

# Sam Roberts

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Software developer with 20+ years of experience in a variety of industries, languages, and platforms.

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*Multi-language:* C; C++; JavaScript (server side); Lua; Python; Ruby; Go.

*Systems programming:* event-driven and non-blocking I/O; sockets and low-level networking; Linux systems.

*Networking and security:* implement and test both networking and cryptographic protocols and formats.

*Open source:* Node.js TSC member; conference speaker; author or contributor to many open-source projects.

## Experience

### 2018/10-now: Senior Software Developer, IBM Canada (Runtimes) (remote)

Contribute to Node.js project in C++ and JavaScript, primarily to crypto, security, LTS, and IBM platform support. Develop tools for Node.js deployment in Docker, Kubernetes, and IBM cloud.

- **Contributor** to Node.js since 2013.
- Member of Node.js Technical Steering Committee (**TSC**).
- Add TLS1.3 support to Node.js ([nodejs/node#26209](#) and previous).
- Coordinate Node.js security releases ([nodejs.org/en/blog/vulnerability/](#)).
- Develop IBM reference architecture for Node.js development: recommend best practice for Node.js containerization, Prometheus, Kabanero and Apsody stacks. POC of using Kubernetes operator for Node.js specific functions.

### 2016/10-2017/09: Senior Software Developer, IBM Canada (Runtimes) (remote)

Contribute to Node.js project and IBM's Node.js APM (**appmetrics**).

- Integrate Strongloop capabilities into appmetrics, replace **strong-agent** with appmetrics in **strong-pm.io**.
- Help setup Node.js' **Security Working Group**.
- **Back Pressure, or, Don't Accept Work Before You're Ready**, Node.js Interactive, Oct 2017/Nodeconf.eu, Nov 2017.
- **Node's Event Loop from the Inside Out**, Node.js Interactive, Austin TX, Dec 2016

### 2015/11-2016/09: Senior Software Developer, IBM Canada (APIConnect) (remote)

Lead team of 3 IBM developers to integrate Strongloop runtime technology into IBM's APIConnect using **strong-supervisor**.

- **Node.js API Pitfalls: Can You Spot Them?**, Node.js Interactive, Portland WA, Dec 2015

### 2013/04-2015/10: StrongOps Team Lead, Strongloop (remote)

Lead team of 4 responsible for deployment, management, and monitoring for Node.js applications (**strong-pm.io**) until Strongloop acquisition by IBM.

- Participate developing the **strong-agent** APM and metrics collector in JavaScript and C++.
- Develop process and cluster management for single machines (strong-pm.io), and distributed app orchestration (unreleased).
- Contribute to Node.js core, primarily to `child_process`, `cluster`, and documentation.

### 2007/05-2013/03: Senior Architect and Development Lead, Worldtech (Vancouver, BC)

Lead a team of 8 developers developing a network protocol test appliance using Python/Twisted, Lua, and C on Linux.

- Implement Scrum, and ship product within first year of development.
- Rewrite the network protocol and test framework from Java to Lua.
- Implement tests for many network and industrial protocols in C and Lua.
- Write a protocol interceptor in C, along with a Lua rule engine for a Linux/VxWorks intrusion prevention system (IPS).

#### **2005/11-2007/06: Senior Software Architect, Bycast (Vancouver, BC)**

Implement microservice components of StorageGrid, a large image distributed data store, in C, C++, and Lua on Linux.

- Implement grid communication protocols in Ruby, for QA team to automate tests.
- Implement an XML RPC API for the Grid in C, and rewrite the HTTP server for standards conformance and security.
- Embed Lua in the Grid, and use it to write Grid components.

#### **2000/10-2005/10: Senior Software Developer, Certicom (Mississauga, ON)**

Develop C language cryptographic toolkits on servers and mobile devices.

- Extend Crypto-C API to support 3rd party and hardware-based crypto.
- Design PKI-C toolkit, and implement BER/DER, key formats, X.509 certificates, CMS, and PFX.

#### **1998/10-2000/10: Software Developer, Cogent Real-Time Systems (Mississauga, ON)**

Develop industrial distributed systems in C and Cogent's LISP-dialect, using a microservice architecture (service discovery, hierarchical key-value store, message queueing, time-series data, etc.).

- Port microservice SDK product to Linux, after writing Linux kernel emulation of QNX4 messaging.

#### **1995-1998/10: Development Lead, International Submarine Engineering (Port Coquitlam, BC)**

Responsible for ACE, an asynchronous event-based C++ control kernel and configuration language for robotics that originally targeted embedded systems. Port to QNX4, a POSIX O/S, and support its use in all new projects.

## **Education**

B.A.Sc., Engineering-Physics, Computer Science Option; University of British Columbia (1996)

## **Open source**

<b>Node.js</b>	• <b>commits</b> to Node.js core • <b>authored or maintained</b> many Strongloop packages, such as <b>modern-syslog</b> (~9K downloads/week), <b>debuglog</b> (~1.2M downloads/week, weirdly!), <b>strong-supervisor</b> (~1.7K downloads/week),
<b>Lua</b>	• <b>luasocket</b> , <b>forked</b> , integrated multiple CVS and Mercurial forks into github, brought collaborators together, and passed project back to original author • C/Lua bindings: <b>pcap-lua</b> , <b>netfilter-lua</b> , <b>termios-lua</b> , <b>bcrc-lua</b>
<b>Ruby</b>	• vCard and iCalendar support ( <b>vpim</b> ) • ZeroConf DNS service discovery ( <b>net-mdns</b> )
<b>C</b>	• <b>libnet</b> , adopted a widely used packet crafting and injection library • <b>GNU mailutils</b> , <b>commits</b> to email address decoding, file locking, SMTP
<b>Go</b>	• <b>git-walk</b> , recursive, parallel command execution in Ruby, Node.js, and Go • <b>operator-nodejs</b> , operator that triggers Node.js diagnostic reports • <b>wtfutil</b> <b>secret store</b> , use docker-credential-helpers to store API keys and other secrets • <b>whereami</b> , example app to explore Go programming and channels