GURJASHAN SINGH

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EDUCATION

University of Toronto – Computer Engineering – Enrolled in PEY Co-op Program **Toronto, ON**
Bachelor of Applied Sciences Class of 2025

- **Currently pursuing minors in business and artificial intelligence**
- **Relevant Coursework:** Data Structures and Algorithms, Software Communication, Operating Systems, Applied Deep Learning, Robot Modeling and Control, Introduction to Machine Learning, Embedded Systems, Digital Systems, OOP
- **Academics:** Dean's List Honoree for 2 semesters

TECHNICAL SKILLS

Programming Languages	Python, C++, C, JavaScript, HTML/CSS, MATLAB, Verilog, Assembly, SQL
Frameworks/Libraries	React.js, Next.js, Tailwind CSS, Node.js, Express.js, Pytorch, Numpy, SciKitLearn, GTK
Tools	Git/GitHub, Valgrind, MongoDB, ModelSim., Figma, Glade

EXPERIENCE

Web Developer **Delhi, India (Remote)**
KrayaDotShop Pvt. Ltd. May 2023 – August 2023

- Developed a landing page website for the company with **HTML**, **CSS**, and **JavaScript** using media queries to ensure responsiveness.
- Implemented **Figma** designs perfectly and collaborated with a team of five developers using **Git.**

Project Manager **Toronto, ON**
Engineering Strategies and Practices Course – Indigenous Sweat Lodge Design January 2022 – April 2022

- **Managed a multidisciplinary team** of three architect and three engineering students to design a sweat lodge, fulfilling a specific request from an Indigenous elder.
- Utilized engineering design principles and project management tools such as **Gantt charts** to meet project deadlines and conducted **stakeholder and gap analysis** to deliver excellent design.

PROJECTS

Colorization of Grayscale Images with Deep Learning: Demo Link Code Link September 2023 – December 2023

- Built a U-Net-based **conditional Generative Adversarial Network** (cGAN) with **PyTorch** and **Numpy** utilities to colorize grayscale images using the 25k image colorization Kaggle dataset.
- Incorporated the recommended loss function from **research published on arXiv** and leveraged CUDA cores to perform computations.
- Adapted the model to overcome challenges in training time and insufficient GPU memory to use the pre-trained Res-Net 34 as the encoder layer and a corresponding decoder layer to receive satisfactory results.

Google Maps Clone September 2022 – December 2022

- Created a Google Maps clone with **C++** integrating **OpenStreetMap API** which mapped **17 cities/countries** and enhanced user experience with CSS-styled **GTK** widgets oriented with the help of **Glade**.
- Applied **Dijkstra's algorithm** to find the fastest path between a source and destination intersection, designed an **A* heuristic** to reduce query time, and debugged memory leaks with **Valgrind.**
- Crafted an algorithm for the NP-hard **traveling salesman problem**, using **multi-threading** to explore multiple solutions which helped achieve a **12-fold** reduction in time to find a working solution.

Portfolio Website: Demo Link Code Link May 2023 - Present

- Engineered a full-stack portfolio website with **MERN (MongoDB, Express.js, React.js, Node.js**) tech stack to create and maintain a mailing list providing updates on my projects and work for those interested.
- Used **AWS S3** cloud storage along with MongoDB to store user feedback, worked with **GreenSock Animation Platform (GSAP)** to create smooth animations, and sent emails with **Nodemailer.**

The Impossible Game Clone: Code Link September 2022 – December 2022

- Recreated a 2D game clone with **C** on the **DE1-SoC board**, using **pixel buffers** for off-screen rendering and **2D sprites** for game levels.
- Integrated **PS2 keyboard inputs** from the user to control the game character and checked for input security by **handling interrupts.**

Movie Ticket Booking Application: Code Link 2021

- Developed a movie ticket booking system in **Python** with GUI using **graphics.py** and utilized **python-SQL connectivity** to automate the storage of user data and **perform CRUD operations**.