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](https://www.om-language.com).

### SPECIALTIES

Modern C++ (22+ years, along with STL, Boost, Qt/QtQuick/QML, and others), C, CMake/CPack/CTest, JavaScript, internationalization, creative problem solving and complexity elimination, elegant architecture/code/UI design, and fast proficiency in whatever is required to ship a high-quality product.

### EXPERIENCE

#### Distributive | Kingston, Ontario, Canada

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

* **Used:** 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, Git, GitLab CI
* **Contributed to:** Google Dawn, Google Omaha, Google V8, Uncrustify
* Architected, developed, and owned [DCP Native](https://gitlab.com/Distributed-Compute-Protocol/dcp-native), the native layer of the Distributive Compute Protocol, enabling users to install/configure/run workers for a distributed computer on x64/arm64 variants of Ubuntu, MacOS, Windows, and Docker (via multi-architecture image).
* Designed and implemented a cross-platform, multithreaded, multiprocess, socket-based native V8-embedded JavaScript evaluation server with WebGPU capabilities.
* Created a screensaver to perform distributed work, along with a graphical configuration application.
* Managed releases: implemented a CI process that built graphical installers/containers and deployed to alpha/beta/release channels for manual/automatic download on all platforms.
* Mentored junior developers, pair-programmed, and reviewed code.

#### Suitable Technologies | Palo Alto, California, United States (Remote)

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

* **Used:** C++, CMake, Qt, QtQuick, QML, Python, Linux, Windows, MacOS, Android, iOS, Objective-C++, Git
* **Contributed to:** Qt
* As the first hire after spin-off from Willow Garage, worked on the team responsible for both the embedded and client (“pilot”) software for the acclaimed Beam remote presence robot.
* Played a key role in porting pilot software to iOS and Android, including successfully designing and implementing a mobile driving paradigm and UI that achieved both safety and usability.
* Took the lead in the addition of a high-definition point/tilt/zoom camera and laser pointer: delegated tasks, collaborated on the design, and wrote supporting code.
* Internationalized code (including RTL), instituted coding standards, and coordinated with translators.
* Designed and implemented a network diagnostics tool and accompanying UI, and took code ownership of the pseudo-TCP implementation and relay-related code.
* Fixed bugs, wrote unit tests, reviewed code, and conducted technical job interviews.

#### PrintFleet Inc. | Kingston, Ontario, Canada

##### Senior Software Developer | July 2012 - May 2013

* **Used:** ASP, ASP.NET, C#, SQL, JavaScript, HTML, CSS, Windows
* Worked on an asset management web software team.
* Internationalized code, automated text extraction/substitution, and coordinated with translators.
* Redesigned and rewrote the distributed scheduling architecture for device notifications.
* Designed and implemented much of the public REST API.

#### Endetec (Veolia Water Solutions & Technologies North America) | Kingston, Ontario, Canada

##### Software Developer | March 2011 - July 2012

* **Used:** C++, CMake, Boost, Python, XML, XSLT, HTML, CSS, wxWidgets, Linux
* **Contributed to:** Boost, CMake, wxWidgets
* Constituted half of the embedded software team for a touch-screen water-testing device, taking it through its first several production releases.
* Internationalized the code, automated text extraction/substitution, and added Korean support to the touch-screen keyboard (requiring me to learn the Hangul alphabet and all combining character logic).
* Added HTML reporting, implemented as XSLT transforms on XML data.
* Fixed all resource leaks.

#### PYXIS Innovation | Kingston, Ontario, Canada

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

* **Used:** C++, Boost, C#, SWIG, Windows
* Worked on the team developing a geospatial grid technology, browser, and SDK.
* Co-wrote the core of a peer-to-peer geospatial data sharing service.
* Fixed memory usage bugs when 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, Ontario, Canada

##### Senior Software Developer | November 2008 - September 2009

* **Used:** C++, Boost, TTL SDKs, MFC, C#, XNA, WCF, Lidgren, ActionScript, Windows, Xbox
* Architected and implemented a neurofeedback training software system.
* Developed networked games for the system, controlled by the brain via real-time EEG and EMG data.

#### Hummingbird | Kingston, Ontario, Canada

##### Software Developer | April 2002 - September 2006

* **Used:** C++, MFC, OLAP, Windows
* Worked on the software team for a BI reporting product.
* Implemented a multi-dimensional OLAP reporting and interaction feature.
* Maintained a large part of the code, including user interface design and implementation.

#### Hilton Consulting Group | Kingston, Ontario, Canada

##### 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
* Managed a team of developers: trained, delegated, instituted standards, and reviewed code.
* Designed and developed a commercial, web-based multi-dimensional data source browser and API.
* Built the database and web UI for an automated asset auditing and management application.
* Coded and tested applications for Hotel Dieu Hospital and the Ministry of Health and Long-Term Care.

### PROJECTS

#### Om Language | [https://github.com/sparist/om](https://github.com/sparist/Om)

Creator of the Om Language, an experimental high-level, concatenative, functional, homoiconic, embeddable 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 associative array implemented in modern, portable C17 as a binary compact prefix tree with novel optimizations that allow it to significantly outperform std::map on most operations. It was implemented for use in a forthcoming rewrite of the Om Language and has [100% line, function, and branch unit test coverage](https://impossibilium.gitlab.io/om-tree/gcovr/index.html).