Muneeb Hassan

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EDUCATION

UNIVERSITY OF WATERLOO — Waterloo, Ontario
Bachelor of Mathematics — Expected August 2029
Major in Computational Mathematics; Joint in Statistics and Minor in Computing | GPA: 3.7 | Co-op (Seq. 3), 2A – Fall 2025

WORK EXPERIENCE

FIRMWARE DEVELOPER — Waterloo, Ontario
Midnight Sun Solar Car Team — October 2024 – Present
- Designed and implemented a modular button manager with debounced polling and edge-triggered callbacks, improving steering input reliability by **10%** in system tests.
- Integrated input handling into FreeRTOS scheduling, ensuring reliable and responsive controls under real-time conditions.
- Implemented statically allocated tasks, timers, and semaphores for safe, predictable scheduling on the MSXVI solar vehicle.

ORACLE ADF DEVELOPER INTERN — Lahore, Punjab
Sapphire Fibres Limited — June 2023 – August 2023
- Built and optimized Oracle ADF/PLSQL modules to streamline supplier onboarding and asset registration, reducing manual entry by **15%.**
- Fixed legacy ERP bugs and co-developed inventory tracking and supplier management modules in JDeveloper 12c, improving platform stability for **400+** users.
- Automated supplier performance reports and asset logs, saving **10+** hours/week in manual reporting across business units.

GAME DEVELOPMENT INTERN — Lahore, Punjab
Chirp Tech — June 2022 – August 2022
- Developed a real-time C++ application in Unreal Engine with a team of 5, designing networking architecture to support scalability up to **10,000+** users across multiple platforms.
- Implemented networking logic for multiplayer sessions, reducing latency and supporting **50+** concurrent players.
- Refactored UI and state systems from Unreal Blueprints into C++ for greater performance and maintainability.

PROJECTS

MLOX | C, Make — June 2025 - August 2025
- Designed and implemented a custom interpreted language in C, extending LOX with runtime enhancements and modern features such as ternary operators, OOP primitives, native string methods, mathematical operations, and file I/O.
- Explored virtual machine architecture, bytecode dispatching, and recursive descent parsing through hands-on compiler development.

COCODE | TypeScript, React, Tailwind CSS, Firebase, Vercel — October 2024 - June 2025
- Built a web-based collaborative code editor with real-time syncing, multi-user concurrency, and Monaco-based editing using Firebase Realtime Database.
- Developed Git automation scripts in Bash to streamline branching and enable secure Discord-based commit notifications, reducing manual overhead.
- Demoed at the University of Waterloo CS Club, receiving positive feedback on UI/UX and collaboration features.

CHABACRUNCH | Python, Pandas, scikit-learn — February 2025
- Led a 4-member team in the CXC Hackathon, processing **1M+** TouchBistro transactions across Canada and the U.S. through unified pipelines.
- Engineered data cleaning and feature engineering workflows: handled missing keys, labeled refunds, applied outlier capping, and optimized memory with numeric downcasting.
- Trained a Random Forest model (**85%** accuracy) to impute unknown venue concepts, helping enrich the dataset and improve findings for downstream analysis and EDA.

HARMONICS | Python, Pandas — March 2023
- Developed a Python/Pandas tool to sonify particle physics datasets by mapping particle IDs, momentum, and angles into MIDI files, refined in a DAW into auditory teaching modules.
- Delivered outreach sessions in partnership with the Rising Sun Foundation, teaching electron–proton scattering through sound to **30+** differently abled students and promoting accessible STEM education.

TECHNICAL SKILLS

- **Programming Languages:** Python, C++, C, TypeScript, JavaScript, R, SQL (PostgreSQL, PL/SQL)
- **Frameworks/Libraries:** React, Firebase, Tailwind CSS, Pandas, NumPy, scikit-learn
- **Developer Tools:** Git, GitHub Actions, Linux, Bash, VS Code, Vim, Vagrant