

# Mahieddine Dellabani

Tech Lead | Scalable & High-Performance Systems

I am a seasoned R&D software engineer with deep expertise in Java, JVM internals, and high-performance database systems. My work focuses on building efficient, scalable, and reliable software, with a strong emphasis on concurrency, distributed systems, and observability. I have extensive experience in CI/CD, containerization, and monitoring stacks, ensuring robust and maintainable deployments.

Passionate about software architecture and clean code, I continuously explore emerging technologies and experiment with new features to solve real-world challenges. I take a pragmatic approach to reducing technical debt, optimizing performance, and designing systems that balance scalability, maintainability, and long-term efficiency.

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

R&D software engineer with strong technical skills. Autonomous, self-motivated and curious, but mostly not afraid of new challenges and eager to learn new technologies. Open minded, sociable and used to work in a multicultural collaborative environment. As an engineering manager, I strive at making a great product for both users and developers : Foster innovation, promote best practice and ensure engineers' happiness.

 **Location:** Saint-Medard, 64370, France

 **Age:** 34

 **Nationality:** French / Algerian

 **Interests:** Football, Vinyl, Piano, Surf, Snorkling

 **Employment:** Freelance.

## TECH STACK

### Languages



### Tools, Libraries and Frameworks



### Databases











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## R&D Software Engineer Freelance

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.
-  **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 and 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.

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03/2024

06/2019  
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09/2023



-  **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](#)).



## 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

09/2018  
-  
06/2019

accessibility and processing efficiency for distribution clients.

OCR

GOOGLE CLOUD

PDF PARSING

MACHINE LEARNING

IMAGE PROCESSING

DATA EXTRACTION

CARREFOUR

## 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.

FORMAL METHODS

MODEL-BASED DEVELOPMENT

TIMED AUTOMATA

DISTRIBUTED SYSTEMS

EMBEDDED SYSTEMS

OPTIMIZATION

VERIFICATION

JAVA

ACCELEO

ECLIPSE

## 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

10/2014

-

09/2018

09/2015

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09/2016

EDUCATION

Fall  
2014

Exchange Student in Computer Engineering

Iowa State University - USA

- ADVANCED COMPUTER ARCHITECTURE
- RECONFIGURABLE SYSTEMS
- DISTRIBUTED SOFTWARE DEVELOPMENT

09/2011  
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09/2014

Engineering Diploma - Embedded Software and Systems

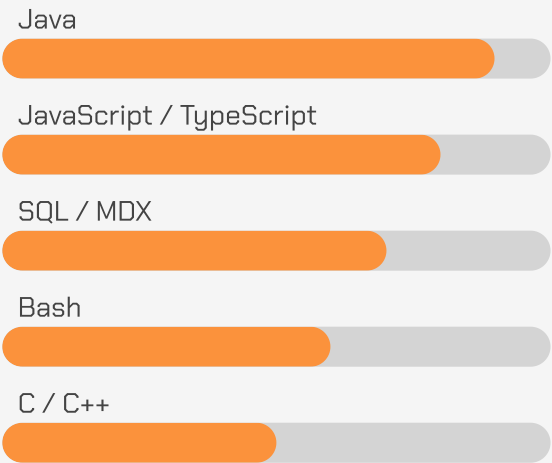
Grenoble INP PHELMMA/ENSIMAG - France

🚀 **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.

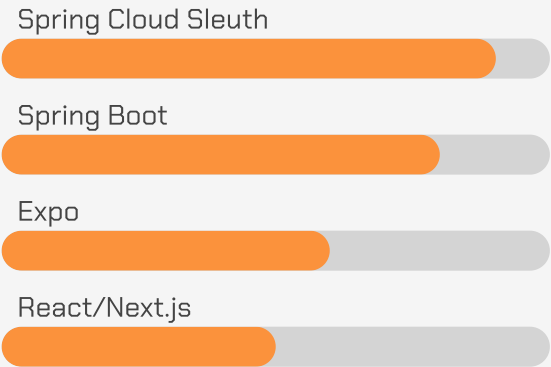
- MATHEMATICS
- PROGRAMMING
- OPERATIONAL RESEARCH
- OPERATING SYSTEMS
- REAL-TIME EMBEDDED SYSTEMS
- HARDWARE DESIGN
- C++
- SAP HANA

SKILLS

Programing



Frameworks





## Cloud Services

AWS - S3



Azure - Storage



Azure - Durable Functions



GCP - Vision API



## Spoken languages

English



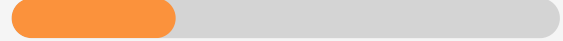
French



Arabic



Spanish



## PUBLICATIONS

### [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]