JASON ERB

Senior Software Developer & Architect

98 Main Street
Kingston, ON K7K 3Y8
Canada
+1-343-333-4397
consulting@jason-erb.com
https://www.linkedin.com/in/jason-erb/

SUMMARY

Senior software developer and architect with over 25 years of professional experience delivering robust desktop, mobile, embedded, and web software in a wide range of platforms, languages, technologies, and domains, including robotics, geospatial analysis, brain-computer interfaces, and distributed computing.
Creator of the Om programming language.

SPECIALTIES

Modern C++ (with Boost, STL, Qt/QtQuick/QML, and others), modern C, modern CMake/CPack/CTest, internationalization/Unicode, JavaScript, creative problem solving and complexity elimination, elegant architecture/code/UI design, and fast proficiency in whatever is required to ship an exceptional product.

EXPERIENCE

Distributive (Contract)
Senior Software Developer

August 2019 - September 2024
Kingston, Ontario, Canada

Architect and developer of DCP Native (https://gitlab.com/Distributed-Compute-Protocol/dcp-native), the native (C++) layer of the company's core distributed computing product, taking it from conception through several releases. Included:
- A multi-threaded, multi-process JavaScript evaluation server with WebGPU capabilities.
- A screensaver running the evaluation server (Windows).
- A service running a work supervisor.
- A graphical configuration interface (Windows).
- User-friendly installers for x64 and arm64 variants of Ubuntu, MacOS, and Windows.
- Auto-update on Windows and apt on Ubuntu.
- A public multi-architecture docker container.
- A GitLab CI process to build, test, and deploy it all with the click of a button.

Additional accomplishments:
- Mentored junior developers, reviewed code, and made improvements to the JavaScript DCP product.
- Contributed code fixes to Google Dawn, Google Omaha, and Google V8.

Technologies: C++, CMake, CPack, CTest, Google V8, Google Dawn, Google Omaha, Node API, JavaScript, WiX Toolset, Win32 API, Bash, Batch Script, Sockets, Linux, Windows, MacOS, Docker

Suitable Technologies (Contract)
Senior Software Developer

May 2013 - January 2020
Palo Alto, California, United States (Remote)

Part of a small team responsible for all software for the acclaimed Beam remote presence robot, including both the embedded device software and the user-facing pilot software. Accomplishments:

- *Mobile:* Took the lead in porting the software to iOS and Android, including design and implementation of the mobile driving paradigm and UI.
- *Networking:* Designed and implemented a network diagnostics tool and accompanying UI and took code ownership of the pseudo-TCP implementation and relay-related code.
- *Leadership:* Acted as project lead for the software portion of new high-definition camera and laser pointer features: set and delegated tasks, collaborated on the design, coordinated development, and implemented the UI and some of the underlying code.
- *I18n:* Internationalized the software (including right-to-left language support), instituted coding guidelines for internationalization best practices, and coordinated with translators.
- *Qt:* Managed Qt integration, updates, and patches. Contributed code fixes to Qt.
- *General:* Fixed bugs, improved driving safety, wrote unit tests, reviewed code, conducted technical job interviews, managed CI, and did whatever else needed doing.

Technologies: C++, CMake, Qt, QtQuick, QML, Python, Linux, Windows, MacOS, Android, iOS, Objective-C++

PrintFleet Inc.
Senior Software Developer

July 2012 - May 2013
Kingston, Ontario, Canada

Part of a small team that developed the PrintFleet asset management web software product. Accomplishments:

- Internationalized the software: implemented automated text extraction and run-time translation lookup, coordinated with translators, and integrated localizations.
- Redesigned and rewrote the core distributed scheduling architecture for device notifications.
- Designed and implemented a significant portion of the public REST API.

Technologies: ASP, ASP.NET, C#, SQL, JavaScript, HTML, CSS, Windows

Endetec (Veolia Water Solutions & Technologies North America)
Software Developer

March 2011 - July 2012
Kingston, Ontario, Canada

Half of a team developing all embedded software for a touch-screen water-testing device, taking it through the first several production releases. Accomplishments:

- Implemented a touch-screen keyboard with configurable layouts (including Korean, which required me to learn the Hangul alphabet and all combining character logic to implement it).
- Internationalized the software, including converting all strings to Unicode, localizing date and time formats, and automating string extraction and substitution.
- Fixed all resource leaks in the software.
- Wrote XSLT transformations to generate HTML reports from XML data.
- Contributed code fixes to Boost, CMake, and wxWidgets.

Technologies: C++, CMake, Boost, Python, XML, XSLT, wxWidgets, Linux

PYXIS Innovation

Software Developer

September 2006 - October 2008, September 2009 - January 2011
Kingston, Ontario, Canada

Part of a small team that developed the PYXIS Worldview GeoWeb browser and SDK. Accomplishments:
- Fixed memory usage bugs when marshalling between managed and unmanaged code.
- Implemented support for point feature datasets.
- Reduced import time for large data sets from minutes to seconds.
- Co-wrote the core of PYXnet, a peer-to-peer geospatial data sharing service.
- Coined the "WorldView" product name.

Technologies: C++, Boost, C#, SWIG, Windows

Dunne and Associates

Senior Software Developer

November 2008 - September 2009
Kingston, Ontario, Canada

Architect and developer of BrainModder, a neurofeedback training software system. Developed networked games for the system that used real-time EEG and EMG data inputs, including composing and recording the in-game music.

Technologies: C++, Boost, TTL SDKs, MFC, C#, XNA, WCF, Lidgren, ActionScript, Windows, Xbox

Hummingbird

Software Developer

April 2002 - September 2006
Kingston, Ontario, Canada

Part of the software team for the BI Query product. Accomplishments:
- Implemented a multi-dimensional OLAP reporting and interaction feature.
- Maintained a large part of the code, including user interface design and implementation.

Technologies: C++, MFC, OLAP, Windows

Hilton Consulting Group

Software Developer (Team Lead), Product Development Manager, Software Tester

September 1998 - April 2002
Kingston, Ontario, Canada

Part of a small team that provided asset management and Y2K software and testing. Accomplishments:
- Built the database and web UI for an automated asset auditing and management application.
- Designed and developed a commercial, web-based multi-dimensional data source browser and API.
- Managed a team of developers by training team members, assigning tasks, instituting usability and coding standards, and overseeing application modifications.
- Helped build web applications for Hotel Dieu Hospital and the Ministry of Health and Long-Term Care.

Technologies: SQL Server, Microsoft Analysis Services, OLAP, SQL, MDX, XML, ASP, JavaScript, HTML, CSS, Visual Basic, COM, XML, XSLT, Windows

PROJECTS

Om Language

https://github.com/sparist/om

Inventor and developer of the Om Language, an experimental high-level programming language with the goal of maximal simplicity. It is a concatenative, functional, homoiconic, embeddable programming and algorithm notation language, implemented in C++, with minimal syntax (only three elements), prefix notation (whereby functions manipulate the remainder of the program itself), and novel "panmorphic" typing (allowing programming without data types). A full rewrite is currently in progress.

Om Tree

https://gitlab.com/impossibilium/om-tree

Inventor and developer of the Om Tree, an efficient associative array implemented in modern, portable C17 as a binary compact prefix tree with some novel optimizations that allow it to significantly outperform `std::map` on most operations. It was implemented for use by the forthcoming rewrite of the Om Language and has 100% line, function, and branch unit test coverage (CI-generated interactive report: https://impossibilium.gitlab.io/om-tree/gcovr/index.html).