Mahieddine Dellabani

Tech Lead & Software Architect | High-Performance Java & Distributed Systems

Seasoned Tech Lead and Software Architect with deep expertise in Java, JVM internals, and high-performance database systems. I build scalable distributed systems and real-time analytics platforms for financial services — from in-memory OLAP engines to market risk and FRTB solutions. Strong emphasis on concurrency, observability, and production-grade deployments.

Passionate about software architecture and clean code, I continuously explore emerging technologies and experiment with new features to solve real-world challenges. I also design and build modern, responsive websites — from landing pages to full web applications — using React, Next.js, and Tailwind CSS.

Beyond technical expertise, I have experience leading teams, mentoring engineers, and contributing to product roadmaps, ensuring alignment between technical execution and business goals.

Resume ⬇   Contact

About me

Tech Lead and Software Architect with 10+ years building high-performance Java applications and scalable distributed systems. Specialized in real-time analytics, in-memory databases, and financial services platforms including market risk, credit risk, and FRTB. I also design and develop modern, responsive websites and web applications. Autonomous, curious, and experienced in multicultural environments. Whether leading a team, diving deep into architecture, or crafting a pixel-perfect website, I build great products for both users and developers.

Location: Saint-Medard, 64370, France

Age: 35

Nationality: French / Algerian

Interests: Football, Vinyl, Piano, Surf, Snorkling

Employment: Freelance.

TECH STACK

Languages

Tools, Libraries and Frameworks

Databases

Freelance Web Designer & Developer
Self-employed - Full Remote

Designing and developing modern, responsive websites and web applications for businesses and creatives.

🎵 **Love Reaction:** Music label website featuring a custom audio player, playlist management, SoundCloud RSS feed integration, and dark/light theme switching.

🩺 **Collectif Entraide:** Business website for a first aid training organization with session booking, admin dashboard, email notifications, and SEO optimization.

💼 **Personal Portfolio:** This retro-themed portfolio site built with Next.js, Tailwind CSS, and TypeScript.

| NEXT.JS | REACT | TYPESCRIPT | TAILWIND CSS |

| SHADCN/UI | HEROUI | DRIZZLE ORM | TURSO | NEXTAUTH |

| VERCEL | RESPONSIVE DESIGN | SEO | FRAMER MOTION |

2024 - Present

Tech Lead
Real-Time Analytical Platforms (ActiveViam Accounts) - Full Remo

Leading technical delivery and architecture for real-time risk analytics platforms serving Tier-1 banking clients. Driving design decisions, mentoring a team of 6 engineers, and owning end-to-end technical execution with full autonomy — from migration strategy to production-grade feature delivery.

Santander — Market Risk

🔥 **Direct Query with Databricks:** Owned the full setup of Direct Query from A to Z, enabling the platform to query risk data directly from **Databricks** at scale — covering schema design, SQL dialect adaptation, naming conventions, and production deployment.

🚀 **Platform Migration:** Key driver of the platform migration, delivering it end-to-end while simultaneously implementing new features across **PnL**, **Sensitivity**, and **VaR** cubes.

📈 **Performance & Observability:** Tuned query performance and set up end-to-end observability with **OpenTelemetry**, **Prometheus**, and **Grafana** to ensure reliability at production scale.

BBVA — Risk Viewer

04/2025 - Present

🔥 **Projection Engine:** Leading the design and implementation of the **Rho Basis Projection** feature — a high-priority capability for traders that projects basis swap curves into related curves for sensitivity analysis across multiple currencies.

🚀 **Platform Migration:** Led a cross-framework migration spanning **Spring Boot**, **Spring Batch**, **Atoti**, **JDK 21**, and **AWS libraries** — ensuring continuity for all existing risk calculations and reporting workflows.

⚡ **Performance Optimization:** Driving performance tuning and caching strategies for real-time projection calculations across large portfolios.
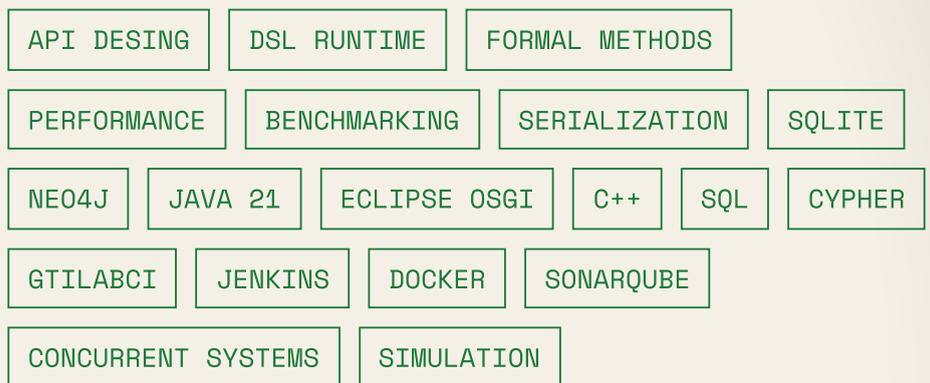
ATOTI	DIRECT QUERY	DATABRICKS	MARKET RISK

SPRING BOOT	JAVA 21	OPENTELEMETRY	KAFKA	AWS

POSTGRESQL	PERFORMANCE	TEAM LEADERSHIP

R&D Software Architect

Huawei - Full Remote (1 week per month in Grenoble)

Grenoble Fermat Lab. is responsible for advanced technical research and development of Model-based and Formal methods for different business domains including Automotive and ICT. The team is responsible for building formal modeling, simulation, verification and code generation tools for the design and development of trustworthy and efficient embedded software.

🔥 **Scalable & High-Performance DSL Runtime:** Designed, implemented, tested, and benchmarked a Java runtime interpreter and exploration engines for a domain-specific language.

🛠️ **API Design & Extensibility:** Designed a user-friendly API to expose and parameterize runtime internals, enabling seamless configuration, enhanced observability, and greater flexibility for developers.

📦 **Canonical Serialization & Database Integration:** Implemented **canonical serialization** for structured data persistence and seamless interoperability. Designed and optimized data handling for **SQLite** and **Neo4j**, ensuring efficient storage, retrieval, and query performance.

🚀 **Java Migration & Modernization:** Led the migration from Java 8 to Java 21, leveraging new features like **Records, Virtual Threads, and Structured Concurrency** to enhance performance and maintainability.

09/2023
-
09/2025

🔍 **Formal Methods & Verification:** Explored modeling technologies for developing trustworthy software.

🤝 **Cross-Team Collaboration:** Worked closely with **Supply Chain teams** to address performance issues and implement their use cases, ensuring high-quality, robust software solutions.

⚙️ **CI/CD & Infrastructure Modernization:** Updated all **CI/CD scripts**, led the migration of **Jenkins**, and ensured a more efficient and reliable build pipeline.

📖 **Engineering Best Practices:** Established team-wide best practices, including **Architecture Decision Records (ADR)**, improved **repository documentation**, and structured the **wiki** for better knowledge sharing.

| API DESING | DSL RUNTIME | FORMAL METHODS |

| PERFORMANCE | BENCHMARKING | SERIALIZATION | SQLITE |

| NEO4J | JAVA 21 | ECLIPSE OSGI | C++ | SQL | CYPHER |

| GTILABCI | JENKINS | DOCKER | SONARQUBE |

| CONCURRENT SYSTEMS | SIMULATION |

Open Contributor
SquashQL - Full Remote

SquashQL is an open-source SQL query engine designed to streamline the process of building multi-dimensional queries. At its core, it acts as a middleware layer that stands between SQL databases and multiple clients or front-end applications.

🔥 **Compiled Queries & API Refinement:** Led a significant restructuring of the query API by introducing CompiledXXX objects, separating query user API from query engine internals, ensuring cleaner code and better maintainability. This redesign simplifies query execution, enforces the SRP principle abd enable the introduction of the vector aggregation feature.

📅 **Date Functions Support:** Added support for **date functions** within the query engine, improving query flexibility and user capabilities.

🛠️ **API Enhancements:** Introduced a public total_count measure, counting the total number of results not considering the query limit.

⚙️ **Query Scope & Resolver Optimization:** Streamlined query scope management by introducing

QueryResolver, replacing static helper methods with a more flexible and scalable approach.

🔄 **String Removal & Field Optimization:** Spearheaded the initiative to replace all **Strings** in query building with typed **Field** objects, paving the way for future POJO query compilations and improving query resolution consistency.

📈 **Execution Graph Simplification:** Simplified the query execution graph, optimizing performance and making it easier for developers to manage complex queries.

`API DESIGN` `QUERY OPTIMIZATION` `PERFORMANCE` `SQL`

`DATABASE ENGINEERING` `DATE FUNCTIONS` `JAVA 21`

`FIELD OBJECTS` `COMPILER` `CONCURRENCY`

Technical Lead
Activeviam - Full Remote (1 week per month in Paris)

As part of the R&D team, I designed and built Atoti, a real-time decisive data analytics software for financial services.

👷 **Team Leadership & Mentoring:** Led a team of 6 engineers, overseeing development, design sessions, and code validation. Provided mentorship, supervised project planning, and coordinated team efforts to ensure timely delivery and adherence to best practices. Owner of the distributed, monitoring and aggregation modules.

💻 **Product Development:** Designed, built, tested, and deployed Atoti Java API capabilities: Aggregation engine, real-time updates, distributed computing, MDX querying.

📊 **Monitoring:** Involved in enhancements and implementations of Atoti Application Performance Monitoring stack: Tracing, metrics, and logs.

🤝 **L2 Support:** Solved performance issues and assisted clients in using the APIs.

⚙️ **JDK Features Prototype:** Supervised the internship and university project focused on maximizing the impact of new JDK capabilities in Atoti Java API (projects Loom and Panama).

`IN-MEMORY` `DISTRIBUTED SYSTEM` `AGGREGATION`

`CONCURRENCY` `MONITORING` `JAVA 17` `JAVASCRIPT`

`ZIPKIN` `LOGSTASH` `GRAFANA` `PROMETHEUS` `DOCKER`

06/2019
-
09/2023

R&D Software Engineering

INGIMA - Paris

INGILAB is the Innovation Lab and POC Factory of INGIMA, focused on exploring new possibilities with its motto "explore by doing." As part of INGILAB, I worked on various research studies and proof of concepts in multiple fields such as image processing, machine learning, and embedded systems.

📄 **PDF Parsing & Extraction:** Developed and optimized a solution for analyzing nutrition table conformities by parsing and extracting relevant data from PDF documents. This project aimed at automating the comparison and validation of nutrition information to ensure accurate product distribution.

🧠 **OCR Project with Google Cloud:** Led the OCR (Optical Character Recognition) project using Google Cloud to extract text from images and scanned documents, improving data accessibility and processing efficiency for distribution clients.

OCR GOOGLE CLOUD PDF PARSING MACHINE LEARNING

IMAGE PROCESSING DATA EXTRACTION CARREFOUR

09/2018 - 06/2019

Full Time Researcher - PhD in Computer Science and Mathematics

Verimag - Grenoble

My thesis focused on the design, optimization, and validation of distributed real-time applications for embedded systems. Specifically, it delved into using formal methods to address challenges in distributed real-time environments, such as communication delay, optimization issues, and clock drift.

⚙️ **Distributed Real-Time Applications:** Designed and optimized real-time applications for embedded systems using formal methods to solve critical issues like communication delay and clock drift.

📊 **Formal Methods & Verification:** Applied formal methods, including timed automata and model-based development, to verify the correctness and performance of the distributed systems.

10/2014 - 09/2018

Teaching Fellow

IUT Valence - Université Grenoble Alpes - Valence

Introduction to Excel: Taught freshmen the fundamentals of Excel, covering data organization, formulas, and basic analytics.

Introduction to Relational Databases: Guided sophomore students through database concepts, including SQL queries, schema design, and normalization.

TEACHING   EXCEL   SQL   RELATIONAL DATABASES

DATA ANALYSIS

09/2015
-
09/2016

EDUCATION

Exchange Student in Computer Engineering

Iowa State University - USA

ADVANCED COMPUTER ARCHITECTURE   RECONFIGURABLE SYSTEMS

DISTRIBUTED SOFTWARE DEVELOPMENT

Fall 2014

Engineering Diploma - Embedded Software and Systems

Grenoble INP PHELMA/ENSIMAG - France

Engineering thesis: Vectorization of compression algorithms using SIMD instructions. Realtors: Prof. S. Viardot, Ing. R. Schulze, Dr. T. Willhalm. Thesis activity carried out during the final year project at SAP SE, Walldorf, Germany.

MATHEMATICS   PROGRAMMING   OPERATIONAL RESEARCH

OPERATING SYSTEMS   REAL-TIME EMBEDDED SYSTEMS
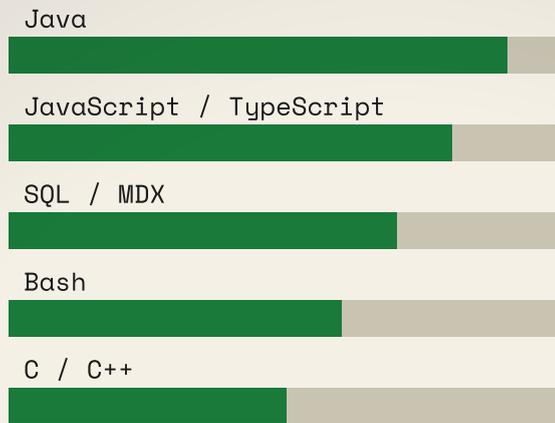
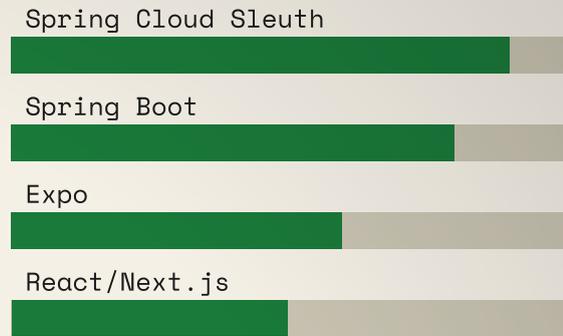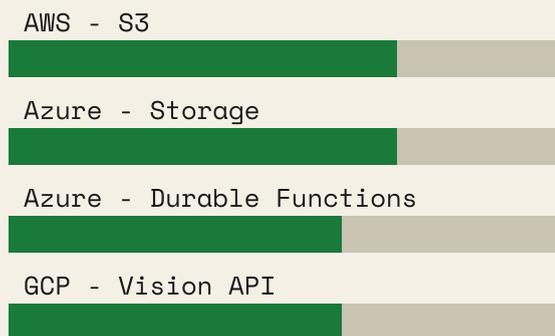HARDWARE DESIGN   C++   SAP HANA

09/2011
-
09/2014

Programing

Java

JavaScript / TypeScript

SQL / MDX

Bash

C / C++

Frameworks

Spring Cloud Sleuth

Spring Boot

Expo

React/Next.js

Cloud Services

AWS - S3

Azure - Storage

Azure - Durable Functions

GCP - Vision API

Spoken languages

English

French

Arabic

Spanish

Local Planning of Multiparty Interactions with Bounded Horizons
Authors: Mahieddine Dellabani, Jacques Combaz, Marius Bozga, Saddek Bensalem
FM 2016: 199-216

Knowledge Based Optimization for Distributed Real-Time Systems
Authors: Mahieddine Dellabani, Jacques Combaz, Saddek Bensalem, Marius Bozga
APSEC 2017: 751-756

Formal methods for distributed real-time systems. (Méthodes formelles pour les systèmes distribués temps-réel)
Authors: Mahieddine Dellabani
Grenoble Alpes University, France, 2018

S BIP 2.0: Statistical Model Checking Stochastic Real-Time Systems
Authors: Braham Lotfi Mediouni, Ayoub Nouri, Marius Bozga, Mahieddine Dellabani, Axel Legay, Saddek Bensalem
ATVA 2018: 536-542

Local Planning Semantics: A Semantics for Distributed Real-Time Systems
Authors: Mahieddine Dellabani, Jacques Combaz, Saddek Bensalem, Marius Bozga
Leibniz Trans. Embed. Syst. 6(1): 01:1-01:27 (2019)