Harkaran Gill

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Technical Summary

University of Waterloo Computer Science student with experience developing software in C++, Python, and Java, with hands-on experience in Linux, Git, debugging, and computer graphics. Experienced in building and testing software projects independently and collaborating on technical projects. Interested in software engineering, systems, and low-level computing.

Education

University of Waterloo – Bachelor of Computer Science Expected May 2031
President's Scholarship of Distinction; Michael Egan Entrance Scholarship *Waterloo, ON*
Brampton Centennial Secondary School – OSSD June 2025
Governor General's Medal of Academic Excellence *Brampton, ON*

Certifications

Google Cybersecurity Professional Certificate May 2025 – Sep. 2025
Security fundamentals, network defense, Linux, Python automation, and technical documentation

Projects

C++ Ray Tracer| *C++, CMake, Computer Graphics* August 2025 – November 2025
- Built a CPU-based path tracer in C++, implementing vector and ray classes, ray-sphere intersections, camera positioning, and recursive light transport.
- Implemented anti-aliasing, depth of field, and diffuse, reflective metal, and refractive dielectric materials to produce physically based renders.
- Configured the project with CMake and documented build and run instructions for Visual Studio and CLion.

Storyteller AI Chatbot | *Python, PyTorch, Jupyter Notebook, Anaconda* Dec. 2024 – Feb. 2025
- Developed a 10 million parameter character-level language model based on the GPT architecture.
- Trained the model using character-level tokenization an the *TinyStories* dataset under limited hardware capabilities.
- Optimized training with AdamW optimizer, a more appropriate dataset, attaining a 0.6 cross-entropy loss.

Hackathon – 1st Place | *Java, Python, Arduino* May 2025
- Led a 4-person team to win 1st place out of 76 groups (300+ participants) by architecting an AI-powered waste management solution.
- Developed waste classification logic and integrated the software with an Arduino controlled sorting mechanism, aligning the project with Brampton's 2040 municipal goals.

Experience

Math, Physics, Chemistry, and CS Tutor Sep. 2025 – August 2026
Volunteer with Peel District School Board, Self-Employed *Brampton, ON*
- Provided one-on-one support for students, actively debugging logic errors in Python and Java assignments.
- Translated complex theories in Math and Science into simple language based on individual needs.

DSD Receiver May 2026 – August 2026
Walmart Canada *Brampton, ON*
- Provided early-user feedback for the internal receiving application by reporting bugs and app crashes.
- Received and verified direct to store delivery shipments by checking product quantities and delivery documentation for accuracy.
- Investigated and escalated delivery discrepancies while communicating with vendors, drivers, and store associates to maintain timely receiving workflows.

Co-Founder – STEM Club Sep. 2024 – June 2025
Brampton Centennial Secondary School *Brampton, ON*
- Led the computer science division and delivered 10+ workshops on AI, Python, and game development.
- Developed coding contest curriculum and taught peers Data Structures and Algorithms (DSA) concepts.

Technical Skills

Languages: C++, Python, Java, SQL
Tools & Platforms: Git/Github, Linux, VS Code, IntelliJ, Eclipse, Jupyter Notebook
Libraries: PyTorch