Sajeev Debnath

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Education

University of Toronto — Toronto, ON
Bachelor of Applied Science, Computer Engineering + PEY — *June 2027 (Expected)*

- UofT Engineering International Scholar
- UofT Entrepreneurship Hatchery NEST Fellowship

Work Experience

Software Developer & Co-founder — May 2024 - August 2024
DisputeLens | *Website* | *Video* | — *Toronto, ON*

- Developed a web application using **Next.js** and **Python** to analyze home renovation quotes, improving the understanding of **90%** of potential clients.
- Implemented quote analysis using **Anthropic API**, resulting in **82% faster** processing of renovation quotes.
- Automated text extraction from quote documents using Python with **Pytesseract** library.
- Deployed a **Flask**-based backend server, allowing users to make API calls from our app.
- Developed company website using **Node.js**, resulting in **20+ clients** joining the wait list.

Projects & Hackathons

Hack The North 2024 | *Python, AuthO, ChromaDB, DynamoDB, Groq* | Devpost | GitHub | — September 2024

- Programmed a **Video LLM** for security video analysis using Next.js with python backend.
- Developed backend using Google's **Video Intelligence API** to extract video metadata.
- Implemented **ChromaDB** to store and efficiently retrieve video metadata, reducing the processing time by **63%**.
- Created a secure login system using **Auth0**, enabling users to protect their uploaded videos and chat data.
- Stored user's chat data using **DynamoDB**, allowing users to access previous conversations.
- Integrated conversation system using **Groq API**, allowing users to chat using the uploaded video as context.

NomNom | *C++, Git* | Slide Deck | Demo | — January 2024 - April 2024

- Designed a map app in **C++** with the **OpenStreetMap API** for food delivery couriers to deliver efficiently.
- Implemented the **A* algorithm** to find the shortest path between two street intersections.
- Programmed the **multi-start** and **simulated annealing** algorithms, increasing path efficiency through multiple pick-up and drop-off intersections by **6%**.
- Utilised **multithreading** using the directives in the **OpenMP** library resulting in a **65%** increase in the number of Greedy function calls, increasing path quality by **81%**.
- **Collaborated** with 2 classmates on this project for the Software Design and Communication course (ECE297) at the University of Toronto, receiving a **grade of A**.

Graphify | *C, Git* | GitHub | Demo | — March 2024 - April 2024

- Designed a graphing calculator program for the DE1-SoC FPGA **in C** to analyze linear, quadratic, and cubic graphs.
- Wrote algorithms to find intersections, display intersections using character buffers, play background music, and take PS2 keyboard input.
- **Collaborated** with 1 classmate on this project for the Computer Organisation course (ECE243) at the University of Toronto, receiving a score of **8.5 out of 10**.

UTRA Hacks | *C++, Git, Arduino* | Devpost | — January 2024

- Programmed the Arduino microcontroller in **C++** to enable the rover to track lines and avoid obstacles.
- **Collaborated** in a **team of 4** using Git, resulting in 74 commits.
- Achieved **1st place** out of 50+ teams in the autonomous vehicle hackathon.

Technical Skills

Back-End: C++, C, Python, Flask, Next.js, Git, Auth0, ChromaDB

Front-End: React, Next.js, JavaScript, HTML, CSS

Hardware & Low-Level: HDL Verilog, DE1-SoC FPGA, Arduino Uno, NIOS II Assembly