

Bobby Powers

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Education

- Ph.D. Computer Science**, *University of Massachusetts Amherst* Sep 2015-present
GPA: 4.0
Advisor: Emery Berger, Programming Languages and Systems (PLASMA) Lab.
Coursework Includes: Systems, Programming Languages, Advanced Algorithms.
- M.Phil. System Dynamics**, *University of Bergen, Norway* Jan 2008-Dec 2011
GPA: 3.9
Thesis: An Object-Oriented Approach to Managing Model Complexity
<<https://bpowers.net/sd-thesis.pdf>>
- B.S. Environmental Studies**, *SUNY College of Environmental Science and Forestry* Jan 2005-Dec 2008
GPA: 3.5, *magna cum laude*

Research Experience

- Research Assistant**, *PLASMA Lab, University of Massachusetts Amherst* Sep 2015-present
Browsix bridges the gap between conventional operating systems and the browser, enabling unmodified programs expecting a Unix-like environment to run directly in the browser. Browsix comprises a JavaScript-only kernel that makes core Unix features (including pipes, concurrent processes, signals, sockets, and a shared file system) available to web applications, and extended JavaScript runtimes for C, C++, Go, and Node.js that support running programs written in these languages as processes in the browser. (*to appear at ASPLOS 2017*)

Publications

- Bobby Powers**, John Vilks and Emery D. Berger. “BROWSIX: Bridging the Gap Between Unix and the Browser”. In: *Proceedings of the Twenty-Second International Conference on Architectural Support for Programming Languages and Operating Systems*. ASPLOS '17. Xi'an, China: ACM, 2017.
- David Murphy, Charles A.S. Hall and **Bobby Powers**. “New Perspectives on the Energy Return on (Energy) Investment (EROI) of Corn Ethanol”. In: *Environment, Development and Sustainability* 13 (1 2011), pp. 179–202.
- Andrea M. Bassi, **Robert Powers** and William Schoenberg. “An Integrated Approach to Energy Prospects for North America and the Rest of the World”. In: *Energy Economics* 32.1 (2010), pp. 30–42.

Industry Experience

- Software architect**, *SocialCode* Jan 2014-Jul 2015
Responsible for the service-oriented architecture of a social media advertising platform used by one-third of the Fortune 100. This involved coordinating and collaborating on the design and implementation of scalable, maintainable distributed systems. Led the effort to design a centralized data collection and analytics platform, and improved the latency and accuracy of SocialCode's client-facing reporting system.

- Lead Software Developer**, *isee systems* Apr 2013-Oct 2013
Responsible for implementing and improving core aspects of the company's code base. This includes crisply rendering diagrams at any level of magnification (and while zooming) in a memory efficient way. Implemented order-of-magnitude speedups and memory reductions in isee's C++ simulation engine. Fixed a number of issues in isee's legacy C codebase, carefully identifying root causes of subtle problems and understanding the implications of fixes.
- Dev Lead, Developer & Tech Operations Interim Lead**, *SocialCode* Jan 2012-Mar 2013
Managed, implemented, debugged and scaled key systems at SocialCode, serving as team lead responsible for key parts of SocialCode's advertising platform. Served as interim lead for the operations team, which builds and manages the 100+ server EC2-based infrastructure. Designed and implemented a production service that handled more than 60k HTTP requests per hour with 99.999% availability in Go. Recipient of the first 'Stellar SocialCoder' quarterly award.
- Simulation and Software Developer**, *Forio Online Simulations* Jan 2010-Dec 2011
Integral in scaling out, stabilizing and developing new features of Forio's Java-based platform for online, interactive learning environments. Designed and implemented a clustered configuration of our platform for an event serving all 800+ incoming MBA students at the Wharton School of Business. Designed and implemented a standalone service written in C to remove a native-library dependency from Forio's Java-based webapp, reducing memory usage, removing a frequent source of app server crashes, and enabling the move to 64-bit JVMs.
- Software Developer**, *HART Technologies* June 2009-Dec 2009
Ported HART's core enterprise messaging framework to the ARM platform, including fixing structure alignment and padding issues, quickly coming up to speed on a large C++ codebase. Identified and resolved latency issues across an array of networked applications. Later I updated a Linux kernel patch-series for ARM PXA support from the 2.6.21 to 2.6.32 kernel, which was subsequently picked up by the OpenWRT Linux distribution.
- Intern and Open-Source Developer**, *One Laptop Per Child* May 2008-Dec 2009
Developed an activity for the Sugar platform that allowed children to do basic system dynamics modeling. Worked to support the OLPC platform release, fixing an issue causing a 10+ second delay in activity startup time. After internship, rewrote the Python-based boot animation in C, resulting in a ten second decrease in laptop boot time. Work shipped on hundreds of thousands of laptops.

Honors and Awards

- David W. Stemple Scholarship, UMass Amherst College of Information and Computer Sciences, Amherst, for an outstanding Ph.D. student in the area of systems, awarded June 2016
- SIGPLAN PAC Student Travel Grant, for travel to PLMW/PLDI 2016, awarded May 2016
- SIGOPS Student Travel Grant, for travel to SOSP 2015, awarded August 2015

Service

- *Student Volunteer*, PLDI 2016 (37th ACM SIGPLAN Conference on Programming Language Design and Implementation)
- *Mentor*, Google Summer of Code 2016, PLASMA @ UMass, "Browsix Init System"; student Romāns Volosatovs
- *Student Volunteer*, SOSP 2015 (25th ACM Symposium on Operating Systems Principles)

Activities/Outreach

- Committee Member, XML Interchange Language (XMILE) for System Dynamics 1.0 Technical Committee. 2013-2014.