

Xiaoyu Zhang

CONTACT INFORMATION

340 Davis Hall
Department of Computer Science & Engineering
University at Buffalo, SUNY
Buffalo, NY, 14260-2500 USA

Phone: (716) 907-7845
E-mail: zhang376@buffalo.edu
Page: <https://zxy340.github.io/>

RESEARCH INTERESTS

My research interests lie in **Mobile Computing**, **Internet of Things**, **Smart Health**, and **Human-computer Interaction**. My research focuses on designing and evaluating advanced wireless sensing systems for next-generation biomedical and mechanical applications, such as *Skin wound care*, *Material Characterization*, and *Mental health*. Specifically, I explore various technological approaches in the field of mobile computing to effectively extract target attributes such as *composition*, *structure*, and *movement*, in order to enable innovative applications. My highlight research primarily focuses on:

- 1) Non-destructive Human Sensing System:** Exploring non-contact RF-based methods to accurately and reliably capture human biomarker information without causing harm to the body.
- 2) On-the-go Material Characterization:** Hand-held system design for characterization of material properties based on features extracted from the differential response of the material to RF signals, e.g., mmWave-based spatial thermal conductivity distribution sensing system.
- 3) Multi-Modality Interaction:** Enhancing the feature extraction capabilities of low-performance modality models using high-performance modalities enables their application in scenarios where high-performance modalities are not available.

EDUCATION

University at Buffalo, the State University of New York (SUNY) *Sep. 2021 - Present*
Ph.D., Computer Science and Engineering Supervised by Prof. Wenyao Xu

University of Science and Technology of China *Sep. 2017 - Sep. 2020*
Graduate Student, Electronic Engineering and Information Science

Hefei University of Technology *Sep. 2013 - Sep. 2017*
B.Eng., Electronic Information Engineering

EDUCATION

China Merchants Bank Software Center *Jul. 2020 - Sep. 2020*
We design a data verification system based on Bootstrap and Django for various data sources, featuring support for online modification, and we develop the front-end display interface and back-end framework to enable dynamic data interaction between the front and back ends.

HONORS AND AWARDS

- Graduate Teaching Award, 2024
- Chair's Fellowship, 2021
- The Second Prize Graduate scholarship of USTC, 2018, 2019
- The First Prize Graduate scholarship of USTC, 2017
- The Third-class scholarship of HFUT, 2015, 2016, 2017

TEACHING
EXPERIENCES

1. Algorithm Analysis and Design [Fall 2024]
2. Special Topics (Guest Lecture: Wireless Signal Processing: Making Sense of the Invisible) [Fall 2023]
3. Algorithm Analysis and Design [Fall 2023]
4. Algorithm Analysis and Design [Fall 2022]
5. Algorithm Analysis and Design [Spring 2022]
6. Algorithm Analysis and Design [Fall 2021]
7. Mathematical Logic and Graph Theory [Fall 2018]

MENTORING
EXPERIENCES

I mentored 6 Undergraduate students.

- Abhi Ramtel (Undergraduate Student, CSE@UB)
UI Design of An Over-gauze Wound Assessment System
- Cole Desimone (Undergraduate Student, AE@UB)
3D Model Design of mmWave Sensor Scanning System
- George Gillman (Undergraduate Student, EE@UB)
mmWave Technologies for Medical Applications: A Review
- Weida Jiang (Undergraduate Student, CSE@UB)
Embedded mmWave-based Hand Detection in Raspberry
- Wenxuan Huang & Yiwen Tan (Undergraduate Student, CSE@UB)
Tool Design for Automatic Image Labeling

PUBLICATIONS

I have published 8 research papers in high-impact venues for mobile computing (e.g., IoT, BSN), human-computer interaction (UIST), smart health/bioinformatics (e.g., JBHI, Photoacoustics).

- [IoTJ'25] **Xiaoyu Zhang**, Zhengxiong Li, Yanda Cheng, Chenhan Xu, Chuqin Huang, Emma Zhang, Ye Zhan, Wei Bo, Jun Xia, Wenyao Xu, “*mmSkin: An Over-gauze Wound Assessment System using Radio Frequency Technologies*”, IEEE Internet of Things Journal.
- [HumanSys'25] **Xiaoyu Zhang**, Zhengxiong Li, Yanda Cheng, Chenhan Xu, Chuqin Huang, Emma Zhang, Ye Zhan, Wei Bo, Jun Xia, Wenyao Xu, “*Through-dressing Wound Monitoring Based on The mmWave Sensor*”, The Third International Workshop on Human-Centered Sensing, Modeling, and Intelligent Systems.
- [IoTJ'25] **Xiaoyu Zhang**, Zhengxiong Li, Chenhan Xu, Luchuan Song, Huining Li, Hongfei Xue, Yingxiao Wu, Wenyao Xu, “*mmHand: Towards Pixel-Level-Accuracy Hand Localization Using A Single Commodity mmWave Device*”, IEEE Internet of Things Journal.
- [Photoacoustics'25] Chuqin Huang, Emily Zheng, Wenhan Zheng, Huijuan Zhang, Yanda Cheng, **Xiaoyu Zhang**, Varun Shijo, Robert W Bing, Isabel Komornicki, Linda M Harris, Ermelinda Bonaccio, Kazuaki Takabe, Emma Zhang, Wenyao Xu, Jun Xia, “*Enhanced clinical photoacoustic vascular imaging through a skin localization network and adaptive weighting*”, Photoacoustics.
- [JBHI'24] Wei Bo, Suzanne S. Sullivan, **Xiaoyu Zhang**, Mingchen Gao, Wenyao Xu, “*A Telemedicine Analytic Framework for Fully and Semi-automatic Alzheimer's Disease Screening using Clock Drawing Test*”, IEEE Journal of Biomedical and Health Informatics.
- [UIST'23] Tiantian Liu, Feng Lin, Chao Wang, Chenhan Xu, **Xiaoyu Zhang**, Zhengxiong Li, Wenyao Xu, Ming-Chun Huang, Kui Ren, “*Robust and Secure Multi-modal User Identification via mmWave-voice Mechanism*”, ACM Symposium on User Interface Software and Technology, San Francisco, USA, October 2023.
- [BSN'19] **Xiaoyu Zhang**, Bin Liu, “*A Channel Hopping Strategy Based on the Human Trajectory Similarity for WBANs*”, IEEE-EMBS International Conference on Body Sensor Networks, Chicago, USA, May 2019.

[**Bodynets'17**] Guan, Chengjie, Bin Liu, Zhiqiang Liu, Y Zhang, **Xiaoyu Zhang**, “*JMMM: A Mobility Model for WBANs Based on Human Joint Movements*”, 19th EAI International Conference on Body Area Networks, Dalian, China, Sep 2017.

COMPETITION	Xiaoyu Zhang , Chuhui Liu, Jun Xia, Linda M. Harris, Wen Yao Xu. Panasci Technology Entrepreneurship Competition (Panasci TEC) 2025, advanced to semifinals.	
COMMUNITY SERVICES & OUTREACH ACTIVITIES	Reviewer:	
	<ul style="list-style-type: none"> • ACM Transactions on Computing for Healthcare [2025] • Smart Health (SH) [2025] • Smart Health (SH) [2024] • IEEE-EMBS International Conference on Biomedical and Health Informatics (IEEE BHI) [2024] • IEEE-EMBS International Conference on Body Sensor Networks (IEEE BSN) [2024] • IEEE-EMBS International Conference on Body Sensor Networks (IEEE BSN) [2023] 	
PRESENTATIONS	<ul style="list-style-type: none"> • Pitch Talk: Panasci TEC Competition WavelyVision: Advanced Through-Gauze Wound Assessment Technology • Invited Talk: IEEE-EMBS International Conference on Body Sensor Networks A Channel Hopping Strategy Based on the Human Trajectory Similarity for WBANs • Invited Talk: 19th EAI International Conference on Body Area Networks JMMM: A Mobility Model for WBANs Based on Human Joint Movements 	<p>March. 2025</p> <p>May. 2019</p> <p>Sep. 2017</p>
PATENTS	<ul style="list-style-type: none"> • mmHeat: Non-destructive Inspection of Thermal Insulation in Building Envelope. • A new mmWave system for accurate hand and finger tracking • Device and Method for Wound Monitoring and Diagnosis using Radio-Frequency Technologies. (Available for licensing or collaboration.) 	