Yufei Shen

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EDUCATION

The University of Texas at Austin   Austin, TX
Ph.D. Electrical and Computer Engineering, GPA: 3.95/4.00   Expected May 2027
Supervisor: Prof. Edison Thomaz, The University of Texas at Austin
Honors: UT Engineering Fellowship

Rice University   Houston, TX
B.S. Electrical Engineering, B.A. Statistics, GPA: 3.95/4.00   May 2022
Honors: Distinction in Research and Creative Work, Magna Cum Laude

RESEARCH EXPERIENCE

Human Signals Lab, Graduate Research Assistant   Austin, TX
Supervisor: Prof. Edison Thomaz, The University of Texas at Austin   August 2022 - Present
- Developed an iOS mobile application that continuously collects and uploads longitudinal behavioral and physiological data from iPhone and Apple Watch sensors to establish digital biomarkers for cognitive impairment; 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.
- Constructed pipelines to process the collected multimodal sensor data and trained machine learning models to assess cognitive functioning naturalistically and unobtrusively.
- 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   Houston, TX
Supervisor: Prof. Akane Sano, Rice University   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.   Shanghai, China
System Application Engineer Intern   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