

# Muhammad Muzammil

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## SKILLS

**Programming:** Proficient (3+ yrs): Python, C++, JavaScript; Intermediate (1-2 yrs): TypeScript, C#, Java, SQL, PowerShell, GLSL

**Technologies:** PyTorch, RAG/LangChain, AWS, React, Next.js, FastAPI, VMWare, Django, Node.js, PostgreSQL, Supabase, Git/GitHub, PowerBI, Factory Talk Suite, Wireshark, Qt, Unity3D, Unreal Engine, Blender, Three.js, Pandas, NumPy, Tableau

## EDUCATION

### University of Calgary

Bachelor of Science in Computer Science

Calgary, AB

Expected Graduation: June 2027

- **Dean's List:** 2022, 2023
- **Relevant coursework:** Data Structures & Algorithms, Operating Systems, Natural Language Processing, Machine Learning, Database Management, Software Engineering, Web Development

## EXPERIENCE

### Software Engineering Intern

May 2025 – Present

Cenovus Energy

Calgary, AB

- Automated sensor data processing with **Python and PowerShell** scripts, eliminating **200+ hours** of quarterly manual work and saving **\$40k annually** in labor costs
- Diagnosed critical PLC communication failures using **Wireshark packet analysis**, resolving OPC UA/DA session drops and data synchronization issues that restored **99%+ uptime** across **50+ field devices**
- Built SQL queries and PowerBI dashboards analyzing **100k+ sensor readings**, enabling predictive maintenance that reduced equipment failures by 20%
- Developed APIs for pulling PSI data and auto-generating analysis, integrating real-time process control data with business intelligence platforms like PowerBI
- Designed and implemented tools for bulk tag updates and automated configuration backups, streamlining system migrations across **15+ industrial control systems**
- Modernized plant HMI (Human-Machine Interface) screens using HTML and VB scripting to improve operational efficiency and user experience for process control operators

### Full-Stack Engineer

July 2025 – Present

Thinkera

Calgary, AB

- Designed end-to-end **FastAPI-based** intelligence platform for teams and individuals with **agentic architecture** and multi-agent orchestration
- Architected parallel research orchestration system conducting multiple simultaneous API queries with **RAG pipelines** and vector search capabilities
- Implemented comprehensive **relational database schema with proper foreign key relationships** using PostgreSQL and Supabase
- Built **knowledge graph querying tools** and developed systems for extracting insights from complex data relationships

### Software Engineer

Oct 2022 – May 2025

UofC Solar Car

Calgary, AB

- Developed **3,000+ lines of C++ and QML** for real-time telemetry dashboard, displaying 20+ vehicle metrics with **sub-100ms update latency** during competition testing
- Migrated development environment to Linux virtual machines, eliminating cross-platform compatibility issues affecting 8-person team
- Implemented CAN bus data parser processing **1k+ messages/sec**, enabling real-time driver feedback during 1000km+ race competition
- Built custom data visualization components with Qt Charts, creating real-time graphs for battery voltage, motor temperature, and energy consumption metrics
- Coordinated with electrical and mechanical sub-teams using **Jira and Agile methodologies**, ensuring seamless integration of telemetry system with vehicle hardware

## PROJECTS

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- Last Stop** | *Published Game, ~50 hours* | C#, GLSL, Unity3D, Blender [muzmil.itch.io/last-stop](https://muzmil.itch.io/last-stop)
- Shipped PS2-style horror game in 7-day game jam, achieving **6k+ downloads** and **15k+ impressions** with **4.5/5 rating**
  - Implemented custom **GLSL shaders** for retro CRT effects, maintaining stable **60 FPS** across 15+ environments
  - Designed 15+ low-poly 3D models in **Blender** and built procedural sound system with spatial audio
- Note to Self** | *Published Game, ~40 hours* | C#, Unity3D, Blender [muzmil.itch.io/note-to-self](https://muzmil.itch.io/note-to-self)
- Developed PSX-style indie horror game in 10-day game jam, achieving **200+ downloads** with positive ratings
  - Created atmospheric environments with low-poly art style and implemented dynamic lighting system
  - Designed engaging puzzle mechanics and narrative elements that received strong player feedback
- Automated Stock Signals** | *Personal Project, ~40 hours* | Python, Pandas, NumPy [github.com/muzman123/stocksignals](https://github.com/muzman123/stocksignals)
- Built Python pattern scanner analyzing **500+ stocks daily** with **pandas/NumPy**, achieving **75% accuracy** on breakout patterns
  - Automated email alerts via **SMTP** delivering CSV reports with patterns, targets, and TradingView URLs to **50+ users**
  - Implemented double-top detection algorithm identifying bearish reversal patterns across 250+ stocks
- RateXpose** | *Startup Project, ~80 hours* | TypeScript, Next.js, Supabase, Vercel [ratexpose.ca](https://ratexpose.ca)
- Built full-stack price transparency platform with **Next.js/TypeScript/Supabase**, acquiring **200+ waitlist signups** in first month
  - Engineered anonymous submission system with server-side validation, processing **500+ verified entries** across 10 categories
  - Implemented **OAuth authentication and role-based access control** enabling moderation while maintaining user privacy
- Music Cluster Visualization** | *ML Project, ~30 hours* | Python, PyTorch, Vite [github.com/muzman123/music-cluster](https://github.com/muzman123/music-cluster)
- Developed interactive web application visualizing music clustering using **deep learning model with 90%+ accuracy**
  - Implemented **PyTorch-based neural network** for audio feature extraction and classification
  - Created dynamic visualization interface with **Vite** for real-time cluster exploration
- Globe News** | *Web Application, ~25 hours* | React, JavaScript, Three.js [github.com/muzman123/globe-news](https://github.com/muzman123/globe-news)
- Built web application combining **3D visualization with real-time news aggregation** webscraped from Google News
  - Implemented interactive **Three.js 3D Earth model** allowing users to explore global news geographically
  - Designed responsive user interface with **React** for seamless news browsing experience

## ACHIEVEMENTS/ACTIVITIES

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- Runner-Up, AWS & Keyera Tech Case Competition** | *2nd out of 30+ teams* Mar 2025
- Technical Blog** | *Write articles on ML, deep learning, and AI engineering at* [muzman123.github.io/blog](https://muzman123.github.io/blog) 2024 – Present
- Headstarter AI Fellowship** | *Built 5 AI projects, final project acquired 1,000+ users* July 2024 – Sept 2024
- Alberta Health Hackathon** | *Developed MyBuddy app vetted by Alberta Health Services professionals* July 2024