Patrick Wagstrom

Software Engineering Research Scientist

patrick@wagstrom.net, https://patrick.wagstrom.net/

Professional Objective

A leadership position conducting research, development, and data analysis to generate insight and develop novel new methods to solve the world's hardest technical, policy, and social problems by integrating observations of human behavior, raw data, innovative software tools, dynamic visualization, and state of the art machine learning.

Skills

Research Methods: data mining, qualitative interviews, social network analysis, uncertainty analysis, sentiment analysis, machine learning, multi-attribute utility analysis, usability analysis, data visualization

Programming Languages: JavaScript, Python, Java, SQL, R, C

Other Assorted Skills: DevOps architecture and deployment, CloudFoundry, technical and acquisition strategy, agile methodologies and transformation, Linux system administration

Employment History

Research Staff Member/Technical Lead

IBM Watson, Littleton, MA

January 2015-Present

- Led a globally distributed team that built the IBM Watson Conversation service - an innovative service to create rich interactions using natural language processing, entity recognition, and scripted dialog.
- Global team lead for Watson Developer Cloud Tooling. Created cutting edge applications for creating, training, and maintaining cognitive and machine learning solutions including Watson Engagement Advisor and IBM Watson Natural Language Classifier.
- Conducted research on optimal methods to build and configure cognitive and machine learning systems resulting in a 95% reduction in human time required to train these systems.
- Presented cognitive solutions and technologies to more than a dozen companies in six countries.
- Developed best-of-breed modern web application architecture based on Angular, Node.js, GitHub Enterprise, Slack, UrbanCode Deploy and more.

Research Staff Member

IBM Watson - Watson Life, Yorktown Heights, NY

January 2014-January 2015

- Leadership team member responsible for evaluating promising consumer applications of cognitive computing and guiding teams in lean startup and IBM design thinking processes to explore ideas.
- Project lead for the IBM Food Truck at SXSW which demonstrated cognitive computing to more than 4,000 people and resulted in more than 1 billion media impressions.
- Organized and directed globally distributed teams on how to contextualize solutions to cognitive computing challenges.
- Planned and executed international workshops on design thinking methodologies.
- Implemented best practices for DevOps using IBM DevOps services, IBM BlueMix, Jenkins, and more.

Research Staff Member

IBM TJ Watson Research Center, Yorktown Heights, NY

August 2009-January 2014

- Technical and strategy contributor to IBM's research and acquisition strategy for software development tools and processes.
- Analytics lead for JazzHub, IBM's cloud software development strategy. Designed analytics strategy, implemented metrics driven development, introduced A/B testing, and developed analytics dashboards.
- Developed and designed GitMiner - an open source project used by 15 universities to perform graph analysis on large scale software engineering databases such as GitHub and BitBucket.
- Led a research team to evaluate productivity of new users and small teams using IBM's enterprise software engineering and product development environments.
- Developed WhatsMyBrand, a framework for assessing an individual's personal brand by analyzing connections and contents of their actions through public social networks and relating those actions to the actions of others in their network.

Graduate Research Assistant

Carnegie Mellon University, Pittsburgh, PA

August 2003-July 2009

- Designed and developed CVSMiner an open source tool to perform social network and technical analysis of software engineering ecosystems such as GNOME and Eclipse.
- Worked with members of the GNOME Foundation and Eclipse Foundation to evaluate and improve the relationships between non-profit foundations that manage open source ecosystems and commercial firms.
- Delivered lectures in classes on software engineering and technology policy.
- Utilized a variety of qualitative and quantitative research methods: stakeholder interviews, message analysis, natural language processing, data mining, machine learning, and social network analysis to generate insight into largely ad hoc software development processes.

Summer Research Intern
IBM TJ Watson Research Center, Hawthorne, NY
June 2007-August 2007

- Expanded the Socio-Technical Congruence metric, which relates communication between individuals and technical dependencies inferred from archived data.
- Developed a model of successful projects that transitioned from IBM proprietary technologies to strong open source communities.
- Developed novel visualizations of communication and congruence in software development teams.

Teaching/Research Assistant
Computer Science Department, Illinois Institute of Technology, Chicago, IL
September 2000-August 2003

- Managed a group of twelve undergraduates to develop an ambitious automated tour system utilizing Segways and mobile devices for wireless location sensing and data in an era years before the iPhone and Android.
- Hired and managed three undergraduates to develop a python based framework for pervasive computing based on web services technologies.
- Designed graduate level class on grid and pervasive computing.
- Delivered numerous lectures on a wide variety of related to distributed computer, operating systems, and computer architecture.

Summer Research Intern
Math and Computer Science Division, Argonne National Laboratory, Argonne, IL
April 2002-September 2002

- Developed the Grid Services Flow Language for specifying dependencies and flow in the GLOBUS environment.
- Worked with the SciDAC Java CoG Kit Team and the Collaboratory for Multiscale Chemistry to develop a grid services based system for analysis of thermochemical tables.

Senior Developer
LEC, Ltd, Chicago, IL
April 1999-September 2000

- Designed, ordered, installed, and managed a commercial grade data center for advertising agency clients.
- Architected and developed E-Stakes, a multi-million user capable system for tying offline purchases to online activities.
- Designed and managed the technical components of the Chicago Transit Authority's "Take it and Win" promotion that utilized CTA transit cards to tie together offline and online behavior of transit riders.
- Worked directly with designers and clients to sell and develop usable, novel, and cutting edge web experiences.

Developer
MyPoints, Schaumburg, IL
April 1998-September 1998

- Designed and implemented a complete customer relationship management system in PL/SQL and Java.
- Integrated customer service system to work with multiple advertising campaigns and custom co-branded sites.

Education

Ph.D. in Engineering and Public Policy and Computation, Organizations, and Society, May 2009
Carnegie Mellon University, Pittsburgh, PA
Dual degree between the Carnegie Institute of Technology (College of Engineering) and School of Computer Science at Carnegie Mellon University. Ph.D. thesis title "Vertical Interaction in Open Software Engineering Communities". Thesis advisors Dr. James Herbsleb and Dr. Kathleen Carley.

MS in Computation, Organizations, and Society, May 2007
Carnegie Mellon University, Pittsburgh, PA
Intermediate degree awarded en route to my Ph.D.

MS in Computer Science, August 2003
Illinois Institute of Technology, Chicago, IL
Focused on distributed and pervasive computing. Thesis title "Scarlet: A Framework for Context Aware Computing".

BS in Computer Science / BS in Computer Engineering / BS in Electrical Engineering, May 2002
Illinois Institute of Technology, Chicago, IL
I was on scholarship and it seemed like a good idea to keep tacking on degrees.