JASON ERB | Senior Software Developer & Architect

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SUMMARY

25+ years of professional experience delivering 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

C++ (22+ years, with STL, Boost, Qt/QtQuick/QML), C, CMake/CPack/CTest, JavaScript, i18n, SDLC

EXPERIENCE

Distributive | Kingston ON CA
Senior Software Developer (Contract) | August 2019 - September 2024
- **Used:** C++, CMake, CPack, CTest, Boost, Google V8, Google Dawn, Google Omaha, JavaScript, Node API, WiX Toolset, Win32 API, Bash, Sockets, Linux, Windows, MacOS, Docker, Git, GitLab CI
- **Contributed to:** Google Dawn, Google Omaha, Google V8, Uncrustify
- Architected and wrote DCP Native, the 30000+ LOC (mostly C++ and CMake) native layer of the Distributive Compute Protocol enabling distributed work to be performed natively on x64 and arm64 variants of Ubuntu, MacOS, Windows, and Docker (via multi-architecture image). Main components include (1) a cross-platform, multithreaded, multiprocess, socket-based, secure Javascript evaluation server with WebGPU support; (2) a screensaver, with graphical configuration UI, for performing work when the computer is idle; (3) a CI build/test/release process deploying containers and graphical installers to alpha/beta/release channels for manual/automatic download.
- Mentored junior developers (design review, pair programming) to add features such as live debugging.

Suitable Technologies | Palo Alto CA US (Remote)
Senior Software Developer (Contract) | May 2013 - January 2020
- **Used:** C++, CMake, Qt, QtQuick, QML, Python, Linux, Windows, MacOS, iOS, Android, Objective-C++, Git
- **Contributed to:** Qt
- As the first developer hired after spin-off from Willow Garage, wrote core C++, QML, CMake, and Python code on the embedded and client ("pilot") software team for the acclaimed Beam remote presence robot.
- Led projects that included design and implementation of a safe and intuitive mobile driving UI, addition of a high-definition PTZ camera and laser pointer feature, and internationalization (including right-to-left language support).
- Owned all pseudo-TCP and relay-related code, and wrote tools and UI to improve call quality.

PrintFleet Inc. | Kingston ON CA
Senior Software Developer | July 2012 - May 2013
- **Used:** ASP, ASP.NET, C#, SQL, JavaScript, HTML, CSS, Windows
- Internationalized code, automated text extraction and substitution, and oversaw localization.
- Redesigned a distributed scheduling architecture for improved device notifications.
- Contributed to the design and delivery of a clean public REST API for programmatic querying.

Endetec (Veolia Water Solutions & Technologies) | Kingston ON CA
Software Developer | March 2011 - July 2012
- **Used:** C++, CMake, Boost, Python, XML, XSLT, HTML, CSS, wxWidgets, Linux
- **Contributed to:** Boost, CMake, wxWidgets
- Wrote embedded C++ code for a touch-screen water-testing device, shipping the first several releases.
- Internationalized code, automated text extraction and substitution, and added Korean support to the touch-screen keyboard (requiring learning the Hangul alphabet and combining character logic).

PYXIS Innovation | Kingston ON CA
Software Developer | September 2006 - October 2008, September 2009 - January 2011
- **Used:** C++, Boost, C#, SWIG, Windows
- Helped develop a novel multiresolution hexagonal geospatial grid technology, along with a GeoWeb browser, SDK, and peer-to-peer geodata sharing service.
- Improved code: fixed all memory bugs caused by marshalling between managed and unmanaged code, reduced large dataset import time from minutes to seconds, and added point feature dataset support.

Dunne and Associates | Kingston ON CA
Senior Software Developer | November 2008 - September 2009
- **Used:** C++, Boost, TTL SDKs, MFC, C#, XNA, WCF, Lidgren, ActionScript, Windows, Xbox
- Created the BrainModder neurofeedback software system for improving mind focus.
- Developed networked games for BrainModder, controlled by the brain via real-time EEG and EMG data, to train the brain toward desired activity metrics.

Hummingbird | Kingston ON CA
Software Developer | April 2002 - September 2006
- **Used:** C++, MFC, OLAP, Windows
- Fixed bugs and made general improvements to the flagship BI reporting product.
- Completed a multi-dimensional OLAP reporting and interaction feature for advanced data analysis.

Hilton Consulting Group | Kingston ON CA
Software Developer (Team Lead), Product Development Manager | September 1998 - April 2002
- **Used:** SQL Server, Microsoft Analysis Services, OLAP, SQL, MDX, XML, ASP, JavaScript, HTML, CSS, Visual Basic, COM, XML, XSLT, Windows
- Directed a team of developers in writing and testing applications for Hotel Dieu Hospital and the Ministry of Health and Long-Term Care.
- Produced a commercial, web-based multi-dimensional data source browser and API.
- Created a web-based asset management application that simulated the Windows desktop UI.

PROJECTS

Om Language | https://github.com/sparist/om
Creator of the Om Language, an experimental high-level, concatenative, functional, homoiconic programming language, written in C++, with minimal syntax (only three elements), prefix notation (whereby functions manipulate the remainder of the program itself), and a single "program" data type.

Om Tree | https://gitlab.com/impossibilium/om-tree
Creator of the Om Tree, an efficient and robust (with 100% line, function, and branch unit test coverage) associative array written in modern, portable C17 as a binary compact prefix tree with novel optimizations that allow it to significantly outperform `std::map` on most operations.