

# Victoria Zhang

Machine Learning Research Scientist

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## EDUCATION

- **Ph.D. Computer Science**, University of California San Diego, GPA: 3.96/4.0 Expected 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 EXPERIENCE

### Meta

June 2025 – September 2025

#### Research Scientist Intern

- Co-developed EMG-based handwriting recognition and enabled its research-to-product deployment for the [Meta Neural Band](#), featured in a [live demo](#) by Mark Zuckerberg at [Meta Connect 2025](#).
- Improved the **robustness** of EMG-based handwriting recognition, achieving a 5% relative accuracy gain under motion conditions using signal processing, **diffusion-based data augmentation**, and importance weighting techniques.

### Meta

June 2024 – September 2024

#### Research Scientist Intern

- Built the EMG–CV **multimodal foundation model** infrastructure for hand recognition using neural wristbands and glasses.
- Achieved strong performance across multiple downstream decoding tasks using device-agnostic representations, including 99.6% gesture classification accuracy and less than 4° joint angle error.

### University of California San Diego

September 2021 – Present

#### Graduate Student Researcher | advised by Dr. Gal Mishne, Dr. Mikio Aoi

- Designed an **unsupervised** learning framework on a large-scale human bipolar behavior **video dataset** and developed interpretable quantitative metrics, increasing the detection accuracy by 45.85% relative.
- Developed a **real-time neural speech decoding** algorithm using **LLM** (DPO and instruction tuning) and **adversarial domain adaptation**, improving cross-session test-time brain-computer interface (BCI) decoding accuracy by 65% absolute.
- Designed a multi-resolution representation learning framework for **time-series** data, where embedding dimensionality controls clustering granularity for multiscale structure discovery.
- Improved **LLM** handling of position-based queries and retrieval tasks (e.g., recent logs, code slices) by building a benchmark and **SFT** post training pipeline, increasing reliability in production workflows.

### Washington University in St. Louis, Harvard Medical School

December 2019 – August 2021

#### Research Assistant | advised by Dr. Carlos Ponce

- Discovered principles of information encoding in primate ventral streams with macaque monkey electrophysiological data.
- Designed **interpretable** alignment methods to compare information encoding principles in primate brains and in **neural network** models (**ViTs, CNNs, RNNs**) of the ventral stream.

## SELECTED PUBLICATIONS

- **Zhang, Z. et al.** (2026) (*preprint*) When Order Breaks: Reverse Indexing Failures in Position-Based Retrieval in LLM.
- **Zhang, Z. et al.** (2026) (*preprint*) Neural Embedding Representation for Multiscale Clustering.
- **Zhang, Z. et al.** (2026) (*in review*) [Adversarial learning for generalizable speech neuroprosthesis](#).
- **Zhang, Z. et al.** (2025) (NeurIPS Workshops) [BEHAVE: Behavioral ethology for human assessment via variational encoding](#).
- Raut, R., Rosenthal, Z., Wang, X., Miao, H., **Zhang, Z., et al.** (2025) (*Nature*) [Arousal dynamics mirror spatiotemporal brain dynamics](#).
- **Zhang, Z., et al.** (2025) (*Science Advances*). [Brain feature maps reveal progressive animal-feature representations in the ventral stream](#).
- Rosberg, H., Miranda, A., Holloway, B., **Zhang, Z., et al.** (2025). (*Methods in Psychology*). [Quantifying exploratory behavior in the human behavioral pattern monitor using automated video tracking](#).
- **Zhang, Z. et al.** (2024) (*in review*) [Characterizing behavioral dynamics in bipolar disorder with computational ethology](#).

## SKILLS

- **Programming:** Python, PyTorch, Distributed Data Parallel (DDP), CUDA, C/C++
- **Machine Learning:** LLMs (post-training: SFT, RL, DPO), deep learning (CNNs, RNNs, Transformers, VAEs), generative and self-supervised learning, multimodal representation learning, foundation models, computer vision, signal processing, large-scale data pipelines, data visualization.
- **Leadership:** Technical Leadership, Cross-functional Collaboration, Research-to-production, 0-1 Projects, Rapid Learning