Joël Bouchard

Lead Engineer

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Profile

Lead Engineer with a background in engineering physics. My experience includes software architecture, applying design patterns, and working with microservices and gRPC. I work on electrical power system simulation, time-series databases, and software delivery, with a specialization in .NET data access using Entity Framework Core and Entity Framework 6. Earlier projects covered scientific instrumentation, real-time simulation, signal processing, and automated test systems.

Consulting engagements have included work for Google, Bombardier, CAE, and Nortel.

Professional experience

Lead Engineer

Present

Eaton · CYME power engineering software

- Develop software for modeling and simulating electrical power networks, with eight years of experience working on CYME at Eaton.
- Develop time-series databases and work with MySQL, PostgreSQL, Microsoft SQL Server, Oracle Database, and SQLite providers.
- Build Git workflows and CI/CD pipelines with Azure Pipelines. Work with Microsoft Azure and contribute to DevSecOps practices.

Software Developer

2018

VPixx Technologies

- Developed eye-tracking calibration and demonstration software for equipment used in neuroscience research.

Software Development Consultant

2008–2018

Averna Technologies

- Developed GPS simulation and navigation software, including work on Averna Navasim.
- Developed wideband RF recording and generation software for Averna RF Studio and implemented analog and digital radio modulation for the Averna URT.
- Designed the architecture and wrote requirements for a railway signal analysis application.
- Built automated test software for cable modems, RF transponders, and railway door controllers, including instrument control interfaces.

Software Applications Engineer, Consultant

2006–2008

Jordale Technologies

- Supervised software developers and designed test software architectures, sequencing tools, and automated test benches.
- Delivered test and measurement solutions on consulting assignments for clients including Air Canada, Nortel, and CAE.

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Technical skills

Programming languages · C++, C#, JavaScript, Python, PHP. Earlier experience with C, Visual Basic, Java, and Ruby.

Web and desktop · React, HTML, CSS, WPF, and Qt

.NET platform · .NET Framework, .NET Core, and modern .NET (5+)

Databases · SQL, time-series database development, data modeling, PostgreSQL, MySQL, SQL Server, Oracle Database, SQLite, Microsoft Access

.NET data access · Entity Framework Core (EF Core) and Entity Framework 6 (EF6)

DevOps and CI/CD · Git workflows, Microsoft Azure, Azure Pipelines, Jenkins, TeamCity, and DevSecOps contributions

Test and instrumentation · LabVIEW, TestStand, LabWindows/CVI, automated test benches, data acquisition, and instrument control over GPIB, VISA, and serial interfaces

Simulation and RF · Power system and real-time simulation, GPS/GNSS, wideband RF recording and generation, and AM/FM, QPSK, QAM, and OFDM modulation

Earlier experience

Co-founder and Chief Technology Officer

2004–2008

AmigoExpress

- Co-founded a carpooling service and designed and implemented the web application, database, search algorithms, and city geolocation calculations.

Software Developer and Architecture Consultant

2006–2007

OPAL-RT Technologies

- Developed real-time simulation software, wrote test plans, and helped define software development practices.

Engineering Physics, Oncology Research

Summer 2005

Hôtel-Dieu de Québec Research Centre · CHUQ

- Calibrated gamma measurement instruments and developed software for radiographic image processing and calculations in oncology research.

Software Developer

1999–2002

ITF Optical Technologies

- Automated optical component production and test benches, including instrument control, data acquisition, and reporting.
- Developed software for optical assembly simulation, image analysis, and optical transmission measurements.

Network Support Intern

Summer 1999

LGS

- Provided client network support and helped set up workstations and software.

Education

Bachelor's degree in Engineering Physics · Concentration in Biophotonics · Université Laval · 2006

College diploma in Computer Systems Technology · Cégep de Limoilou · 1999