

# RYAN LAM

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## TECHNICAL SKILLS

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**Programming Languages:** Python, JavaScript, TypeScript, HTML, CSS, C, Racket

**Frameworks:** Node.js, Express.js, React.js, Jest.js, Cypress, Django, Flask

**Libraries:** Apollo, Graphene, NumPy, SciPy, SymPy, Matplotlib, Pandas

**Databases:** SQL, NoSQL, SQLite, SQLAlchemy, Cloud Firestore, Cloud Storage

**Tools:** Git, Postman, Terraform, Docker, GraphQL, Jupyter Notebook, AWS, macOS, Windows Linux Subsystem

## EXPERIENCE

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**Epoch** **September 2022 – Present**

*Software Engineer Intern* *San Francisco, California*

- Implemented a workflow using GraphQL, SQLAlchemy, Flask, and React.js to allow users to modify and manage scheduled Slack and Google Calendar notifications within the web application
- Worked with Quill.js and RegEx to allow custom formatting of user-generated HTML content on different webpages

**Midnight Sun Solar Car Design Team** **September 2022 – Present**

*Software Developer; Strategy Subteam* *Waterloo, Ontario*

- Developed an algorithm using Python to determine the elevation gains of the solar car's route using a polygonal chain, resulting in a 90% reduction of API requests to Bing Maps' Elevation API
- Designing a numerical model to simulate and optimize driver actions using real-time weather, elevation, battery, velocity, and traffic data

**JamLabs Data Science** **January 2022 – April 2022**

*Software Test Engineer Intern* *Toronto, Ontario*

- Increased test coverage from 5% to 50% by creating and implementing end-to-end test suites using Cypress
- Designed and integrated CI/CD pipelines to create test environments, seed databases, run end-to-end tests, and destroy test environments using Terraform, GitHub Actions, and AWS (Lambda, DynamoDB, S3)
- Analyzed and documented over 60 end-to-end tests via stress testing to optimize runtime and to detect test flakiness
- Created a proof-of-concept function for Cypress to use a Node.js process and AWS SDK to upload to an S3 Bucket

**Waterloo Rocketry Design Team** **September 2021 – December 2021**

*Software Developer; Software Subteam* *Waterloo, Ontario*

- Helped rewrite the team website using React.js to improve code readability and future maintainability
- Designed and helped architect a Python program that simulated the thrust of various rocket nozzles

## PROJECTS

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**Fast Fourier Transform Image Compressor** | *Python, NumPy, Matplotlib* **July 2022**

- Compressed grayscale images using NumPy's 2D discrete Fourier Transform on 32x32 pixel sub-blocks for varying drop tolerances and drop ratios
- Computed the Fourier coefficients (FFT2) for each 32x32 pixel sub-block, removed coefficients that were lower than the drop tolerance, and computed the inverse Fourier coefficients (IFFT2) to get the compressed image
- Compressed images to 50%, 30%, 15%, and 5% of their original sizes

**ClassAI (PolyHacks 2022 Winner)** | *JavaScript, Express.js, Node.js, Vue.js, Tailwind CSS, Firebase* **February 2022**

- Built a classroom platform that allows teachers to upload video lectures and utilizes AssemblyAI's API to timestamp and summarize important sections in the lecture
- Automated a workflow to upload lectures in Firebase's Cloud Storage and create signed URLs for third-party APIs
- Designed the backend using Express.js and a NoSQL database using Firebase's Cloud Firestore

**KIC-8462852 Star FLux Analysis** | *Python, NumPy, Matplotlib, SciPy, Scikit-learn* **February 2022**

- Plotted a time series scatter plot of star KIC-8462852's flux and used NumPy to find a polynomial model for the data
- Used SciPy to determine if the dataset was normally distributed and performed a one sample t-test to determine if the flux of star KIC-8462852 was decreasing

## EDUCATION

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**University of Waterloo** **September 2020 – April 2025**

*Bachelor of Science; Honours Physics & Computing Minor* *Waterloo, Ontario*

Coursework: Elementary Algorithm Design and Data Abstraction; Data Structures & Algorithms; Databases; Numerical Computation; Computational Physics; Probability, Statistics, and Data Analysis for Physics; Calculus 1/2/3; Linear Algebra 1