Yucheng Yang

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Education

University of Wisconsin-Madison, Madison, Wisconsin — Aug. 2018 – May 2024 (Expected)

- Ph.D. in Electrical & Computer Engineering (Candidate)
- **Major (Computer Engineering):** Introduction to Computer Architecture, Advanced Computer Architecture, Computer and Network Security, Android Programming, Mobile and Wireless Networking, Embedded Computing Systems
- **Minor (Computer Science):** Machine Learning, Security and Privacy for Data Science
- **Research Interests:** Security and privacy for users interacting with their devices, data privacy, authentication systems without user involvement, road user safety applications in vehicular networks, AI-powered systems.

Shanghai Jiao Tong University, Shanghai, China — Sept. 2014 – Jun. 2018

- B.S. in Electronic Engineering

Selected Research Experiences

Pedestrian road crossing prediction through motion tracking — May 2022 – Aug. 2023

- Implement fine-grained smartphone orientation tracking with high accuracy and minimal drift (Android)
- Design an algorithm for tracking pedestrian's real-time heading with high accuracy and low delay (python)
- Predict pedestrian crossing behavior ahead of actual crossing with high precision and recall rate (Tensorflow)

An Efficient Crowd-sourcing Pedestrian Data Collection Framework — Jan. 2020 – Mar. 2022

- Implemented a stable and energy-efficient pedestrian data collection application in Android
- Distributed to 60 study participants and run in background without user interaction for months (Android)
- Extract detailed pedestrian walking data offline including nearest road data using OpenStreetMap (Postgres)

Privacy Analysis of Mute Buttons in VCAs — Feb. 2021 – Nov. 2021

- Perform audio information flow tracing from microphone to network through debugging in Windows
- Perform audio flow analysis on web-based apps by recompiling Chromium project (C++)
- Detect user's background activities from Webex's audio attributes packets (81.9% accuracy) (Tensorflow)

PEDRO: Secure Pedestrian Mobility Verification — Jan. 2020 – Jan. 2021

- Designed a pedestrian-to-vehicle authentication mechanism based on pedestrian mobility verification
- Evaluated authentication mechanism's performance on Android devices in real-world scenarios (Android)
- Achieved distinguishing moving pedestrian and attackers with 8.5% EER under 8 s (Python)

Selected Publications

- [Under Review] Real-Time Pedestrian Road Crossing Prediction Using Commodity Devices **Yucheng Yang**, Jingjie Li, Kassem Fawaz.
- [PoPETs 2022] Are You Really Muted?: A Privacy Analysis of Mute Buttons in Video Conferencing Apps **Yucheng Yang**, Jack West, George Thiruvathukal, Neil Klingensmith, Kassem Fawaz.
- [IMWUT 2022] AeroKey: Using Ambient Electromagnetic Radiation for Secure and Usable Wireless Device Authentication. Kyuin Lee , **Yucheng Yang**, Omkar Prabhune, Aishwarya Lekshmi Chithra, Jack West, Kassem Fawaz, Neil Klingensmith, Suman Banerjee, Younghyun Kim.
- [CPSIoTSec 2021] PEDRO: Secure Pedestrian Mobility Verification in V2P Communication using COTS Mobile Devices. **Yucheng Yang**, Kyuin Lee, Younghyun Kim, and Kassem Fawaz.

Skills

Programming language: (Proficient) Python ; (Familiar) Java(Android), C++, SQL

Tools & Platforms: Android, Tensorflow, PostgreSQL, Git, Matlab, LaTeX, Docker