Yuxuan Zhang (Wayne)

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EXPERIENCE

Machine Learning Intern
Sep. 2023 – Current

Salk Institute for Biological Studies — *San Diego, CA*

- Researched the generative capabilities of protein VAEs and pretrained MSA Transformer models with higher order marginal benchmarks on 6 millions of synthetic protein data, containerized Keras training codes in Docker.
- Developed and incorporated principal component based latent-space tracking technique in high-resolution cryo-EM image clustering process, leading to novel downstream analysis in existing research project.
- Collaborating with other researchers, developing data-driven and AlphaFold2-based methods to explore new research questions from existing cryo-EM micrograph datasets and artifacts.

Teaching Assistant
Apr. – Aug. 2023

Halıcıoğlu Data Science Institute, UC San Diego — *San Diego, CA*

- Head TA for DSC 30: Data Structures & Algorithms, consistently supervised and guided over 20 students each quarter in Java programming assignments.

Software Engineer
Dec. 2021 – Jul. 2022

Awesung Inc. — *Cranbury, NJ*

- Working full-stack with React.js and Django for the internal logistics management app, shipped new features weekly to provide new APIs and interfaces for new logistic operations.
- Revised relational database schema to handle business growth, reworked redux and django queries, leading to over 20% reduce serialization time and 50% reduced API response times.
- Led the eBay Verification project through implementing an ETL pipeline to leverage previously unused data on third-party platforms, leading to over 15% reduced Item-Not-Received complaints within two months, significantly improving operational reliability and customer trust.

Software Engineer Intern
Oct. 2020 – Dec. 2021

AILaw — *Remote*

- Developed and deployed new features for a legal document management app in Vue.js on a weekly basis, leading to an increase coverage in customer feature requests.
- Revitalized a defunct customer performance reporting tool, enhancing its efficiency by over 20% through data query optimization, enabled the re-engagement of a dozen clients within two months.

PROJECTS

Medilora — Large language models, Fine-tuning

- Led Medilora project to fine-tune OpenHermes-2.5-Mistral-7B with Q-LoRA on 300M medical text tokens.
- Implemented multi-GPU training with Axolotl, inference with Llama-cpp-python and evaluation with LM-Eval.
- Improved PubMedQA and MedQA over 20% and matching state-of-the-art 70B open models on MMLU-Medical with 0.05% of data size.

Open-ended Document Classification — Large language models, Classification

- Implemented the recursive summarization method in 2109.10862, generated summary embeddings for ArXiv papers using OpenAI ChatGPT API and generated open-ended class labels with RoBERTa model.

EDUCATION

University of California San Diego
La Jolla, CA

M.S. Data Science. GPA: 3.5 — *Sep. 2022 - Present*

- **Courses and Involvements** Attention/Diffusion Reading Group, RL/LLM seminar, Search and Optimization, Learning Algorithms, Deep Learning, Scalable Data Systems, Data-driven Text Mining, Statistical Modeling

University of Washington Seattle
Seattle, WA

B.S. Informatics. GPA: 3.5 — *Sep. 2017 - Jun. 2021*

TECHNICAL SKILLS

Programming: Python, Java, SQL (Postgres), JavaScript, R
Computing Libraries: Keras, Jax, PyTorch, XGBoost, Pandas, NumPy, Matplotlib
Frameworks: Apache Spark, Dask, React, Django, Node.js, Flask, JUnit
Tools: Git, Docker, AWS, Linux, Vim, Jupyter, VSCode