Yinan (Tom) Xuan

Research Scientist | Research Engineer | Generalist

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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 (nRF5* w/ Zephyr, 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 systems for low-friction speech input, leveraging expertise in **acoustics, sensors, ML, and DSP**, through close collaboration with **multiple cross-functional teams**. Created a **real-time demo**, which was **selected for C-suite review**.

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 **Nordic 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. **Xuan, Y.**, Barry, C., Antipa, N., & Wang, E. J. (2023). *A Calibration Method for Smartphone Camera Photophlethysmography*. **Frontiers in Digital Health**, 5. (2023)
3. 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*
4. 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.