

HAMZA KHALFI

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EDUCATION

McGill University

Bachelor of Software Engineering (CO-OP)

Expected May 2028

CGPA: 3.83/4.00

WORK EXPERIENCE

Citi Bank | *Software Engineer Intern*

Toronto, ON

May 2026 – Aug 2026

- Engineered resilient Spring Batch data pipelines, orchestrating the seamless, zero-loss migration of critical enterprise datasets across legacy financial systems.
- Developed robust, high-throughput RESTful APIs in Spring Boot to facilitate secure and efficient data integration between internal banking microservices.
- Optimized complex data retrieval workflows utilizing MongoDB and SQL, significantly reducing API latency and improving systemic load distribution.

RBC Capital Markets | *Software Engineer Intern*

Montreal, QC

Sept 2025 – Dec 2025

- Built high-throughput API endpoints in Elixir/Phoenix, seamlessly integrating with ClickHouse to power internal data tools and streamline real-time reconciliation workflows.
- Overhauled core workflow logic and state-machine validation for a global application serving 7,000+ employees, eliminating race conditions and cutting duplicate requests by 30%.
- Engineered and deployed a fault-tolerant data synchronization engine to guarantee strict real-time consistency across distributed SQL Server database clusters.

Leap Event Technology | *Software Engineer Intern*

Montreal, QC

Jan 2025 – Aug 2025

- Modernized mission-critical authentication infrastructure using Node.js and OIDC, successfully scaling an SSO gateway to flawlessly handle 20K+ daily active users.
- Optimized complex MongoDB aggregation pipelines and schemas, achieving a massive 90% reduction in dashboard query latency (from 1.2s to 120ms) under peak load.
- Integrated OpenTelemetry across the microservice ecosystem, building distributed tracing pipelines that drastically accelerated production MTTR.

PROJECTS

OptiFund | *Python, Pandas, SciPy, Matplotlib*

- Engineered a high-performance financial pipeline to execute Markowitz mean-variance and Sharpe ratio optimizations for portfolios of large-cap equities and index ETFs.
- Built a rigorous algorithmic backtesting engine utilizing Pandas and SciPy, processing massive datasets of historical market data to benchmark against traditional strategies.

Applicate | *Java, Spring Boot, PostgreSQL, GraphQL*

- Engineered a Spring Boot backend service to aggregate and track cross-platform developer activity (GitHub, LeetCode), managing complex account linking and daily activity logs.
- Integrated external GraphQL APIs to ingest and normalize data, implementing efficient calendar aggregation algorithms to compute real-time streaks spanning 365+ days.

TECHNICAL SKILLS

Languages: Java, C#, JavaScript/TypeScript, Python, Elixir, Bash

Backend: Spring Boot, .NET 8, Node.js/Express, REST, GraphQL, Phoenix

Data & Storage: PostgreSQL, MongoDB, SQL Server, ClickHouse

DevOps/Infra: Docker, Kubernetes, GitHub Actions, OpenTelemetry

Testing: JUnit, Mockito, Spring Integration Testing

Tools: Git, JetBrains IDEs, VS Code, DataGrip/DBBeaver, Postman

Interests: Dragon Boat Racing, Soccer, Distance Running (10k)