Jack Ryan

ryanjack@stanford.edu
cs.stanford.edu/~ryanjack

Summary

Passionate programmer and mathematician with extensive coding experience in Python & PyTorch, and moderate experience with C, C++, SQL, Spark/PySpark, R, React, and several other languages. My Master's focused on large-scale machine learning/foundation models. Seeking a role as a machine learning engineer, data scientist, quantitative trader, or software engineer.

Testimonials

> "Jack drove a complex ML project through leading the design/implementation end to end. Jack is motivated, smart, easy to work with, and detail-oriented. Jack is awesome!"
>
> *- Min Kim, Senior Software Engineer @ Google Labs*

Education

Stanford University, M.S. Computer Science (AI track) 2023–2024

Stanford University, B.S. Mathematics 2017–2024

Experience

Research Assistant (Dr. Fei Fei Li), Stanford Trustworthy AI group 2021

Research Fellow (OpenAI's Chelsea Voss), Stanford Existential Risks Initiative 2020–2021

Teaching Assistant and Head Counselor, Stanford Pre-Collegiate Studies 2018–2019

Selected Projects

IdeaGPT

ChatGPT optimized for generating good ideas quickly.

Try it | GitHub | OpenAI API | Structured Outputs | Next.js | Vercel | Supabase | TypeScript | Tailwind

---

CLIP Enrichment Circuits

Discovered 3 novel neural net patterns. Mentored by Chelsea Voss (OpenAI).

URL | Github | Python | PyTorch | Captum | Computer Vision | Interpretability

---

LLM Math Scientist

Automatically finds new integer sequences with beautiful graphs. Hobby project (2024).

GitHub | Python | LLMs | Mathematics

Graph Neural Network Fraud Detection

Trained edge-based GNN on financial fraud detection. CS224W Final Project (2023).

Colab | Blog Post | Python | PyTorch | NumPy | scikit-learn | Graph Neural Networks | SciPy

Publications

[1] Bommasani, [...] **Ryan, J.**, [...] P. Liang (114 authors total). "On the Opportunities and Risks of Foundation Models". In: Preprint in *ArXiv* (2021). URL

Teaching

TA for Logic, Problem Solving, Knot Theory, and Group Theory,
Stanford Pre-Collegiate Studies. 2018-2019

Math, SAT, and ACT Tutor, Independent 2014-2017

Honors

2 x Catriona M. Mitchell Mathematics Award 2016, 2017

Oklahoma Magazine Outstanding Senior Article 2017

Hampshire College Summer Studies in Mathematics - Ky and Yu-Fen Fan Scholarship 2016

Selected Coursework

Natural Language Processing with Deep Learning (CS224N), Probabilistics Graphical Models (CS228), Mining Massive Datasets (CS246), Machine Learning with Graphs (CS224W), Randomized Algorithms and Probabilistic Analysis (CS265), Introduction to Big Data Systems (CS145), Convolutional Neural Networks for Visual Recognition (CS231N), Artificial Intelligence: Principles and Techniques (CS221)

Reference Letter from OpenAI Technical Staff

> "I mentored Jack and two other Stanford students on a circuits-style interpretability project using CLIP in 2021–2022.
>
> For historical context, at that time CLIP was a model at the field's absolute cutting edge when it came to image understanding. Chris, the rest of the OpenAI Interpretability team, and I had been working on some of our own investigations into multimodal neurons in CLIP, so I had context with which to evaluate and mentor this work.
>
> I interacted with Jack and the rest of the project team through regular calls on the group's progress. Through those calls, I was impressed at the progress the team made, including Jack, who was very motivated and consistently asked insightful, thought-provoking questions during our meetings.
>
> At that time I was thinking a lot about research taste and how to cultivate it in myself, and in the group's questions and especially Jack's, I observed a lot of this same virtue: noticing things that we and the field are still confused by, being willing to dig into what ideas for experiments might resolve those confusions, extracting research directions from that, and overall just using that sort of instinct and intuition to pursue scientific hypotheses and generate new science.
>
> Jack made a few novel discoveries about how different units within CLIP contribute to one another, which I found both interesting and valuable. I was also impressed with the technical difficulty of the project, since it involved working with model internals and understanding CLIP's architecture well. This required the team to be willing to get their hands dirty with running experiments on real model weights.
>
> From my experience mentoring him, I can attest that Jack is curious, hard-working, intelligent, and easy to work with, and he would be a great addition to an AI research team."

- Chelsea Voss, Member of Technical Staff @ OpenAI