Cyber-Physical Systems (**DI-CPS**)*, pp. 7–13, Virtual, 2022

[9] **Kyuin Lee**, Yucheng Yang, Omkar Prabhune, Aishwarya Lekshmi Chithra, Jack West, Kassem Fawaz, Neil Klingensmith, Suman Banerjee, and Younghyun Kim, **"AeroKey: Using Ambient Electromagnetic Radiation for Secure and Usable Wireless Device Authentication,"** in *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**IMWUT**)*, Vol. 6, Issue. 1, 2022 (Presented at the ACM International Joint Conference on Pervasive and Ubiquitous Computing (**UbiComp**) 2022)

[8] **Kyuin Lee**, **"Secure, Usable and Practical Authentication for the Internet of Things,"** in *The University of Wisconsin–Madison ProQuest Dissertations Publishing*, 2022

[7] **Kyuin Lee**, and Younghyun Kim, **"Balancing Security and Usability of Zero-interaction Pairing and Authentication for the Internet-of-Things,"** in *Proceedings of the Workshop on CPS & IoT Security and Privacy (**CPSIoTSec**)*, pp. 29–34, Virtual, 2021

[6] Yucheng Yang*, **Kyuin Lee***, Younghyun Kim, and Kassem Fawaz, **"PEDRO: Secure Pedestrian Mobility Verification in V2P Communication using COTS Mobile Devices,"** in *Proceedings of the Workshop on CPS & IoT Security and Privacy (**CPSIoTSec**)*, pp. 41–46, Virtual, 2021 (*Equal contribution by Yang and Lee)

[5] Jack West, **Kyuin Lee**, Suman Banerjee, Younghyun Kim, George K. Thiruvathukal, and Neil Klingensmith, **"Moonshine: An Online Randomness Distiller for Zero-Involvement Authentication,"** in *Proceedings of ACM International Conference on Information Processing in Sensor Networks (**IPSN**)*, pp. 93–105, Virtual, 2021

[4] **Kyuin Lee**, Neil Klingensmith, Dong He, Suman Banerjee, and Younghyun Kim, **"ivPair: Context-Based Fast Intra-Vehicle Device Pairing for Secure Wireless Connectivity,"** in *Proceedings of ACM Conference on Security and Privacy in Wireless and Mobile Networks (**WiSec**)*, pp. 25–30, Linz, Austria, 2020
Patent: US #11617085, KR #102404884B1

[3] Younghyun Kim, Joshua San Miguel, Setareh Behroozi, Tianen Chen, **Kyuin Lee**, Yongwoo Lee, Jingjie Li, and Di Wu, **"Approximate Hardware Techniques for Energy-Quality Scaling Across the System,"** in *Proceedings of IEIE/IEEE International Conference on Electronics, Information, and Communication (**ICEIC**)*, pp. 1–5, Barcelona, Spain, 2020

[2] **Kyuin Lee**, Neil Klingensmith, Suman Banerjee, and Younghyun Kim, **"VoltKey: Continuous Secret Key Generation based on Power Line Noise for Zero-Involvement Pairing and Authentication,"** in *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**IMWUT**)*, Vol. 3, Issue. 3, pp. 93:1–93:26, 2019 (Presented at the ACM International Joint Conference on Pervasive and Ubiquitous Computing (**UbiComp**) 2019)
US Patent: US #11700120, KR #102399762B1

[1] **Kyuin Lee**, Vijay Raghunathan, Anand Raghunathan, and Younghyun Kim, **"SyncVibe: Fast and Secure Device Pairing through Physical Vibration on Commodity Smartphones,"** in *Proceedings of IEEE International Conference on Computer Design (**ICCD**)*, pp. 234–241, Orlando, FL, 2018

TALKS, POSTERS & FORUMS

[7] **Kyuin Lee**, **"The Internet's Impact on Export Controls," "Use of the Internet to Detect and Thwart Proliferation,"** *Security & Strategic Trade Management Academy*, Houston, TX, 2023

[6] Jakob Veselsky, Jack West, Isaac Ahlgren, George K. Thiruvathukal, Neil Klingensmith, Abhinav Goel, Wenxin Jiang, James Davis, **Kyuin Lee**, and Younghyun Kim **"Establishing trust in vehicle-to-vehicle coordination: a sensor fusion approach,"** *Poster Session @ International Workshop on Mobile Computing Systems and Applications (HotMobile)*, Tempe, AZ, 2022

[5] **Kyuin Lee**, **"Secure and Usable Zero-interaction Pairing and Authentication Methods for the Internet-of-Things,"** *CPS Rising Stars Workshop*, Charlottesville, VA, 2022

[4] **Kyuin Lee**, **"Secure and Usable Zero-interaction Pairing and Authentication Methods for the Internet-of-Things,"** *Ph.D. Forum @ Design Automation Conference*, Virtual, 2021

[3] **Kyuin Lee**, **"Secure Pairing Methods for Ubiquitous IoT Devices,"** *Richard Newton Young Student @ Design Automation Conference*, San Francisco, CA, 2018

[2] Yongwoo Lee, and **Kyuin Lee**, **"CamPUF: Physically Unclonable Function based on CMOS Image Sensor Fixed Pattern Noise,"** *SIGDA University Demonstration @ Design Automation Conference*, San Francisco, CA, 2018
Best Demonstration Award

[1] **Kyuin Lee**, and Shihan Wang, **"Preventing Epidemics Via Sensing and Learning Mosquito Behaviors,"** *Meeting of the Minds Research Symposium*, Pittsburgh, PA, 2017
Osher Lifelong Learning Institute Award

PATENTS

[2] **Kyuin Lee**, Younghyun Kim, Suman Banerjee, and Neil Klingenmith, **"Pairing Apparatus Using Secret Key Based on Power Line Noise,"** U.S. Patent and Trademark Office, US#11700120B2, 2023

[1] **Kyuin Lee**, Younghyun Kim, Suman Banerjee, and Neil Klingenmith, **"Context-based Pairing Apparatus and Method Thereof,"** U.S. Patent and Trademark Office, US#11617085B2, 2023

TEACHING EXPERIENCE

University of Houston *Houston, TX*

CIS 2337 Fundamentals of Information Security (Instructor)	F22, F23, S23, S24
CIS 6321 Principles of Cybersecurity (Instructor)	F23
CIS 4357 Digital Forensics (Instructor)	S23
Security and Strategic Trade Management Academy (Instructor)	S23

University of Wisconsin–Madison *Madison, WI*

ECE 353 Introduction to Microprocessor Systems (Teaching assistant)	S19, S20
ECE 751 Embedded Computing Systems (Guest lecturer)	F20

Carnegie Mellon University *Pittsburgh, PA*

18-549 Embedded Systems Design (Teaching assistant)	S17
18-349 Real-Time Embedded Systems (Teaching assistant)	F16

SERVICE

Peer review

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

The Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, External Reviewer

ACM Transactions on Embedded Computing Systems, External Reviewer

SKILLS

Programming Languages

C, C++, Java, Python, Verilog, Scala, SQL

Hardware

ARM Cortex-M series, AVR series, Raspberry Pi series

Application Software

MATLAB, EAGLE, Altium, ModelSim, SPICE, Quartus, Bantam, Android Studio