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 (Ultra-wideband, IMU, Vision, 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

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

♠ *ASLRing: American Sign Language Recognition with Meta-Learning on Wearables*
Hao Zhou, Taiting Lu, Kenneth DeHaan, and Mahanth Gowda
ACM/IEEE IoTDI 2024 (Now SenSys)

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

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

♠ *An Open Source Smartring Platform for Finger Motion Analytics and Healthcare Applications*
Hao Zhou, Taiting Lu, Yilin Liu, Shijia Zhang, Runze Liu, and Mahanth Gowda
ACM/IEEE IoTDI 2023 (Now SenSys)
Best Paper Award for Edge IoT AI

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

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

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