Ryan Lin

rylin@caltech.edu · https://rlin232.github.io · San Francisco Bay Area

Education

California Institute of Technology (Caltech) Pasadena, CA
B.S. Computer Science, Minor in Information and Data Sciences *GPA: 4.2/4.0* Graduation Date: 06/26

Relevant Coursework: Large Language Models for Reasoning, Machine Learning & Data Mining, Projects in Machine Learning, Data Structures & Algorithms, Mathematical Foundations of Computer Science (Discrete Mathematics), Differential Equations, Probability & Statistics, Probability Models, Software Design, Computer Systems
Teaching Assistant for: Data Mining & Machine Learning (Jan 2025 - Present), Data Structures & Algorithms (Jan 2025 - Present)

Experience

Apple Inc. Sunnyvale, CA
Incoming Machine Learning Intern Jun 2025 - Present

Caltech - Anima AI + Science Lab Pasadena, CA
Researcher - advised by Dr. Julius Berner, Prof. Animashree (Anima) Anandkumar Oct 2023 - Present

- Developing new machine learning architectures capable of zero-shot super-resolution for solving families of Partial Differential Equations (PDEs) with arbitrary geometries.
- Incorporating new loss functions to neural operators (ex. physics losses) to improve training speed and data usage.
- Performing ablation studies on neural operator architectures to understand the impact of different components on performance and compare against state-of-the-art models.
- Improving code quality and flexibility of the neural operator repository.

The MITRE Corporation San Diego, CA
Software Engineering & Machine Learning Intern Jun 2024 - Sep 2024

- Designed a pipeline leveraging Retrieval-Augmented Generation (RAG) and Large Language Models (LLMs) to enhance domain-specific knowledge retrieval and automate the creation of security tests from Security Technical Implementation Guides (STIGs), accelerating security profile delivery by 500%.
- Utilized OpenAI API and LangChain's Chroma vector store, and custom embeddings to optimize context retrieval from various security resource documentations.

Software Development & DevSecOps Intern Jun 2023 - Sep 2023

- Engineered an end-to-end DevSecOps pipeline for Security Automation Framework (SAF) using applications, libraries, and tools created by MITRE and the security community. Hosted pipeline on EC2.
- Automated pipeline for key tasks (hardening, validation, visualization) to inform platform owners of security risks and accelerate capability deployment in development, test, and prod environments by up to 500%.
- Presented and demonstrated the prototype pipeline directly to corporate partners and government sponsors, articulating intricate technical details while highlighting its operational benefits and simplicity.

Software Engineering Intern Jun 2022 - Sep 2022

- Developed a modern reimplementation for STIGViewer within Heimdall (a full-stack app for viewing security results). The backend uses PostgreSQL, JavaScript, and Typescript. The frontend uses Vue and Typescript.

Software Engineering Intern Jun 2021 - Sep 2021

- One of ≈ 5 high school sophomores out of all the (500+) interns selected for the MITRE Internship Program.
- Authored the SAF CLI (Command Line Interface), a software that streamlines security automation for IT Systems and DevOps pipelines with over 100,000 downloads by the security community.
- Created and published libraries to normalize outputs from various cybersecurity scanning tools into Heimdall Data Format for government sponsors and commercial partners, accelerating accreditation processes by up to 1000%.

Publications

Strategic Collusion of LLM Agents: Market Division in Multi-Commodity Competitions.
Ryan Y. Lin, Siddhartha Ojha, Kevin Cai, and Maxwell F. Chen.
Towards Safe & Trustworthy Agents Workshop at NeurIPS 2024. Language Gamification Workshop at NeurIPS 2024

Activities

Director of Hacktech (Caltech's Annual Hackathon) Nov 2023 - Present

- Managed a team of 10+ students to organize and execute a 36-hour hackathon with 500+ participants.
- Coordinated with sponsors, judges, and mentors to ensure a successful event.

NCAA DIII Varsity Swimmer - Caltech Swim & Dive Sep 2023 - Present

Skills

Programming Languages: Java, Python, Typescript, JavaScript, R, Ruby, C, C++, Shell Script

Developer Tools & Practices: PyTorch, Jupyter, TensorFlow, Weights & Biases, SLURM, CUDA, Linux, High Performance Computing (HPC), Natural Language Processing, GitHub, Android Studios, AWS, Brew, Bash/Shell, Docker, Eclipse, Firebase, NodeJS, VSCode, PyCharm, RStudio, PostgreSQL, Jenkins, Vuex, Chef, Ansible, Github Actions, LangChain, OpenAI API, Huggingface, Agile Development