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 hightlight 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

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

I mentored one 5 Undergraduate students.

- 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 4 research papers in high-impact venues for mobile computing (BSN), human-computer interaction (UIST), smart health/bioinformatics (e.g., JBHI, BodyNet).

[**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 Identication 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.

Community Services & Outreach Activities

Reviewer:

- 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

Conference: IEEE-EMBS International Conference on Body Sensor Networks — May. 2019
A Channel Hopping Strategy Based on the Human Trajectory Similarity for WBANs

Conference: 19th EAI International Conference on Body Area Networks — Sep. 2017
JMMM: A Mobility Model for WBANs Based on Human Joint Movements