

XIN YANG

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New Brunswick, NJ - USA

EDUCATION

Rutgers University-New Brunswick	New Brunswick, NJ, USA
M.S. in Computer Engineering	GPA: 4.0/4.0
	09/2017 - 05/2019
University of Electronic Science and Technology of China	Sichuan, China
B.E. in Computer Science and Technology	GPA: 3.61/4.0
	09/2014 - 06/2017

RESEARCH EXPERIENCE

WINLAB, Rutgers University, North Brunswick, NJ, USA 09/2019 - 08/2020
Research Assistant

- **Multiple People Identification Using Millimeter Wave**
 - Proposed a multi-user identification system that examines lower-limb gait patterns using a single off-the-shelf mmWave sensor.
 - Analyzed mmWave sensor data in the spatiotemporal domain and devised environment independent gait features that can be visualized using heat maps.
 - Designed clustering-based step separation algorithms to extract gait features per user and developed a convolutional neural network to perform step-wise user identification.
- **In-baggage Suspicious Object Detection Using WiFi**
 - Implemented a non-intrusive system to detect suspicious objects concealed in baggage using channel state information (CSI) obtained from commercial WiFi devices.
 - Investigated unique data patterns embedded in WiFi CSI signals reflected from different materials that can be used to estimate risk levels of test objects.
 - Developed adversarial learning-based classification models to distinguish object materials in different experimental environments.
- **Finger-input Authentication on Ubiquitous Surfaces via Physical Vibration**
 - Developed a finger-input authentication system that vibrates solid surfaces to provide touchscreen experience and user authentication for enhanced security.
 - Conducted frequency analysis on vibration signals and revealed correlations between received signals and user's distinctive behavioral and physiological characteristics.
 - Extended effective authentication area and improved authentication accuracy to 97% using deep learning models and evaluated performance on different surface materials.
- **Secure Coded Distributed Learning for Mobile IoT**
 - Designed and prototyped an Android-based distributed learning framework for mobile IoT devices to offload computationally intensive matrix operations.
 - Implemented secure distributed matrix multiplication (SDMM) algorithms on the developed framework to protect data security via Shamir's secret sharing theory.
 - Optimized matrix multiplication operations in SDMM algorithms to achieve 13× faster runtime and 10× less battery consumption on Android smartphones.

INDUSTRY EXPERIENCE

Cisco Systems, Inc., San Jose, CA, USA 06/2020 - 08/2020
Software Engineer Intern (R&D) Supervisor: Dr. David A. Maluf

- Prototyped a real-time multi-factor authentication system using optimization algorithms and collaborated with Cisco engineering team to enhance the functionality.
- Devised device-free user positioning algorithms utilizing 802.11 wireless networking devices and evaluated through simulation, delivered code implementation into Cisco products.

- Explored and researched the feasibility of WiFi-based device-free motion detection and localization algorithms by analyzing the phase and angle of arrival (AoA) of WiFi signals.

Amerilink International Corporation, North Brunswick, NJ, USA 06/2018 - 08/2018
Software Engineer Intern

- Developed two native Android apps for B2B and B2C travel shopping, including core functions, UI, backend API integration, multi-language support, and third-party SDKs for map and payment.
- Tested two developed Android apps through alpha and beta testing tracks, published 1.0 version of Aichotels app and AicTours Hotel app on the Google Play Store.
- Refactored JavaScript and PHP-based backend RESTful APIs for ordering, payment, and user profiling to enhance security and responsiveness.

PUBLICATIONS

Journal Articles:

- **X. Yang**, S. Yang, J. Liu, C. Wang, Y. Chen, and N. Saxena, "Enabling Finger-touch-based Mobile User Authentication via Physical Vibrations on IoT Devices," *IEEE Transactions on Mobile Computing (TMC)*, 2021. (To appear)

Conference Papers:

- Y. Yang, R. D'Oliveira, S. Rouayheb, **X. Yang**, H. Seferoglu, and Y. Chen, "Secure Coded Computation for Efficient Distributed Learning in Mobile IoT," *IEEE International Conference on Sensing, Communication and Networking (SECON)*, Virtual Conference, July 2021.
- **X. Yang**, J. Liu, Y. Chen, X. Guo, and Y. Xie, "MU-ID: Multi-user Identification Through Gaits Using Millimeter Wave Radios," *IEEE International Conference on Computer Communications (INFOCOM)*, Virtual Conference, July 2020.

Posters and Demos:

- Y. Bai, **X. Yang**, C. Liu, J. Wain, R. Wang, J. Cheng, C. Wang, J. Liu, and Y. Chen, "Demo: Monitoring Movement Dynamics of Robot Cars and Drones Using Smartphone's Built-in Sensors," *IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)*, Newark, NJ, November 2019.
- S. M. Kwon, S. Yang, J. Liu, **X. Yang**, W. Saleh, S. Patel, C. Mathews, and Y. Chen, "Demo: Hands-Free Human Activity Recognition Using Millimeter-Wave Sensors," *IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)*, Newark, NJ, November 2019.

TEACHING EXPERIENCE

- Mentored 19 undergraduate students on 5 computer engineering projects. 2019 - 2020
- Teaching Assistant, 16:332:563 Computer Architecture I, Rutgers University Fall 2019

TECHNICAL SKILLS

Programming Languages:

Java, Python, C++, C, MATLAB, HTML, LaTeX, JavaScript, PHP, SQL

Frameworks:

Android Development, TensorFlow, PyTorch, Spark, Hadoop, Apache

AWARDS AND SCHOLARSHIPS

- **IEEE INFOCOM Student Conference Award** 2020
- **National Endeavor Scholarship** 2016

PROFESSIONAL ACTIVITIES

- **ACM ACSAC Artifacts Evaluation Program Committee - Student Reviewer** 2020