

Andrew Yi Zhou

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EDUCATION

University of California San Diego

Sept. 2023 - June 2027

Bachelor's of Science, Double Major: Computer Science and Applied Mathematics, Minor: Music

- **GPA:** 3.98
- **Coursework:** Deep Learning, Reinforcement Learning, NLP, Computer Architecture, Operating Systems, Statistics

PUBLICATIONS

- Andrew Zhou, Peter Eckmann, Sumanth Varambally, Michael K. Gilson, Rose Yu , "MOLLEO+: Towards Optimized Use of LLMs for Drug Discovery", <https://azhou2023.github.io/assets/pdf/MOLLEO+.pdf>

EXPERIENCE

Spatiotemporal Machine Learning Lab, San Diego, CA

Feb. 2025 - Present

Machine Learning Research Intern

- Advised by Dr. Rose Yu and Dr. Mike Gilson in developing **LLMs** for application to **small molecule drug discovery**
- Implemented post-training through **Supervised Fine-Tuning, Reinforcement Learning (PPO), LoRA, Distillation** and **RAG** to optimize for molecular generation, achieving over **20% affinity improvement** over SOTA methods
- First-authored paper on **agentic genetic algorithm framework** using function-calling and large database retrieval

Scripps Institution of Oceanography, San Diego, CA

Nov. 2024 - Present

Machine Learning Research Lead

- Leading collaboration with Scripps Institution of Oceanography to develop **deep computer vision segmentation models** to remotely monitor health of **critical carbon-rich mangrove populations** in global areas of interest
- Built **UNet classifier** w/ ResNet18 encoder that achieves **>95% test accuracy** on high resolution drone imagery
- Developed **super-resolution** techniques (**diffusion, SRCNN, vision transformer**) for lower resolution satellite data

UCSD Center for Energy Research, San Diego, CA

June 2024 - Dec. 2024

Software Engineer Intern

- Worked with Research Director Michael Ferry to create data visualizations of climate change in upcoming decades
- Lead developer for the **Triton Energy Climate** app, an interactive mobile app on App Store and Google Play that projects the effects of increasing renewable energy on CO₂ emissions; build with **React Native** and **PostgreSQL**
- Presented at November 2024 United Nations COP29 Climate Change Conference with **100+ users**

PROJECTS

Veteran Support Website

Jan. 2025 - June 2025

- Created **full-stack application** for non-profit organization Veteran Sisters to facilitate management of veteran clients
- Built extensive **custom PDF viewer** with commenting support in **React.js** for ease of document access by admins
- Managed all document storage operations with **Firebase**, built robust API routes for controlled **MongoDB** interaction

Housing Portal Application

Jan. 2024 - June 2024

- Developed **full-stack admin interface** for non-profit organization Union Station Homeless Services to streamline connection process between landlords and homeless tenants, as well as facilitate management of housing units
- Engineered frontend logic (**dynamic filtering, non-authenticated redirection**, etc) and **Express.js backend API**
- Implemented **OAuth 2.0** for smooth **user authentication** and remote storage of large photos/videos for housing units

SKILLS & INTERESTS

- Research Interests: **Deep Generative Modeling, LLMs, Ai4Science, Computational Drug Discovery**
- Programming languages: **Java, C, C++, Python, JavaScript, TypeScript, HTML/CSS, x86 & ARM Assembly**
- Machine learning: **PyTorch, Tensorflow, CUDA, NumPy, pandas, OpenCV, vLLM, HuggingFace, Quantization**
- Full-stack development: **React.js, Express.js, MongoDB, Node.js, PostgreSQL, Docker, Kubernetes, AWS**