

Xiaoyu Zhang

CONTACT INFORMATION

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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

- 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	<ol style="list-style-type: none"> 1. Special Topics (Guest Lecture: Wireless Signal Processing: Making Sense of the Invisible) [Fall 2023] 2. Algorithm Analysis and Design [Fall 2023] 3. Algorithm Analysis and Design [Fall 2022] 4. Algorithm Analysis and Design [Spring 2022] 5. Algorithm Analysis and Design [Fall 2021] 6. Mathematical Logic and Graph Theory [Fall 2018]
MENTORING EXPERIENCES	<p>I mentored one 5 Undergraduate students.</p> <ul style="list-style-type: none"> • 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	<p>I have published 4 research papers in high-impact venues for mobile computing (BSN), human-computer interaction (UIST), smart health/bioinformatics (e.g., JBHI, BodyNet).</p> <p>[JBHI’24] Wei Bo, Suzanne S. Sullivan, Xiaoyu Zhang, Mingchen Gao, Wen Yao Xu, “A <i>Telemedicine Analytic Framework for Fully and Semi-automatic Alzheimer’s Disease Screening using Clock Drawing Test</i>”, IEEE Journal of Biomedical and Health Informatics.</p> <p>[UIST’23] Tiantian Liu, Feng Lin, Chao Wang, Chenhan Xu, Xiaoyu Zhang, Zhengxiong Li, Wen Yao Xu, Ming-Chun Huang, Kui Ren, “<i>Robust and Secure Multi-modal User Identification via mmWave-voice Mechanism</i>”, ACM Symposium on User Interface Software and Technology, San Francisco, USA, October 2023.</p> <p>[BSN’19] Xiaoyu Zhang, Bin Liu, “A <i>Channel Hopping Strategy Based on the Human Trajectory Similarity for WBANs</i>”, IEEE-EMBS International Conference on Body Sensor Networks, Chicago, USA, May 2019.</p> <p>[Bodynets’17] Guan, Chengjie, Bin Liu, Zhiqiang Liu, Y Zhang, Xiaoyu Zhang, “<i>JMMM: A Mobility Model for WBANs Based on Human Joint Movements</i>”, 19th EAI International Conference on Body Area Networks, Dalian, China, Sep 2017.</p>
COMMUNITY SERVICES & OUTREACH ACTIVITIES	<p>Reviewer:</p> <ul style="list-style-type: none"> • IEEE-EMBS International Conference on Biomedical and Health Informatics (IEEE BHI) [2024] • IEEE-EMBS International Conference on Body Sensor Networks (IEEE 2024) [2024] • IEEE-EMBS International Conference on Body Sensor Networks (IEEE 2023) [2023]
PRESENTATIONS	<p>Conference: IEEE-EMBS International Conference on Body Sensor Networks May. 2019 A Channel Hopping Strategy Based on the Human Trajectory Similarity for WBANs</p> <p>Conference: 19th EAI International Conference on Body Area Networks Sep. 2017 JMMM: A Mobility Model for WBANs Based on Human Joint Movements</p>
PATENTS	<p>Device and Method for Wound Monitoring and Diagnosis using Radio-Frequency Technologies. (Available for licensing or collaboration.)</p>