

Kunal Rao

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| <https://portfolio-kunal-one.vercel.app>

EDUCATION

University of Alberta

Bachelor of Science in Computer Science, Specialization in Software Practice

Expected Graduation: May 2026

Edmonton, AB

Relevant Coursework: Data Structures & Algorithms, Machine Learning, Database Management, Software Engineering, Operating Systems, Computer Architecture, Functional Programming, Reinforcement Learning, Statistics, Data Science, Data Analytics, Numerical Methods.

EXPERIENCE

Software Developer Co-op

Royal Bank of Canada (RBC)

January 2025 – Present

Calgary, AB

- Develop and enhance **CRM components** using **Python, SQL, JavaScript, Java**, and cloud technologies to meet business requirements.
- Collaborate with stakeholders to design **Wealth Management software solutions** using **Agile methodologies**
- Leverage **Azure and DevOps practices** to build scalable solutions, automate workflows, and ensure seamless deployment, monitoring, and maintenance.

Software Engineer

S.P.E.A.R (Space Exploration Alberta Robotics)

September 2023 – April 2024

Edmonton, AB

- Led the Mars rover development for **90%+** autonomous navigation, sensory integration, and object detection.
- Collaborated with teams to define project requirements, design **software architecture**, and conduct rigorous testing using **Agile** and **DevOps** methodologies.
- Enhanced rover autonomy by **30%** through the integration of **SLAM with LiDAR and IMU technologies** and optimizing path planning, obstacle detection through TensorFlow-based computer vision algorithms.

PROJECTS

Shelter For Women | *React, Express.js, Firebase, Node.js, CSS* | **Morgan Stanley - Code To Give 2024 Winner**

- Led the development of an intervention plan system, amplifying **Le Chaînon's** support for women in need.
- Implemented personalized goal-setting features based on **SMART criteria**, resulting in an **80% increase** in plan customization and flexibility by caregivers to meet residents individual needs.
- Developed a real-time messaging system using **Web Socket** technology, achieving a **50%** reduction in communication response times, thereby facilitating seamless collaboration and aid between residents and caregivers
- Integrated **Firebase and Google Calendar API** to enhance scheduling efficiency by **30%**.

Recipe Rover | *Python, React, Flask, LangChain, ChromaDB, OpenAI*

- Engineered a **RAG LLM** using **OpenAI** and **Langchain**, enabling the retrieval of information from over **100,000** cookbooks and recipes globally.
- Utilized **Chroma DB**, improving **scalability** to handle **10,000+** users and enabling rapid recipe retrieval.
- Designed and implemented a Flask backend, optimizing response times by **25%** for recipe generation and personalized dietary recommendations.

QRiffic Android App | *Android Studio, Java, XML, Firebase, Google Maps API*

- Directed a team of 6 developers to create QRiffic, an Android app incentivizing social interaction and exercise through gamified QR code collection.
- Attained **98%** QR code recognition accuracy and implemented a user profile and search feature to track progress across 100,000+ player profiles.
- Integrated **Firebase** and **Google Maps APIs** for a real time leaderboard, 3D map environment functionalities, optimizing data retrieval by **40%** using **NoSQL** queries and indexing.
- Followed **Agile methodology** and Software Engineering practices for development efficiency.

TECHNICAL SKILLS

Languages: Python, C, C++, C#, Java, Java Script, ROS, Dart, Linux, RISC-V, Lisp, Prolog, HTML, CSS, XML, R.

Database Management: MySQL, SQL, MongoDB, Firebase, AWS Cloud Computing, Chroma DB.

Frameworks: React, Node.js, Flask, JUnit, TensorFlow, PyTorch, Express.js, LangChain

Developer Tools: Git, Docker, VS Code, Visual Studio, PyCharm, IntelliJ, Android Studio, Linux, Flutter, Jira.