

## Yinan (Tom) Xuan

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<https://www.yinanxuan.com>

My research interests lie at the intersection of ubiquitous computing and personal tracking. I am interested in enabling what I refer to as **unconscious interaction**, where users' natural behaviors can implicitly facilitate **personalized usage of computational system**. I am trying to achieve this goal by leveraging both machine learning and my hardware and software prototyping skills.

## EDUCATION

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### University of California, San Diego

*Ph.D. in Electrical & Computer Engineering*

*Expected Graduation: June 2024*

La Jolla, CA

*July 2020 – Present*

*M.S. in Biological Science*

*Thesis Topic: Drosophila Gut Imaging Data Collection and Analysis*

*Sept. 2017 – June 2020*

*B.S. in Physiology & Neuroscience*

*Minor: Cognitive Science*

*Sept. 2013 – June 2017*

*Honors: MAGNA CUM LAUDE (GPA 3.89/4.00)*

## EXPERIENCE

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### Graduate Student Researcher

*University of California, San Diego*

*Electrical and Computer Engineering Department, Jacobs School of Engineering*

*Ubiquitous Data & Computing Lab*

Oct. 2019 – Present

La Jolla, CA

*Advisor: Edward Wang*

- Designed and implemented SpecTracle, a vision-based wearable facial tracking system, which consists of fisheye lens cameras controlled by Raspberry Pi and an image based neural network model. (Under review for CHI 2021)
- Implemented a prototype of a Unity based exercising game on Vuzix AR glasses w/ IMU signals

### Graduate Student Researcher

*University of California, San Diego*

*Section of Neurobiology, Division of Biological Science*

*Wang Lab*

April 2018 – June 2020

La Jolla, CA

*Advisor: Jing Wang*

- Designed and implemented an olfaction VR device as a novel instrument to observe odor guided behaviors in *Drosophila*
- Designed, implemented and deployed an image processing software to facilitate bio-imaging data analysis pipeline to profile *Drosophila* intestinal cells' response to different nutrients
- Designed, implemented and deployed an automated solenoid valve control system for perfusion experiments that can independently control up to 22 valves
- Collaborated in building and testing a customized three-photon fluorescent imaging microscope
- Built a feedback controlled temperature based anesthetic platform to facilitate surgery process on *Drosophila*

### Undergraduate Student Researcher

*University of California, San Diego*

*Division of Otolaryngology–Head and Neck Surgery, Department of Surgery*

*Ongkeko Lab*

Jan 2014 – June 2017

La Jolla, CA

*Advisor: Weg Ongkeko*

- Studied the role of long non-coding RNAs in head and neck squamous cell cancer
- Designed and conducted in vitro experiments for various projects

### Research Internship

*AskGene Pharmaceutical Inc.*

June 2016 – Aug. 2016

Camarillo, CA

- Collaborated in cell line development selecting clone cells with the highest titer
- Purified recombinant antibodies using Protein-A Affinity Chromatography

## SOFTWARE TECHNICAL SKILLS

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**Languages:** Python, Matlab JavaScript, HTML/CSS, C, Java, C++, SQL (MySQL)

**Supervised Machine Learning:** Neural Networks, SVM

**Unsupervised Machine Learning:** hierarchical clustering, k-means clustering, DBSCAN, Gaussian Mixture Model

**Data Analysis:** dimension reduction (PCA, t-SNE, UMAP), signal processing, computer vision / image processing

**Mobile Development:** iOS (Swift), Android (JAVA)

**Frameworks:** Bootstrap, React, Node.js

**Developer Tools:** PyCharm, Unity, Git, Google Cloud Platform

**Libraries:** OpenCV, pandas, NumPy, PyTorch, SciPy, scikit-learn, Matplotlib, seaborn

## HARDWARE TECHNICAL SKILLS

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- PCB design
- Prototype w/ microcontroller
- Prototype w/ Raspberry Pi
- Free-space Optics
- Compressed gas cylinder handling

## BIO-RELATED TECHNICAL SKILLS

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- Mice/*Drosophila* handling
- Cell culture
- RNA extraction
- qRT-PCR
- Transfection

## PUBLICATIONS

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1. Vicky Yu, Mehran Rahimy, Avinaash Korrapati, Yinan Xuan, Angela E. Zou, Aswini R. Krishnan, Tzuhan Tsui, Joseph A. Aguilera, Sunil Advani, Laura E. Crotty Alexander, Kevin T. Brumund, Jessica Wang-Rodriguez, and Weg M. Ongkeko. Electronic cigarettes induce DNA strand breaks and cell death independently of nicotine in cell lines. *Oral Oncology*, 52:58–65, January 2016.
2. Angela E. Zou, Jonjei Ku, Thomas K. Honda, Vicky Yu, Selena Z. Kuo, Hao Zheng, Yinan Xuan, Maarouf A. Saad, Andrew Hinton, Kevin T. Brumund, Jonathan H. Lin, Jessica Wang-Rodriguez, and Weg M. Ongkeko. Transcriptome sequencing uncovers novel long noncoding and small nucleolar RNAs dysregulated in head and neck squamous cell carcinoma. *RNA*, 21(6):1122–1134, April 2015.
3. Angela E. Zou, Hao Zheng, Maarouf A. Saad, Mehran Rahimy, Jonjei Ku, Selena Z. Kuo, Thomas K. Honda, Jessica Wang-Rodriguez, Yinan Xuan, Avinaash Korrapati, Vicky Yu, Pranav Singh, Jennifer R. Grandis, Charles C. King, Scott M. Lippman, Xiao Qi Wang, Andrew Hinton, and Weg M. Ongkeko. The non-coding landscape of head and neck squamous cell carcinoma. *Oncotarget*, 7(32):51211–51222, June 2016.

## MEMBERSHIP & HONORS

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- Member of Phi Beta Kappa Honor Society
- Member of Muir College's Senior Honors Caledonian Society