HAO ZHOU

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RESEARCH OVERVIEW

I am a Ph.D. candidate, working with **wearable, wireless sensing, and multimodal learning**. On top of **various modalities (IMU, Vision, Ultra-wideband, Acoustics, etc.)**, I develop signal processing and machine learning algorithms for practical systems in **pose estimation, digital health, and accessibility**.

EDUCATION

The Pennsylvania State University — State College, PA, USA
Doctor of Philosophy in Computer Science and Engineering — *2021 - May 2025 (Expected)*
Advisor: Dr. Mahanth Gowda

The University of Mississippi — Oxford, MS, USA
Master of Science in Computer Science — *2019 - 2021*
Bachelor of Science in Computer Science — *2016 - 2019*

INDUSTRIAL EXPERIENCE

Samsung Research America, hosted by Digital Health Lab — May 2024 - Aug 2024

- Developed multimodal health monitoring systems for digital biomarkers (e.g., cardiac output, blood pressure, heart rate variability) with Samsung devices.

Microsoft Research Asia, hosted by Prof. Jie Xiong — May 2023 - Aug 2023

- Ultra-wideband (UWB) Sensing on Consumer-level Devices for device attitude, respiration, etc.
- Intersection of 3D Vision (LiDAR) and Wireless Sensing.

SELECTED PUBLICATIONS

[**ACM MobiCom 2024**] **Hao Zhou**, Kuang Yuan, Mahanth Gowda, Lili Qiu, Jie Xiong, *"Rethinking Orientation Estimation with Smartphone-equipped Ultra-wideband Chips"*.

[**ACM IMWUT/UbiComp 2024**] Runze Liu, Taiting Lu, Shengming, **Hao Zhou**, and Mahanth Gowda, *"SmartDampener: An Open Source Platform for Sport Analytics in Tennis"*.

[**ACM/IEEE IoTDI 2024**] **Hao Zhou**, Taiting Lu, Kenneth DeHaan, and Mahanth Gowda, *"ASLRing: American Sign Language Recognition with Meta-Learning on Wearables"*.

[**ACM MobiCom 2023**] **Hao Zhou**, Taiting Lu, Kristina McKinnie, Joseph Palagano, Kenneth DeHaan, and Mahanth Gowda, *"SignQuery: A Natural User Interface and Search Engine for Sign Language with Wearable Sensors"*.

[**ACM/IEEE IoTDI 2023** 🎗] **Hao Zhou**, Taiting Lu, Yilin Liu, Shijia Zhang, Runze Liu, and Mahanth Gowda, *"One Ring to Rule Them All: An Open Source Smartring Platform for Finger Motion Analytics and Healthcare Applications"*, **Best Paper Award for Edge IoT AI**.

[**ACM Transactions on Internet of Things 2023**] Shijia Zhang, Taiting Lu, **Hao Zhou**, Yilin Liu, Runze Liu, and Mahanth Gowda, *"I am an Earphone and I can Hear my Users Face: 3D Facial Reconstruction using Smart Earphones"*.

[**ACM IMWUT/UbiComp 2022**] **Hao Zhou**, Taiting Lu, Yilin Liu, Shijia Zhang, and Mahanth Gowda, *"Learning on the Rings: Self-Supervised 3D Finger Motion Tracking using Wearable Sensors"*.

[**NeurIPS 2023 Workshop**] Xi Li, Songhe Wang, Chen Wu, **Hao Zhou**, and Jiaqi Wang, *"Backdoor Threats from Compromised Foundation Models to Federated Learning"*.