Harsimar Singh

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Computer Science student with 4+ years of programming experience and 1+ years of experience in developing projects using Unity Game Engine, both independently and as part of a team. Experience with software and game development, combining linear algebra as well as different data structures and algorithms. Passionate for a career as a full-time Software developer.

Education

University of Toronto (GPA - 3.84/4.0**)**   September, 2022 - August, 2026 (Expected)

Currently Pursuing :
Honours in Bachelor of Science, **Computer Science** (Specialist), and **Mathematical Sciences** (Major), **PEY Co-op**

Relevant Courses : Data Structures and Algorithms, Software Design, Computer Organization, Theory of Computation, Linear Algebra, Machine Learning, Software Tools and Systems Programming, Principles of Management

Awards :
University of Toronto
- **Dean's List Scholar (2023, 2024)** - Cumulative GPA of 3.5 or higher at the end of the academic year.
- **Honour Roll (2023)** - Achieved the highest grade (A+) in more than 3 Computational and Mathematical Science courses.

Experience

Tutor   **(**July, 2022 - Present)
Freelance
- Provided **tutoring to ~20 students** in areas of Mathematics and Computer Science and **adopted inclusion learning method** to cater to diverse student needs which contributed to **~30% average increase** in students' school evaluations.

Unity Game Development   **(**Feb, 2022 - Present)
Freelance Programmer
- **Collaborated with diverse teams** on freelance Unity projects of intermediate complexity, implementing **clean and concise code practices**, resulting in a marked increase in team efficiency by approximately **40%.**
- Utilized various **testing techniques** to identify and **rectify any bugs** and **prepared design documentation** that served as the foundation for **advancing the project**.

Projects

Check out https://harsimarsinghg.github.io/ for my personal website.

Unix Shell Replication (with chatbox feature) - *C, Signal handling, Networking (TCP Protocol)*   (February 2024 - March 2024)
- Created a Unix shell replica in C, **featuring command execution, input/output redirection, and support for background processes**.
- Implemented parsing of user commands, **signal handling**, and built-in functionalities such as change directory (cd) and exit. Demonstrated a strong understanding of **operating system concepts and process management**.
- Implemented additional functionality of **chatbox**, utilizing **socket programming for real-time networking**, and ensuring **an engaging user experience.**

TaleTeller - *Java, JavaFX, Maven, Google API, OpenAI API, DALL-E*   (Deerhacks **Hackathon project** - February 2024)
- Managed and led a team of 4 using agile methodologies and **designed a dynamic storytelling game** inspired by Madlibs.
- **Integrated OpenAI** in the project for the purpose of **dynamic storytelling** that builds a story in an iterative fashion based on the user input.
- **Integrated DALL-E** complements the dynamic storytelling with **AI image generation** to bring the narrative to life visually.
- **Implemented various accessibility features** using Google API like **Speech-to-text, Text-to-speech, and language translation** functionalities. The addition of these features resulted in the game being **positively reviewed** amongst people with disabilities.

Wall of Light (Puzzle Game) - *Assembly (RIPES)*   (November 2023 - December 2023)
- Developed a game in Assembly for the Ripes simulator, featuring box-moving puzzles and **local multiplayer support**.
- Created engaging puzzles that require players to solve challenges by aligning positions of boxes, demonstrating proficiency in **low-level programming and hardware interaction**.

Raining Bullets (Bullet-hell Game Prototype) - *Unity Engine, C#, Unity Netcode Services*   (July 2023 - August 2023)
- **Designed a prototype** for a co-op bullet-hell action game using **Unity Netcode Services, RPCs,** and **Unity's Lobby and Relay Services**.
- Implemented various **compelling game mechanics and level design,** resulting in multiple **positive reactions towards the game's demo**.

Compression/Decompresssion Algorithm - *Python, matplot, tkinter*   (February 2023 - March 2023)
- **Engineered and fine-tuned a compression algorithm** based on Huffman coding, capable of reducing size of large files by up to **50%**, enabling significant storage savings.
- Implemented optimization to achieve high processing speeds, with **compression completed in less than 5 seconds** for sizable files and **decompression to original format in under 2 seconds.**
- Designed and **implemented a user interface using Tkinter.** The UI provides accessible controls for selecting files, and displaying results, **significantly enhancing user experience and usability**.

Skills
- **Coding Languages** : Python, Java, C#, C, HTML/CSS, Javascript, Assembly, Bash
- **Libraries** : Pygame, Numpy, Unity's Netcode and Relay Services, Google API, JavaFX, OpenAI API, DALL-E API, Matplotlib, tkinter
- **Frameworks** : .NET, Maven
- **Developer Tools/ Engines** : Git/Github, Unity Engine, Ripes, Microsoft Office
- **Professional skills** : Knowledgeable in short-cycle, agile, iterative development, proficient in communicating complex ideas, detail-oriented, inquisitive, analytical individual, and a problem solver.