Harsh Pratap Singh

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github.com/Harsh-Pratap-Singh

Education

VIT Bhopal University, Bhopal, India
Bachelor of Technology in Computer Science and Engineering, CGPA: 8.87/10.0 September 2022 – May 2026

Central Academy, Jabalpur, India
CBSE Class XII, Score: 87.2% March 2020 – March 2022

K.V No. 1 G.C.F, Jabalpur, India
CBSE Class X, Score: 91.4% March 2018 – March 2020

Technical Skills

Programming Languages: C, C++, Python, Go
Machine Learning: TensorFlow, Keras, Scikit-learn, NumPy, Pandas
Systems Programming: Socket Programming, Multi-threading, Windows API, Memory Management
Database Systems: MySQL, SQLite, MongoDB
Web Technologies: Flask, HTML, CSS
Development Tools: Docker, Git/GitHub, GCC, Make, Power BI

Project Experience

Multi-Client Chat Server — C, Winsock2, Multi-threading, TCP/IP *May 2025*

- Developed real-time chat application with client-server architecture supporting up to 10 concurrent clients
- Implemented multi-threaded server using Windows threads for independent client handling with critical section synchronization to prevent race conditions
- Designed broadcast messaging system with TCP sockets ensuring reliable message delivery across all connected clients
- Engineered graceful disconnect handling with automatic resource cleanup and departure notifications

Transformer — Python, TensorFlow, Deep Learning, NumPy *October 2024*

- Built complete Transformer architecture from scratch with 8-head attention, 2 encoder/decoder layers, and 512-dimensional embeddings following "Attention Is All You Need" architecture for language translation
- Developed multi-head attention mechanisms and encoder-decoder modules with positional encoding
- Processed parallel corpus using custom tokenizers with padding and masking strategies
- Achieved high translation accuracy on English-Hindi dataset through optimization techniques

Snake Game — C, Windows Console API, Conio.h, Game Development *June 2024*

- Built classic snake game with smooth rendering using Windows Console API and cursor positioning
- Implemented non-blocking input handling with `_kbhit()` and `_getch()` for responsive gameplay
- Designed collision detection system for self-collision and boundary wrapping with dynamic scoring mechanism
- Optimized rendering to eliminate screen flicker using `SetConsoleCursorPosition()` instead of screen clearing

Certifications

- **The Bits and Bytes of Computer Networking** – Google (via Coursera), December 2023

Co-Curricular Activities

- **LeetCode Profile:** </> leetcode - Solved 1000+ DSA problems, Global Rank 589/26,000+ in biweekly contests, 500+ day streak, 26 badges earned
- **GeeksforGeeks:** Contest Rating 1770 with peak Global Rank of 3656 in competitive programming
- **1st Place:** Secured 1st Place in Mozilla Club's Coding Quest, showcasing expertise in data structures and algorithms

Extracurricular Activities

- Literature enthusiast: Read 100+ books including *Siddhartha*, *Animal Farm*, and *The Myth of Sisyphus*
- Philosophy scholar inspired by Confucius, Friedrich Nietzsche, and Albert Camus
- Regional chess player: Competed at regional level in under-14 category, demonstrating strategic thinking