

Yufei Shen

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EDUCATION

The University of Texas at Austin

Ph.D. Electrical and Computer Engineering, GPA: 3.95/4.00
Supervisor: Prof. Edison Thomaz, The University of Texas at Austin
Honors: UT Engineering Fellowship

Austin, TX
Expected May 2027

Rice University

B.S. Electrical Engineering, B.A. Statistics, GPA: 3.95/4.00
Honors: Distinction in Research and Creative Work, Magna Cum Laude

Houston, TX
May 2022

RESEARCH EXPERIENCE

Human Signals Lab, Graduate Research Assistant

Supervisor: Prof. Edison Thomaz, The University of Texas at Austin

Austin, TX
August 2022 - Present

- Analyzed multimodal sensor data from smartphones and wearables to establish digital biomarkers for cognitive impairment; constructed data processing pipelines and trained machine learning models to assess cognitive functioning naturalistically and unobtrusively.
- Developed an iOS mobile application that continuously collects and uploads longitudinal behavioral and physiological data from iPhone and Apple Watch sensors; utilized Apple's SensorKit framework to collect additional data modalities from iPhones that are only accessible to approved research studies.
- Benchmarked the battery consumption of different app components to determine the optimal design for balancing data sampling frequency and energy efficiency.
- Built a server backend to store collected data, and created scripts and web dashboards to monitor data collection from over 30 study participants for up to a year.
- Enhanced the performance of inertial-based human activity recognition for activities of daily living by incorporating audio information through contrastive learning.

Computational Wellbeing Group, Undergraduate Research Assistant

Supervisor: Prof. Akane Sano, Rice University

Houston, TX
May 2020 - August 2022

- Developed machine learning models on multimodal sensing data from smartphones and wearable devices to characterize various health-related conditions, including sleep advice for shift workers and symptoms of schizophrenia patients; explored model personalization to improve the prediction performance for individual subjects.
- Assisted a human subject study to set up and test wearable devices, program daily participant surveys, monitor data collection, and manage collected data.

PROFESSIONAL EXPERIENCE

Chip Wealth Technology LTD.

System Application Engineer Intern

Shanghai, China
July 2019

- Tested OLED display driver ICs for various display functions using SPI and I2C communication interfaces with an STM32 microcontroller.

COMPLETED PROJECTS

Food Recognition and Ingredients Identification with Vision-Language Models

December 2023

- Utilized Low-Rank Adaptation (LoRA) to fine-tune vision-language models, including BLIP-2 and MiniGPT-4, for generating fine-grained captions about the names and visible ingredients of food images.
- Evaluated the quality of generated captions using established image captioning metrics and compared the performance of the fine-tuned models with zero-shot outputs from GPT-4V(ision).

SKILLS

Programming Language: Python, R, SQL, Swift

Tools: PyTorch, TensorFlow, Scikit-learn, Pandas, Numpy