Parmeet Virdi

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Education

University of Calgary Calgary, AB
Bachelor of Science in Computer Science *Aug. 2022 – Present*

- GPA: 3.7/4.0
- Relevant Coursework: Data Structures & Algorithms, Operating Systems, Computer Networks, Distributed Systems, Machine Learning, Computer Vision, Database Systems, Human–Computer Interaction

Technical Skills

Languages: Java, Python, C, Haskell, Prolog, JavaScript, TypeScript, HTML/CSS, ARM Assembly, SQL, Bash, XML
Frameworks: Java NIO, React, Node.js, JUnit, Pytest, Maven, Gradle, Docker, WordPress
Developer Tools: Git, Jupyter, VS Code, IntelliJ, Vim, Raspberry Pi, LaTeX, Linux, Agile
Libraries: NumPy, Pandas, PyTorch, scikit-learn, Matplotlib

Projects

Distributed Fault-Tolerant Chat System | *Java, Bash, Gradle, Docker, Git, Java NIO* Jan 2025 – May 2025

- **Github Repository:** github.com
- Built full client–server architecture using Java NIO with multithreaded event loops, supporting dynamic discovery, load balancing, and peer-to-peer replication across 100+ nodes.
- Implemented gossip-based push–pull sync with vector timestamps to maintain eventual consistency and recover quickly from multi-node failures.
- Added fault-tolerance features including heartbeat crash detection, ACK-tracked message queues, auto-reconnect, and Bully leader election for Addressing Server failover.
- Developed a responsive terminal UI with real-time chat updates and message persistence; deployed with Docker and Gradle and load-tested with 50+ clients, 10+ server nodes and 3+ address server nodes.

Genetic Algorithm Hyperparameter Tuner | *Python, scikit-learn, Jupyter, Git* Sep 2024 – Jan 2025

- Built a genetic algorithm framework for hyperparameter tuning with dynamic search spaces and custom scoring for models such as SVM, Random Forest, Logistic Regression, and Decision Trees
- Improved model accuracy using tournament selection, crossover, mutation, and elitism, running up to 150 times faster than grid search in high-dimensional spaces
- Designed a modular and scalable system compatible with scikit-learn and cross-validation for fast experimentation and automated model selection
- Enhanced GA efficiency with constraint-driven crossover and mutation logic, cutting invalid model evaluations to near-zero and improving convergence speed across Logistic Regression, SVM, and MLP classifiers

Bare-Metal Raspberry Pi Controller| *C, ARM Assembly, Python, GPIO, UART* Jan 2024 – May 2024

- Wrote low-level C and ARM assembly on a bare-metal Raspberry Pi to interface directly with an SNES controller using memory-mapped GPIO.
- Implemented precise polling logic for 16-bit SNES input using LATCH, CLOCK, and DATA lines with custom delay routines to meet timing specifications without an operating system.
- Used UART to stream controller input states over serial for real-time monitoring and debugging, enabling full control without high-level libraries or runtime support.
- Configured the Raspberry Pi's bare-metal boot environment by providing custom kernel images, device-tree blobs, and startup code required for executing ARM assembly without an operating system.

Experience

WordPress Developer | *WordPress, CSS, SQL Server, GoDaddy, cPanel* Sep 2025 – Present

- Customized a WordPress site for a family business, improving layout and mobile responsiveness.
- Configured hosting through GoDaddy, domain setup, DNS management, cPanel deployment, and SQL integration.
- Implemented essential plugins, backups, and security settings to ensure a stable and maintainable site.