JASON ERB | Senior Software Developer & Architect

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SUMMARY

25+ years of professional experience delivering desktop/mobile/embedded/web software in a wide range of platforms/languages/technologies/domains, including robotics, geospatial analysis, brain-computer interfaces, and distributed computing. Creator of the Om programming language. Lover of elegant and complete solutions.

SPECIALTIES

Hard: C++ (22+ years, with STL, Boost, Qt/QtQuick/QML), C, CMake/CPack/CTest, JavaScript, i18n, SDLC
Soft: Creative, open-minded, perceptive, logical, incisive, proactive, diligent, flexible, receptive, adept, inclusive

EXPERIENCE

Distributive | Kingston ON CA

Senior Software Developer (Contract) | August 2019 - September 2024

- **Technologies:** 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
- **Contributions:** Google Dawn, Google Omaha, Google V8, Uncrustify
- Architected, developed, and owned DCP Native, the native (C++) layer of the Distributive Compute Protocol that enables users to install/configure/run workers for a distributed computer on x64 and arm64 variants of Ubuntu, MacOS, Windows, and Docker (via multi-architecture image)
- Created the cornerstone cross-platform, multithreaded, multiprocess, socket-based native V8-embedded JavaScript evaluation server, with WebGPU capabilities, for securely executing distributed code
- Developed a screensaver that performed distributed work, along with a graphical configuration UI, that was widely deployed to compute labs to put idle computers to use for the distributed network
- Established a CI build/test/release process that deploys containers and graphical installers to alpha/beta/release channels for manual/automatic download on all platforms
- Mentored junior developers (reviewed design, pair-programmed) to add features such as live debugging

Suitable Technologies | Palo Alto CA US (Remote)

Senior Software Developer (Contract) | May 2013 - January 2020

- **Technologies:** C++, CMake, Qt, QtQuick, QML, Python, Linux, Windows, MacOS, Android, iOS, Objective-C++, Git
- **Contributions:** 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
- Ported pilot software to iOS and Android, devising a safe and usable mobile driving model and UI
- Led the project that added a high-definition PTZ camera and laser pointer feature
- Internationalized code (including RTL support), instituted i18n best practices, and oversaw localization
- Wrote tools and UI for gathering network diagnostics to improve call quality; owned all pseudo-TCP and relay-related code

PrintFleet Inc. | Kingston ON CA

Senior Software Developer | July 2012 - May 2013

- **Technologies:** ASP, ASP.NET, C#, SQL, JavaScript, HTML, CSS, Windows
- Wrote server- and client-side code on the asset management web software team
- Internationalized code, automated text extraction and substitution, and oversaw localization
- Redesigned and rewrote a distributed scheduling architecture for improved device notifications
- Contributed to the design and delivery of a clean public REST API to open up programmatic querying

Endetec (Veolia Water Solutions & Technologies) | Kingston ON CA

Software Developer | March 2011 - July 2012

- **Technologies:** C++, CMake, Boost, Python, XML, XSLT, HTML, CSS, wxWidgets, Linux
- **Contributions:** Boost, CMake, wxWidgets
- Wrote embedded C++ code as half of the software team for a touch-screen water-testing device, seeing it through its first several production releases
- Internationalized code, automated text extraction and substitution, and added Korean support to the touch-screen keyboard (requiring a crash course on the Hangul alphabet and combining character logic)
- Delivered a needed HTML reporting feature by writing XSLT transforms on XML data

PYXIS Innovation | Kingston ON CA

Software Developer | September 2006 - October 2008, September 2009 - January 2011

- **Technologies:** 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 stability of the product by systematically fixing 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

- **Technologies:** 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

- **Technologies:** 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

- **Technologies:** 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
- Devised a web UI simulating the Windows desktop as part of an asset management application, and architected the backing database

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.