Abhinav Ramesh

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Education

- **University of Waterloo** — Waterloo, ON
  Bachelor of Applied Science (BASc), Mechatronics Engineering — *Sep 2021 - Present*

Skills

- **Languages:** Python, C#, JavaScript, C/C++, Rust, Java, HTML, CSS, SQL, MATLAB
- **Frameworks:** ASP.NET, React.js, Express.js, Flask, Django, NumPy, Pandas, Scikit-Learn, PyTorch, Bootstrap, STM32
- **Tools:** Git, Jenkins, Postman, Docker, AWS, Firebase, Jupyter Notebook

Experience

- **Co-Founder and Lead Software Engineer** — Remote
  Brainforge AI | First Place Boost Hacks II — *Jun 2024 - Present*
  - Founded an edu-tech company building an interactive game that uses **multi-modal** large language models to adapt to user's learning styles
  - Led **full-stack** development efforts using **Flask**, **ASP.NET**, **AWS EC2** and **Cognito**, **LangChain**, **Firebase**, and **Unity**
- **Software Engineer Intern** — Toronto, ON
  QEYnet Inc. — *May 2024 - Aug 2024*
  - Maintained backend infrastructure using **ASP.NET Core**, implementing RESTful APIs and MVC architecture to handle data processing and CRUD operations, resulting in a **400 ms** reduction in data retrieval times
  - Implemented secure authentication protocol using ASP.NET **Identity**, **JWT**, and **OAuth 2.0**, enhancing application security and managing access control for **150** remote users
  - Optimized **Postgres** notifications database by indexing frequently used data, decreasing latency by **45%** during busy periods of data query
- **Software Engineer Intern** — Toronto, ON
  QEYnet Inc. — *Sep 2023 - Dec 2023*
  - Spearheaded and shipped a **10000**-line **computer vision** pointing and guidance module for ground-based quantum key distribution stations using **OpenCV**, **NumPy**, and **Tkinter**
  - Independently designed, programmed, and implemented a spot detection and tracking algorithm using the center of mass and Kalman filtering, achieving **sub-pixel** accuracy when tracking bright spots in a live image feed
  - Refactored pre-existing serial data parser scripts in **C** and **C#**, leading to a **2.5x** enhancement in runtime performance
- **Software Engineer Intern** — Markham, ON
  BLiNQ Networks — *Jan 2023 - Apr 2023*
  - Developed web application using **React.js**, **Flask**, and **Bootstrap** to remotely interface with in-house **LTE** and **wireless broadband** communication test equipment
  - Implemented **multithreading** functionality to facilitate seamless configuration and modification of devices by clients through a remote **Linux** server, utilizing **TCP/UDP** protocols
  - Designed automation scripts, created integration testing, and unified it with a **Jenkins** pipeline to assess solutions for patched bugs, improving developer efficiency by **15%**
  - Practiced test-driven development using **pytest** and developed **CI/CD** pipeline using GitHub Actions, resulting in **35%** increase in code coverage across **20+** essential files
- **Machine Learning Engineer Intern** — Waterloo, ON
  University of Waterloo — *May 2022 - Aug 2022*
  - Designed an investment advice platform using Microsoft Azure ML and Bot service to provide personalized investment advice to users based on their risk tolerance and financial goals
  - Applied **KNN classification** algorithm to an online dataset using K-fold **cross-validation**, achieving **F1** score of **97%**

Projects

- **Full Stack Web App to Play Music With your Friends**
  React.js, Django, SQLite, HTML, CSS, Material UI, Bootstrap, Spotify API
  - Designed modular frontend using **5+ React.js** and **Material UI** components and backend **HTTP** endpoint routing using **Django**
  - Connected to **Spotify API** and stored user data using **SQLite**, enabling memory of **3+** simultaneous user sessions
- **Third Eye Trading - High Frequency Trading Platform (In progress)**
  Rust, React.js, Yahoo Finance API
  - Developed an experimental HFT platform using **Rust** and **React.js** that performs low-latency trades based on statistical analyses of globally distributed random number generators