Yinan (Tom) Xuan

https://www.yinanxuan.com

Research Scientist | Research Engineer | Generalist

yxuan@ucsd.edu

Skills

link to my full CV

Coding: Python, Android (Kotlin, Java), Unity (C#), C/C++, MATLAB, Full Stack Web Dev |
Machine Learning: Neural Networks, SVM, Unsupervised ML | **Signal Processing**: FIR/IIR Filter Design, Image/ Audio Signal Processing | **Prototyping**: SolidWorks, NX, 3D Printing, Laser Cutting |
Embedded System: Digital Circuit Design, PCB Layout, Firmware (nRF Connect SDK, STM32, Arduino), BLE

Education

University of California, San Diego — La Jolla, CA

Ph.D. Candidate in Electrical & Computer Engineering — *July 2020 – 2025 (expected)*

M.S. in Biological Science — *Sept. 2017 – June 2020*

B.S. in Physiology & Neuroscience — *Sept. 2013 – June 2017*

Minor: Cognitive Science — *Honors: MAGNA CUM LAUDE (GPA 3.89/4.00)*

Experience

Meta – Reality Labs — Jun. 2024 - Present

Research Scientist Intern — *Redmond, WA*

- Developed novel low-friction speech input systems by leveraging expertise in **acoustics**, **sensors**, **ML**, and **DSP**. Collaborated closely with **multiple cross-functional teams** and showcased a **real-time demo** to **Meta C-suite executives**.

Meta – Reality Labs — Aug. 2023 – Jan. 2024

Research Scientist Intern — *Redmond, WA*

- Developed a **wearable** test vehicle with integrated motion sensors, responsible for its **mechanical design, sensor circuit integration,** and **firmware development**. Conducted a focused user study and trained an **NN model**. Developed a **real-time demo** w/ visualization.
- Orchestrated the technical setup for a ground truth data collection in a **100 people user study**, selecting optimal devices and engineering synchronization solutions for consistent data integration. Crafted a **Unity app** to facilitate the data collection workflow.

University of California, San Diego — April 2018 – Present

Graduate Student Researcher — *La Jolla, CA*

- Designed and built BPClip, a **low-cost blood pressure monitoring** smartphone attachment consisted of **3D-printed** hardware accessories and **on-device ML/OpenCV Android application**.
- Innovating a **BLE**-enabled tracking solution using the **nRF52810** SoC to monitor bowel movements in IBS patients.
- Developed a calibration method that enables accurate and consistent camera photoplethysmography **(cPPG)** measurement across multiple Android smart phones.
- Designed and implemented SpecTracle, a vision-based unobtrusive **facial tracking system for AR**, which consists of fisheye lens cameras controlled by Raspberry Pi and an image based NN model.
- Implemented a **Unity** exercising game prototype that uses **IMU** signals on Vuzix **AR glasses**.
- Designed and implemented an **olfaction VR** device as a novel instrument to observe odor guided behaviors in fruit flies.
- Designed, implemented and deployed an **image processing** software to facilitate **bio-imaging data analysis**.

Indie Game Developer — June 2021 – Present

- Project Management | Development (**Unity**) | Gameplay Design | Technical Art (**VFX**, **2D lighting, shader graphs**, **particle system**.

Selected Peer Reviewed Publications

1. **Xuan, Y.**, Barry, C., et al. *Ultra-low-cost mechanical smartphone attachment for no-calibration blood pressure measurement*. **Nature Scientific Reports** 13, 8105 (2023).
2. *Barry, C., **Xuan, Y.**, et al. Oscillometric blood pressure measurements on smartphones using vibrometric force estimation*. **Nature Scientific Reports** *14, 26206 (2024)*
3. **Xuan, Y.**, Barry, C., Antipa, N., & Wang, E. J. (2023). *A Calibration Method for Smartphone Camera Photophlethysmography*. **Frontiers in Digital Health**, 5. (2023)
4. Barry, C., Souza, J., **Xuan, Y.**, et al. *Enabling Smartphone Pupillometry using a Facial Identification Camera in At-Home Environments*. **CHI 2022 *Best Paper Honorable Mention Award***
5. Lin, H.-H., Kuang, M. C., Hossain, I., **Xuan, Y.**, et al. (2022). *A nutrient-specific gut hormone arbitrates between courtship and feeding*. In **Nature**. Springer Science and Business Media LLC.