Mouhieddine Sabir

BIRSAx2 | me@mouhieddine.dev | mouhieddine | mouhieddine.dev

Computer Scientist - Backend Engineer

Education

Aarhus University — *Aarhus, Denmark*
MSc in Computer Science — *Aug 2025 - Present*

- Specialisation: Software Foundations and Technology

University of Padova — *Padova, Italy*
B.Eng in Computer Engineering — *Sep. 2021 - Sep.2024*

- Thesis: Exploring Solutions to the Travelling Salesman Problem From Exact Algorithms to the Red-Black Ant Colony System.

University of Cantabria — *Santander, Spain*
Exchange Semester: Computer Systems Engineering — *Jan. 2024 - Jun. 2024*

- Courses: Databases | Physics 2 | System Networks Security and Assurance | Computer Networks and Distributed Systems

Professional Experience

MultiSafepay International — *Remote*
Part-time - Medior Backend Engineer — *Sept. 2025 - Present*

- Led the upgrade from C-TAP v10 to C-TAP v11 (Common Terminal Acquirer Protocol), which defines how payment terminals exchange data with cards and acquirers, covering transaction flows, card recognition, acquirer association, and host message processing, ensuring compliance with updated specifications and improving interoperability in payment processing

MultiSafepay International — *Estepona, Spain*
Medior Backend Engineer — *Oct. 2024 - Aug. 2025*

- Specialized in developing and optimizing technical and financial reconciliation processes, reducing manual intervention time by approximately 90% and improving data accuracy.
- Maintained and enhanced legacy codebase to ensure system stability and performance
- Lead the efforts to migrate from old Java 8 codebase to a modern Java stack, improving performance and maintainability
- Contributed to the development of an internal Fraud Engine, enhancing transaction security
- Architected and implemented an end-to-end, event-driven asynchronous pipeline (Kafka, 3 microservices, PostgreSQL) integrated with the core monolith; applied TDD and DDD principles throughout development and utilized Testcontainers/Docker for robust integration testing, enabling reliable processing exceeding 10 notifications/sec and significantly enhancing application responsiveness.
- Actively participated in peer code reviews, promoting code quality, knowledge sharing, and adherence to established design patterns across the team.

`Java` `Kafka` `JOOQ` `Elasticsearch` `PostgreSQL` `Microservices` `Prometheus` `Grafana` `Docker` `Atlassian` `Git`

CodiceWeb Banking Innovation — *Padova, Italy*
Backend Software Developer (Internship) — *May 2023 - Sep. 2023*

- Created an extension to Struts2 framework for handling Content Security Policy (CSP) headers.
- Developed custom EJBCA and SignServer modules to handle one-shot signatures.
- Configured PostgreSQL for high availability and automatic failover capabilities.

`EJBCA` `PostgreSQL` `Struts2` `Java` `Spring`

Bukò Software and Communication — *Padua, Italy*
Full Stack Software Developer — *Nov. 2021 - Apr. 2023*

- Developed and maintained various full stack applications to analyse and process data for multiple clients
- Played a key role in the development, improvement an operation of web-based software.

`PHP` `JavaScript` `HTML` `CSS` `MySQL` `Linux`

Skills

Languages	Italian (Native), English (C2), Spanish, Arabic
PLs	Java, Rust, Python, OCaml, Elixir, JavaScript, C++, Perl
Tech Stack	Armeria, JOOQ, Spring, Micrometer, Apache Thrift , Picocli, JUnit, Mockito, Testcontainers
Databases	PostgreSQL, MySQL, Redis, Elasticsearch
Platforms and Tools	Docker,Kafka, Ansible, Kubernetes, Prometheus, Grafana, Atlassian, Git, Maven, Gradle, Linux
Other	Latex, Markdown, HTML/CSS, Typst, GitHub Actions
Soft Skills	Leadership,Teamwork, Problem Solving, Communication, Adaptability, Attention to Detail, Initiative, Organization

Projects & Activities

Dolphin Compiler
LINK TO REPO

- Designed and implemented a full-pipeline compiler for a statically-typed imperative language using OCaml, utilizing Menhir for parsing and targeting LLVM IR for code generation.
- Engineered a feature-rich C runtime library to support dynamic arrays, records, file I/O, and low-level network programming (TCP/UDP socket abstraction).
- Implemented semantic analysis (type inference, scope checking) and control flow graph construction, ensuring type safety and correct memory management logic.

Alba CubeSat, ESA Fly Your Satellite
SOFTWARE ENGINEER, ON BOARD SOFTWARE TEAM

Padua, Italy
Oct. 2023 - Oct. 2024

- AlbaSat is the project realised by a group of students of the University of Padua to participate in the 'Fly your Satellite' programme organised by ESA.
- My team focuses on developing sophisticated on-board software (OBSW) using C on FreeRTOS. This software orchestrates communication, power management, and task scheduling among subsystems and payloads.
- It collaborates with the On-Board Data Handling (OBDH) system for data encapsulation, aligns closely with the TT&C module for ground communication, and meticulously budgets memory and CPU resources for operational efficiency.

Random Art Generator
LINK TO REPO

- Developed a Rust application to generate procedural abstract art using recursively defined expression grammars
- Implemented rendering to both static PNG files (image crate) and real-time interactive windows by translating expressions to GLSL shaders

Multiplatform Klotski Game
LINK TO REPO

- A Klotski game written in Java and LibGDX that can run on Desktop and Android devices

Meteo
LINK TO REPO

- A web app to view the weather of any location. Built using Vue.js, TailwindCSS and OpenWeatherAPI.