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.

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

Senior Software Developer (Contract)

August 2019 - September 2024

Kingston, Ontario, Canada

- Architected, developed, and owned 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 that performed distributed work, along with a graphical configuration application
- Managed DCP Native releases: implemented a CI process that built and deployed graphical installers and containers to alpha/beta/release channels for manual/automatic download on all platforms
- Mentored junior developers, pair-programmed, and reviewed code
- **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, GitLab CI
- **Contributed to:** Google Dawn, Google Omaha, Google V8, Uncrustify

Suitable Technologies

Senior Software Developer (Contract)

May 2013 - January 2020

Palo Alto, California, United States (Remote)

- 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, conducted job interviews, and did whatever else needed
- **Used:** C++, CMake, Qt, QtQuick, QML, Python, Linux, Windows, MacOS, Android, iOS, Objective-C++
- **Contributed to:** Qt

PrintFleet Inc.

Senior Software Developer

July 2012 - May 2013

Kingston, Ontario, Canada

- Worked on the software team developing an asset management web software suite
- Internationalized the code, automated text extraction/substitution, and coordinated with translators
- Redesigned and rewrote the core distributed scheduling architecture for device notifications
- Designed and implemented a significant portion of the public REST API
- **Used:** 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

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

PYXIS Innovation

Software Developer

September 2006 - October 2008, September 2009 - January 2011

Kingston, Ontario, Canada

- 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
- **Used:** C++, Boost, C#, SWIG, Windows

Dunne and Associates

Senior Software Developer

November 2008 - September 2009

Kingston, Ontario, Canada

- 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
- **Used:** C++, Boost, TTL SDKs, MFC, C#, XNA, WCF, Lidgren, ActionScript, Windows, Xbox

Hummingbird

Software Developer

April 2002 - September 2006

Kingston, Ontario, Canada

- 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
- **Used:** C++, MFC, OLAP, Windows

Hilton Consulting Group

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

September 1998 - April 2002

Kingston, Ontario, Canada

- Managed a team of developers: trained members, assigned tasks, instituted coding/usability standards, and oversaw application modifications
- 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
- **Used:** 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

Creator of the Om Language, an experimental high-level, concatenative, functional, homoiconic, embeddable programming 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

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 by the forthcoming rewrite of the Om Language and has 100% line, function, and branch unit test coverage.