Victoria Zhang

314-295-0396 | zhz091@ucsd.edu

EDUCATION

- **Ph.D. Computer Science**, University of California San Diego — **Expected June 2026**
- **M.S. Computer Science,** Washington University in St. Louis, **GPA: 4.0/4.0** — **August 2020 – May 2021**
- **B.S. Computer Science,** Washington University in St. Louis, **GPA: 3.95/4.0** — **August 2016 – May 2020**
- **B.S. Electrical Engineering,** Washington University in St. Louis, **GPA: 3.95/4.0** — **August 2016 – May 2020**

WORK EXPERIENCES

Meta   **June 2025 – September 2025**
Research Scientist Intern
- Involved in developing handwriting using electromyography (EMG) for the **Meta Neuro Band**, with handwriting demoed live by Mark Zuckerberg at **Meta Connect 2025**.
- Robustified the handwriting recognition **5% relative accuracy boost** under real-world motion conditions, with no loss in baseline performance. Applied a combination of signal processing, **diffusion-trained data augmentation**, and importance weighting to improve model stability during movement.

Meta   **June 2024 – September 2024**
Research Scientist Intern
- Developed EMG-CV **multi-modality representation learning** model for hand recognition with neural input wristbands and glasses.
- Developed **contextualized EMG-decoding** tasks, achieving gesture accuracy of 99.6% during training in real-world testing.

RESEARCH EXPERIENCES

Graduate Research Student   **September 2021 – Present**
Co-advised by Dr. Gal Mishne and Dr. Mikio Aoi, University of California San Diego
- Analyzed a large human behavior video dataset with **unsupervised learning** on large-scale computer vision bipolar behavior and increased the accuracy by 45.85% relative.
- Designing a neural-to-text decoding pipeline that leverages large language model **(LLM)** with Direct Preference Optimization (DPO) and **speculative decoding** to efficiently and accurately decode real-time text sequences from neural activity.
- Designing a **uniform multi-resolution hierarchical representation learning** framework that simultaneously learn the data structure in hierarchy and form interpretable representation.

Research Assistant   **December 2019 – August 2021**
Advised by Dr. Carlos Ponce, Washington University School of Medicine, Harvard Medical School
- Developed human-subject and deep-learning based **semantic segmentation** pipelines in MATLAB and PyTorch.
- Discovered principles of information encoding in primate ventral streams with macaque monkey electrophysiological data.
- Designed methods to compare information encoding principles in primate brains and in **learning-based neural networks** models (**ViTs, CNNs, RNNs**) of the ventral stream.

SELECTED PUBLICATIONS

- **Zhang, Z**. Chou, C., Rosberg, H., Perry, W., Young, J., Minassian, A., Mishne, G., & Aoi, M. (2025) (NeurIPS Workshops) BEHAVE: Behavioral Ethology for Human Assessment via Variational Encoding.
- Raut, R.V., Rosenthal, Z. P., Wang, X., Miao, H., **Zhang, Z.**, Lee, J., Raichle M. E., Bauer, A.Q., Brunton, S. L., Brunton, B.W., and Kutz J. N. (2025) (*Nature*) Arousal dynamics mirror spatiotemporal brain dynamics.
- **Zhang, Z**., Hartmann, T. S., Livingstone, M. S., Born, R. T., & Ponce, C. R. (2025) (*Science Advances*). Heatmaps Reveal Encoding of Animal Features Across the Ventral Stream.
- Rosberg, H., Miranda, A., Holloway, B. M., **Zhang, Z.**, Peek, E., Sharp, R., Geyer, M., Young, J., & Perry, W., Minassian, A. (2025). *(Methods in Psychology).* Quantifying Exploratory Behavior In the Human Behavioral Pattern Monitor Using Automated Video Tracking.
- **Zhang, Z**., Yang, Y., Sheehan, T., Chou, C., Rosberg, H., Perry, W., Young, J., Minassian, A., Mishne, G., & Aoi, M. (2024) (*medRxiv, in review*) Semi-supervised quantification and interpretation of undirected human behavior.

SKILLS

- **Programming**: Python, PyTorch, Distributed Data Parallel (DDP), CUDA, C/C++, Java, JavaScript, Jupyter, MATLAB
- **Machine Learning**: Deep Learning (CNNs, RNN/LSTMs, VAEs, Transformer, LLMs), Self-supervised Learning, Multi-modality Representation Learning, Transfer Learning, Computer Vision (CV), Data Visualization, Statistical Inference and Modeling, Signal Processing, Optimization, Generative Models, Large-scale Data Pipelines