

# Selim Belhaouane

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in selimbelhaouane

Resourceful software engineer with 10+ years building diverse software systems, including web applications, computer vision for IoT, developer tools, and CAD/CAE automation. Known for solving complex challenges and diving deep into topics, with a proven track record as a self-taught tech lead. Passionate about distributed systems, automation, and databases. Eager to learn from others and equally enthusiastic about sharing knowledge.

## experience

### GardaWorld and ECAMSECURE

#### Team Lead

Montreal, Canada

2022 – Now

Started and lead development of a remote video monitoring solution leveraging AI technology at the edge and in the cloud.

- Generated millions in revenue within a few years.
- Led the design and implementation of a full-stack web application.
- Contributed to the development of a mobile application using React Native.
- Designed and implemented a fault-tolerant and scalable architecture, with message buses and several layers of caching, to handle over 2 million daily video events.
- Routinely performed PostgreSQL performance tuning, including data modeling, query optimization, EXPLAIN plan analysis and index refinement.
- Enabled distributed tracing and alerts in Datadog to improve observability and debugging.
- Managed and mentored a team of five, driving successful delivery of a complex system under tight resource constraints.

Python OpenCV Pytorch Typescript React React Native Next.js REST Rust PostgreSQL Redis Azure Docker Datadog

### MAYA Heat Transfer Technologies Ltd.

#### Team Lead

Montreal, Canada

2020 – 2022

Started and led full-stack development of *Remote Simulation*, a distributed HPC platform integrated with Siemens Simcenter 3D, a leading CAD/CAE product.

- Architected and developed the entire system, including web application, Simcenter 3D GUI plugin, and distributed job runners.
- Enabled real-time solution monitoring and interactive 3D visualizations for improved simulation workflows.
- Led a team of four engineers, fostering collaboration and growth.

Python Django FastAPI React Typescript Cypress Nginx PostgreSQL Docker C++ Qt

#### Technical Lead

2017 – 2020

Led development of Siemens Simcenter 3D plugins to enhance functionality and improve productivity for mechanical engineering (CAD/CAE) workflows.

- Led software development guild meetings after just a year as a professional SWE.
- Onboarded, code-reviewed, and provided guidance to junior developers, fostering growth and maintaining high-quality code standards.

Python C++ .NET Framework

## education

### M.Eng Thesis

#### Mechanical Engineering

McGill University

2015 – 2017

Master's in computational fluid dynamics, sponsored by Maya Heat Transfer Technologies.

- Thesis on implementation and validation of turbulence model in academic and commercial (NX Flow) finite volume codes.
- Used NX Open, Tecplot and Python for pre-processing and/or post-processing purposes.
- Developed web interface for querying the in-house test suite, now an essential part of the development process.

Python Matplotlib Tecplot C++ Fortran MPI jQuery LaTeX

### B.Eng

#### Mechanical Engineering

McGill University

2011 – 2015

- Designed and manufactured carbon fiber steering wheel as part of Capstone project with McGill Racing Team.
- Gave extracurricular classes on LaTeX.

Python MATLAB C Fortran LaTeX