

Allan Zhang

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📍 Los Angeles, CA ✉ allanzhang440@gmail.com
☎ 609-943-8429 🔗 <https://giyushino.github.io> 🌐 giyushino

Education

University of California, Los Angeles
BS in Applied Mathematics

Sept 2024 – June 2028

- GPA: 4.00
- **Relevant Coursework:** Multivariable Calculus, Linear Algebra, Discrete Structures, Intro to C++ (Math 32A, Math 32B, Math 33A, Math 61A, CS 31)

Experience

Undergraduate Research Assistant | BigML
UCLA

Los Angeles, CA
Nov 2024 – Present

- Aided PhD student Siddharth Joshi in training and evaluating custom, lightweight VLMs on spatial reasoning tasks using mechanistic interpretability techniques (i.e. linear probing, ablation studies, and feature visualization)
- Wrote functions to create highly modular datasets, testing the effects of modality mismatch, spurious correlations, alignment between visual and textual context, and number of unique images per class on model's performance

Projects

TinyMathLLM

[TinyMathLLM](#) 🔗

- Researched how datasets, model architecture, compute power, prompting, low-rank adaption, etc can be optimized to finetune LLMs. Demonstrated effectiveness of using LLMs to extract data from questions and using tools
- Finetuned TinyLlama (1.1B) on custom datasets entirely on RTX 4070, demonstrating effective math agents can be trained with limited resources. Despite training 0.0024% of params using LoRA and using 4-bit quantization, model experienced significant improvement in performance

Doodle Guesser

[MyOwnDoogleguesser](#) 🔗

- Fine-tuned OpenAI CLIP-Vit-Large-Patch-14 and custom vision transformer on 6 different animal drawings. Collected and processed 1,000,000+ images of 6 classes from web to create custom dataset
- Using custom training + inference pipeline, accuracy increased from 54% to 87%, worst group improved from 39% to 76%. Custom model achieved 70% accuracy with only 200,000 training images
- Created GUI using Pygame to allow users to draw on a canvas. After drawing, screenshot was taken, processed, and fed into model, softmax taken of the outputted logits to predict the most likely class

UCLA Dining Assistant

[What2Eat@UCLA](#) 🔗

- Using OpenAI API and Deepseek-chat, created chatbot that recommends UCLA dining halls based on dietary preferences. Real time data about dining halls menus was scraped from UCLA Dining website and processed using BeautifulSoup
- Menu + nutritional info of each dish in every dining hall fed into model. Taking into account user's flavor/cuisines preferences, dietary restrictions, and other criteria, chatbot would recommend dining halls. Responses saved to JSON file to distill weaker open-source model

Skills

Programming Languages and Frameworks: Python, PyTorch, NumPy, Matplotlib, TensorFlow, scikit-learn, OpenCV, Hugging Face, L^AT_EX, C++ (basic)

Languages: English, Korean