John Jacobsen

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NPXDESIGNS.COM

Profile

Professional, congenial software developer with passion for functional programming and background in physics thrives on unique and challenging adventures in software engineering, data visualization, simulation, and analysis of large datasets.

Skills

Languages	**Clojure** / ClojureScript, **Python, JavaScript** / CoffeeScript, **C**, Java, Perl, Ruby, Lisp, bash
Databases	**MySQL**, **ElasticSearch**, **Postgres**, MongoDB
AWS	Lambda, API Gateway, DynamoDB, CloudFormation, S3, Route 53
VCS/SCM	**Git (GitHub)**, SVN, CVS
OS	**Linux** (kernel level development), OS-X
Agile Practices	**TDD**, Agile, Continuous integration, refactoring, collective code ownership
Data analysis	Monte Carlo techniques, machine learning.

Values

Always learning new ways to increase simplicity and elegance in design and implementation, combined with coding and testing discipline to improve reliability and deliver repeatable value. Respectful, honest and clear communication with clients, customers and colleagues.

Experience

Sr. Software Architect
OpinionLab, Inc., Chicago, IL, Feb. 2014 - present

Helped craft system in Clojure for the handling of OpinionLab's Next Generation Voice of Customer reporting and analysis pipeline. Technologies included RabbitMQ, PostgreSQL, and Elasticsearch. Shared responsibility for maintaining and clarifying overall system architecture. Ran company-wide, weekly Clojure study group.

Consultant and President
NPX Designs, Inc., Chicago, IL, 2002 - 2014 (clients shown below):

*The **Wisconsin IceCube Particle Astrophysics Center** at the University of Wisconsin, Madison (2007 - 2014)*

Designed and implemented a web-based, distributed experiment control system for IceCube, a $270M neutrino detection experiment deployed from 2005-2011 at the Geographic South Pole. System is based on Python, with Django / JavaScript in the front end and ZeroMQ as the primary data transfer mechanism. Brought system from initial concept to working system on my own in roughly 18 months. Implemented many requested feature upgrades since. Supervised three developers to provide additional upgrades. Test coverage surpassed 70%, with uptime greater than 99%.

Helped overhaul an $8M Java-based data acquisition system for IceCube. Re-implemented control system in Python and streamlined the existing Java components, reducing the size of the code base by 60%, resulting in a scalable design with increased uptime. Wrote comprehensive operator documentation for the system.

*The **University of Maryland** Department of Physics, College Park, Maryland (2010 - 2014)*

Designed and created prototype (in Python / Meteor.js) of experiment control system for proposal for the Long Baseline Neutrino Experiment to be constructed at the Fermi National Accelerator Laboratory (IL) and the Sanford Laboratory (SD).

*E. O. **Lawrence Berkeley National Laboratory**, Berkeley, California (2003-2007)*

Created Linux device driver for custom 64-channel FPGA-based interface to embedded sensors deployed in ice beneath the South Pole station. Driver supports simultaneous control and communications (including error correction).

Created embedded C application for 5500 optical sensors deployed in the ice at the South Pole. Created supporting regression test suite and complete documentation package.

*The **Pennsylvania State University** Department of Physics, State College, Pennsylvania (2011)*

Assisted new group of physicists and developers to establish best software practices (automated testing, revision control, issue tracking, coding standards, code reviews, and continuous integration).

***Pragma Securities**, LLC, New York, New York (2011)*

Assisted financial trading firm in establishing their Chicago data center.

Experience, continued

Computer Systems Engineer
Lawrence Berkeley National Laboratory, Berkeley, CA
1998 - 2002

Created Linux device driver and Perl-based client / server application to configure, test and operate an array of 40 sensors deployed in the AMANDA experiment at the South Pole. Success of this prototype led to adoption of the deployed technology for the successor project, IceCube.

Created a data handling system (in Perl) for moving files from the AMANDA detector at South Pole and shipping data via TDRS satellite to northern hemisphere.

Postdoctoral Research Associate
University of Wisconsin – Madison
1997 - 1998

Created a Perl-based data mining system on a massively-parallel Cray supercomputer at LBNL to reduce a multi-terabyte data set down to a small sample of events enriched in neutrinos, resulting in the discovery of the first "gold-plated" neutrino events at the South Pole. Wrote additional data processing programs in C.

Education

University of Wisconsin – Madison:
Ph.D., Physics, 1996
BS, Physics, 1990

Recent Coursework

Stanford / Coursera University Machine Learning Class (perfect score), 2012
Stanford / Coursera Design and Analysis of Algorithms, 2014
"Write a Compiler" Python master class, David Beazley, DaBeaz, LLC, 2012

Publications

Co-author of over 50 publications in refereed journals and conference proceedings (see list at github.com/eigenhombre/cv).

Significant contributor to Clojure Cookbook (O'Reilly media, 2014)

Recent Conferences

Clojure/conj, Washington, DC, 2014
Clojure/West, Portland 2013
Clojure/conj, Raleigh 2012
Clojure/West, San Jose 2012
O'Reilly Open Source Conference, Portland 2010
PyCon, Chicago, 2008
O'Reilly Open Source Conference, Portland 2008

Associations

Member of the Association for Computing Machinery.
Participant in the Chicago Python Users's group (ChiPy), the Chicago Clojure Meetup, and the Chicago Machine Learning Meetup.
Registered Clojure contributor (Clojure CA signatory).

Other Interests

Running, meditation, creating visual art (johnj.com); exhibited in Chicago, San Francisco, Wisconsin and elsewhere.

Links

Technical blog		eigenhombre.com. Popular recent posts describe advanced workflows for Clojure, use of Clojure for bioinformatics, and tools for continuous testing in Python.
GitHub		github.com/eigenhombre. Popular projects: toolz, PyClojure, i3d3., lein-script, jenome
StackOverflow		stackoverflow.com/users/611752/johnj
Consulting Web Site		npxdesigns.com
LinkedIn		linkedin.com/in/eigenhombre