

VIVAAN CHUGH

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EDUCATION

University of Waterloo

Waterloo, ON

Candidate for B.A.Sc. in Computer Engineering

2029

University of Waterloo President's Scholarship of Distinction, Nortel Networks Undergraduate Scholarship

TECHNICAL SKILLS

Languages: Python, C, C++, JavaScript, TypeScript, SQL, Java, Bash/Shell Scripting

Libraries: React, Next.js, Flask, Django, PyTorch, TensorFlow, Pandas, NumPy, Matplotlib, Express.js, Bootstrap

Tools: Git, Docker, DynamoDB, Lambda, S3, AWS, MongoDB, PostgreSQL, Postman, RTOS, SolidWorks, STM32/Arduino

EXPERIENCE

🔗 Software Developer

January 2025 - Present

UW Orbital

Waterloo, ON

- Developed efficient software in **C** for satellite systems, **optimizing performance** and resource utilization on the RM46 microcontroller while ensuring robust operation in space-critical environments through error handling.
- Implemented and debugged **robust communication protocols** for satellite systems, resulting in a **28% improvement** in data transmission reliability in simulated space environments.

🔗 Software Programmer

September 2020 – June 2023

Orbital Robotics

Oakville, ON

- Developed advanced automation algorithms in **Java** to optimize robotic movement patterns, reducing execution time by **40%** while enhancing path efficiency and increasing operational precision by **25%**.
- Utilized **SolidWorks** to design, refine, and simulate 3D models of critical robot components, collaborating closely with a **50-person team** to enhance functionality and secure a **top 10 ranking** in provincial robotics competitions.

🔗 President, Hackathon

September 2023 – June 2024

Hack The Ridge

Oakville, ON

- Led **strategic planning** with a team of 10 student executives, resulting in a **75% increase** in participant registration and expanding the event to include **200+ students** from across the region.
- Secured over **\$10,000 in sponsorships** by developing compelling partnership packages, enabling the purchase of new equipment and **doubling the prize pool** for competitors.

PROJECTS

🔗 Findr: AI-Powered Hackathon Matchmaking | FastAPI, React, Python, MongoDB, Gemini AI

March 2025

- Developed a **full-stack matchmaking** platform to connect hackathon participants based on skills and interests.
- Built a **FastAPI** backend with **MongoDB** for data storage/user authentication via **GCP Identity Platform**.
- Implemented an AI-powered resume parser using **PyPDF2**, **Google Vision API**, and **Gemini AI**, extracting and structuring user profiles dynamically.

🔗 Digit Classifier using CNN | Python - PyTorch, TensorFlow, Machine Learning

March 2025

- Developed a **CNN** in **PyTorch** to classify handwritten digits from the MNIST dataset with high accuracy.
- Optimized network performance by designing multiple convolutional layers and fine-tuning hyperparameters, leveraging the **Adam optimizer** for efficient training, faster convergence, and improved accuracy.
- Evaluated model accuracy** on test data by implementing comprehensive performance metrics and **visualized** training progress through detailed **loss curve analysis**, ensuring robust and reliable model performance.

🔗 SmartSpend: A Personal Finance Tracker | Django, Python, HTML, Matplotlib, Bootstrap

February 2025

- Developed a **Django** finance tracker with user authentication, allowing users to log in and manage transactions.
- Implemented income and expense tracking with entries, enabling users to monitor their spending habits efficiently.
- Integrated **Matplotlib** to generate bar charts for visualizing expenses by category, improving financial insights.
- Designed a clean and responsive user interface using **Bootstrap**, enhancing usability across different devices.