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 <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 **LLMs** (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.

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.**, Aoi, M., Mishne, G. (2026) (*preprint*) Neural Embedding Representation for Multiscale Clustering.
- **Zhang, Z.**, Li, S., Sabatini, B., Aoi, M., Mishne, G. (2026) (*in review*) Adversarial learning for generalizable speech neuroprosthesis.
- **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., Rosenthal, Z., Wang, X., Miao, H., **Zhang, Z.**, Lee, J., Raichle M., Bauer, A., Brunton, S., Brunton, B., Kutz, J. (2025) (*Nature*) Arousal dynamics mirror spatiotemporal brain dynamics.
- **Zhang, Z.**, Hartmann, T., Livingstone, M., Born, R., Ponce, C. (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.**, Chou, C., Rosberg, H., Perry, W., Young, J., Minassian, A., Mishne, G., Aoi, M. (2024) (*medRxiv, in review*) Characterizing behavioral dynamics in bipolar disorder with computational ethology.

SKILLS

- **Programming**: Python, PyTorch, Distributed Data Parallel (DDP), CUDA, C/C++
- **Machine Learning**: Deep Learning (CNNs, RNNs, VAEs, Transformer, LLMs), Self-supervised Learning, Multimodality Representation Learning, Generative Models, Transfer Learning, Computer Vision (CV), Data Visualization, Statistical Inference and Modeling, Signal Processing, Large-scale Data Pipelines
- **Leadership**: Technical Leadership, Cross-functional Collaboration, Research-to-production, 0-1 Projects, Rapid Learning