# Aditya Rao

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## Education

**McMaster University,** Hamilton, Canada                               Sept 2023 – April 2028
**Bachelor of Engineering CO-OP**, GPA: **4.0 first year**
Majoring in **Software Engineering**

## Experience

**Medium AI**                                                          May 2024 – Aug 2024
Full-stack Developer Intern

- Contributed to Medium AI's first-place win in the McMaster Forge Startup Survivor program by developing user interfaces with React.js and writing code in Python and TypeScript.
- Implemented web APIs and integrated speech recognition technologies using OpenAI, AssemblyAI, and Whisper models.
- Utilized Socket.IO and gRPC for real-time communication and processed live audio streams with FFmpeg.
- Managed Linux development environments and employed Git for version control and collaboration.

## Projects

**Resume Builder**                                                     Aug 2024 – Present

- Developing a real-time resume builder and critiquer leveraging AI to automate creation, editing, and scoring
- Secured frontend and backend with Firebase Auth and Spring Boot OAuth2 resource server
- Managed resume storage with MongoDB for resume and profile objects and AWS S3 for PDF objects
- Planning on creating and deploying ML services with Docker and Kubernetes as AWS Lambda services

**FashioNova**                                                         Oct 2024 - Oct 2024

- Developed a virtual wardrobe and AI fashion advisor in 36 hours at Hack the Valley 9 at UofT Scarborough
- Created an OpenCV pipeline using Flask and Socket.io to fit virtual clothes onto users via live video feed
- Leveraged Cloudflare AI to suggest outfits based on the occasion, promoting sustainable fashion consumption.

**Smart Study Buddy**                                                  Aug 2024 – Aug 2024

- Developed an intelligent chatbot capable of summarizing course materials and answering user queries on various topics.
- Integrated OpenAI API for natural language processing to provide general question-answering capabilities.
- Utilized Wolfram Alpha API to handle scientific and computational queries, offering accurate and in-depth responses.
- Built a feature to generate practice problems based on course material, enhancing the learning process.
- Designed with a responsive front-end using Next.js and TypeScript, paired with Python Flask for efficient backend processing.

**Portfolio & Dashboard Management**                                   Dec 2023 – Mar 2024

- Developed a personal portfolio which hosts both my projects, sketches, and oil paintings done by me
- Developed a dashboard to manage the projects, sketches, oil paintings, and messages sent to me
- Automated the creation of projects and artworks and developed a messaging system which saved around 50% of development time.
- Used Next.js and TailwindCSS for frontend and Express, MongoDB, Node.js, and Vercel Cloud for Backend

**QuakeGuard**                                                                                    Jan 2024 – Jan 2024

- Developed an earthquake prediction tool for both DeltaHacks X and GDSC McMaster hackathons
- Used regression models like decision tree, random forest, gradient boost, and neural networks to train the prediction model with Machine Learning libraries like TensorFlow, Keras and SciKit Learn
- Used Maps Geocoding API to highlight high-risk areas and allowed the user to visualize and analyze the earthquakes which have occurred around the world and at various Richter scales

**Task Management and Scheduling App**                                                             May 2023 – Jun 2023

- Developed a dynamic calendar application enabling users to efficiently create and manage events and sub-tasks.
- Integrated Google Classroom API to sync with classroom assignments, offering seamless event management.
- Developed a reminder system that notifies users of upcoming events and deadlines.
- Designed a Pomodoro timer feature to boost productivity by breaking tasks into focused work intervals.

**Demographic Data Visualizer**                                                                   Apr 2023 – May 2023

- Built a data-driven application that visualizes key demographic statistics, including birth and death rates, education, and employment data.
- Leveraged Ontario Open Data records and statistics to provide insights into various demographic trends.
- Implemented data processing techniques to handle large datasets in CSV format efficiently.
- Created an intuitive user interface using Java Swing to allow users to explore and analyze demographic data interactively.
- Focused on making complex data accessible and easy to interpret through graphical representations and charts.

**TTR Canada**                                                                                    Mar 2023 – Apr 2023

- Developed an online multiplayer version of Ticket to Ride, set on a Canadian map.
- Implemented AI bots that leverage graph theory algorithms such as Minimum Spanning Tree (MST), Dijkstra's algorithm, and Pruning to optimize route planning and resource management.
- Designed a visually engaging and interactive user interface with Java Swing to replicate the board game experience.
- Focused on creating challenging AI opponents, enhancing player engagement with intelligent game mechanics.
- Engineered game logic to ensure fair play and strategic depth, supporting both human and AI players.

**E-commerce App**                                                                                Aug 2021 – Dec 2021

- Designed and implemented an e-commerce platform enabling users to browse products, add items to a shopping cart, and complete purchases via a secure checkout process.
- Utilized Spring and Hibernate to manage backend services and database operations, ensuring smooth user experience and transactional integrity.
- Integrated MySQL for reliable data storage, handling product inventory, user accounts, and order tracking.
- Developed a delivery status tracking feature allowing users to monitor the progress of their orders post-checkout.
- Leveraged Bootstrap and JQuery to create a responsive and interactive front-end interface.

**SFML Game Engine**                                                                              Apr 2021 – Aug 2021

- Designed and developed a versatile game engine using C++ and SFML, providing a foundation for building 2D games.
- Built reusable components for game development, including physics, rendering, and event handling systems.
- Leveraged the engine to create a sharpshooter game, demonstrating its capabilities in handling real-time gameplay mechanics.
- Focused on optimizing performance and ensuring smooth rendering of game elements.
- Engineered modularity in the engine design, allowing for easy expansion and integration of new features for future game projects.

# Extra-Curricular Activities

**FIRST Robotics Team 9113**                                        Jan 2023 – May 2023

- Designed and programmed a robot capable of picking up cones and cubes and placing them into designated drop zones for the First Robotics Competition.
- Implemented autonomous balancing code using a gyroscope to stabilize the robot when on a platform, ensuring precision and efficiency in movement.
- Coded the robot's control systems with Java and WPLib, focusing on accurate manipulation and smooth operation during tasks.
- Achieved recognition by winning the Rootkie All-Star award at Newmarket and the Rookie Inspiration Award at Western University.
- Contributed to the mechanical design and autonomous features, emphasizing innovation and team collaboration.

# Skills

**Programming Languages:** Java, Python, SQL, .NET Framework, C/C++, JavaScript/TypeScript
**Frameworks:** Spring Boot, Hibernate, Express, Next.js, Flask, UWP, Django, ASP.NET Core
**Developer Tools:** VS Code, Eclipse, AWS, GCP, Git, Github, Docker, Vercel, MongoDB, MySQL, Unity
**Libraries:** Pandas, TensorFlow, OpenCV, SciKit Learn, JavaFX, Redux, JQuery, React, Mongoose
**Hobbies:** Sketching, Painting, Violin (Western and Carnatic), Badminton, Swimming, Chess
**Udemy Certifications (In-progress):** AWS Cloud Practitioner, Docker & Kubernetes