# Ryan Lin

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## Education

**California Institute of Technology** — Pasadena, CA
B.S. Computer Science *GPA: 4.0* — Sep 2023 - Jun 2027

Relevant Coursework: Machine Learning & Data Mining, Learning Systems (Machine Learning), Data Structures, Mathematical Foundations of Computer Science (Discrete Mathematics), Calculus of One and Several Variables and Linear Algebra, Differential Equations, Algorithms, Introduction to Probability & Statistics, Introduction to Computer Programming

## Experience

**Caltech - Anima AI + Science Lab** — Pasadena, CA
*Student Researcher* — Oct 2023 - Present

- Tuned hyperparameters for neural operator models to improve performance in solving PDEs (ex. Burgers' Equation).
- Improving code quality and flexibility of the neural operator repository.
- Configured development environment to interface with High Performance Computing (HPC) cluster for training large models.

**The MITRE Corporation** — San Diego, CA
*Software Development & DevSecOps Intern - Security Automation Framework (SAF)* — Jun 2023 - Sep 2023

- Engineered an end-to-end DevSecOps pipeline for SAF using applications, libraries, and tools developed 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 production environments.
- 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 – Full-Stack Application Development* — Jun 2022 - Sep 2022

- Developed an initial, modern reimplementation for STIGViewer within Heimdall (a full-stack application for viewing security results). The backend uses PostgreSQL, JavaScript, and Typescript. The frontend uses Vue and Typescript. Github
- Expanded the enterprise capabilities of Heimdall, a flagship application within the SAF, and validated/tested server-side Rest API calls to the Heimdall PostgreSQL database. Github

*Software Engineering Intern - Open Source Tools* — Jun 2021 - Sep 2021

- Authored the SAF CLI (Command Line Interface), a software that streamlines security automation for IT Systems and DevOps pipelines. The tool has over 25,000 downloads by the security community. Github
- Created and published libraries to normalize outputs from various cybersecurity scanning tools into Heimdall Data Format (HDF) for various government sponsors and commercial partners. Github

## Skills

**Programming Languages:** Java, Python, Typescript, JavaScript, R, Ruby, C, C++, HTML/CSS, Shell Script, Batch

**Developer Tools & Practices:** PyTorch, Jupyter, Weights & Biases, SLURM, GitHub, Android Studios, AWS, Brew, Bash/Shell, Docker, Eclipse, Firebase, NodeJS, VSCode, PyCharm, RStudio, PostgreSQL, Jenkins, Vuex, Chef, Ansible, Continuous Integration (CI)

## Projects

**Comparison of Classical and Quantum ML Models**
Explored structural and mathematical parallels of a Convolutional Neural Network and a Quantum Circuit. Implemented a hybrid quantum/classical binary classification model using Pennylane and TensorFlow.

**Stock Prediction Using LSTMs With Sentiment Analysis**
Implemented a multivariable LSTM model in R to predict the trajectory of any given ticker. Notable considered variables include previous time series data and a sentiment analysis on news headers.

**Y86 Architecture Simulation**
Programmed and implemented a simulator of a processor and assembler. Github