

Zuhayr Mahmood

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TECHNICAL SKILLS

Languages: Java, Python, C, C++, SQL, Go, Javascript, Typescript, HTML/CSS

Frameworks/Libraries: Spring/Springboot, JUnit, PyTorch, DSPy, OpenPyxl, Pandas/Polars, TensorFlow, Plotly, React, Mockito, WireMock, Apache Beam, Scikit-Learn, Prometheus, REST

Tools: Git, IntelliJ, PyCharm, VS Code, Docker, Postman, Swagger, AWS, GCP, JIRA, ArchUnit, Grafana, Maven

EXPERIENCE

Software Developer

June 2026 – Present

IP4B 

Montreal, QC

Software Development Intern – eCommerce Catalog

September 2025 – December 2025

Coveo Solutions Inc. 

Montreal, QC

- Extracted an independent micro-service module from a monolithic service using **Java**, **Spring Boot**, and **Maven**, resulting in reduced deployment time, going from **3 days** on average to around **6 hours**
- Improved data integrity by implementing rule-based schema validation, cutting pipeline failures by **27%**
- Defined **over 105 architectural boundaries** across a **100k+** LOC repository using **ArchUnit** in **CI/CD**, catching **16,000+** architectural violations and preventing illegal architectural changes from reaching production

Python Data Development Intern – Data Analytics

April 2024 – September 2024

Monachil Capital Partners LP 

Montreal, QC

- Restructured SharePoint storage by unifying report structures and building a cross-functional file tracker managing **200,000+** files for investment and procurement teams, using **OpenPyxl**, **Pandas**, and **Microsoft Graph API**
- Overhauled **Python** configuration architecture across **17** modules, eliminating hard-coded paths, global .env files, and cross-platform incompatibilities, which reduced pipeline-blocking environment bugs by **33%**
- Rebuilt a vintage analysis report, tracking delinquent loans by DPD (days past due) bucket (30/60/90+) across a **\$50M assets under management portfolio**, saving **4+** hours of manual reporting per week

Software Development Intern – Real-time Data

May 2023 – August 2023

Coveo Solutions Inc. 

Montreal, QC

- Refactored end-of-life projects to migrate from **GCP** to **AWS**, cutting web services costs by **13%**
- Implemented **Prometheus/Grafana** monitoring and alerting for **3** previously unmonitored pipelines, shifting detection from manual to real-time and reducing mean time to detect failures from **1.5 hours** to **16 minutes**
- Consolidated metrics from **4** services into a single Grafana dashboard, reducing context-switching during incidents

Software Development Intern – eCommerce Infracore

September 2022 – December 2022

Coveo Solutions Inc. 

Montreal, QC

- Spearheaded project to implement URL tracking and visitor analysis for multiple eCommerce clients, processing **2.9B** events and **7.3B** mutations to **Google BigTable** using **Apache Beam**, **Java**, and **Google Dataflow**

PROJECTS

Banking Associate AI Advisor

March 2026

- Created an LLM-powered banking advisor using **Ollama**, **Python**, and **DSPy** to generate relevant open-ended, personalized teller conversation prompts based on customer financial profiles
- Implemented a financial gap detection engine identifying banking opportunities such as large idle balances, missing savings products, and upcoming mortgage/GIC renewals

ML CartPole Solution: DQN, PPO and Image Feature Extraction

February 2026

- Solved Gymnasium's CartPole problem using reinforcement and machine learning algorithms like DQN and PPO from **scikit-learn**, PPO was able to balance the pole **79%** more effectively than DQN
- Experimented with using pretrained vector encoders (ResNet18 and DINOv2) from **PyTorch** to extract features at each frame of the simulation and train using PPO on those features, displaying the results using **Tensorflow**

EDUCATION

McGill University

September 2021 – December 2025

Bachelors of Science, Computer Science

- Vice President of Community at **Google Developer Group on Campus: McGill**
- **Relevant Courses:** Data Structures and Algorithms, Machine Learning, Robotic Systems, Artificial Intelligence, Database Systems, Operating Systems, Software Design, Probability, Discrete Structures, Calculus 3