Kathryn Rivard

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Skills

Operating Systems: MacOS X, unixes, Windows XP, QNX
Programming: Java, Python, C, perl, Scheme/Common Lisp, others
Web: HTML/CSS, javaScript, PHP, RDF, javaScript, MoinMoin, Apache
UI Prototyping: Revolution (HyperCard), Flex
Tools/Other: CVS, SVN, Trac, MATLAB, LaTeX, Photoshop, MySQL

Education

Carnegie Mellon University: Robotics Institute Pittsburgh, PA
Left PhD program: loved research, hated being a graduate student Sep 2006-Jan 2008
Awarded full funding from the RI as well as a Barbara Lazarus Women@IT fellowship from CMU.
Research pertained to the continuing development of Ballbot, a balancing robot.
Coursework spans foundation areas of robotics including mathematics, sensing, action, and cognition.

Franklin W. Olin College of Engineering Needham, MA
B.S. in Engineering with concentration in Computing; GPA 3.6 Sep 2002-May 2006
Member of inaugural class and recipient of 4-year full tuition and room scholarship.
Coursework includes traditional engineering topics, computer science, design, music, and business.
Most coursework relies on teamwork and peer teaching, integral parts of the Olin College curriculum.

Experience

RADAR Web Group Nov 2007-Present
UI Designer and Misc. Developer: *Institute for Software Research at CMU*
RADAR is a research project in its 4th year at CMU exploring applications of machine learning on the desktop. I worked on the user interfaces for the web tools Workflow by Example (webform automation), Honeydew (natural language meeting negotiation), and Responsive Workflow (user-designed forms for multi-website search) from scenario building through rapid iterative prototyping and user testing. I also handled various developer tasks in javaScript and Java.

Ballbot: *Microdynamics Systems Lab, Robotics Institute at CMU* Oct 2006-Sep 2007
Ballbot is a robot for human environments which balances on a single spherical wheel. When I inherited the project, the software was in its larval stages and based on bitwise communication with the hardware in C. I have since written an abstraction layer which provides for task scheduling and protects higher-level functions from the hardware details. Upon departing for a leave of absence, I put together a comprehensive set of documentation describing the new software, tests in progress, pending tasks, and other "tribal knowledge" acquired over my year with the project.

Fresnel in Python: *Cognition Lab at Olin College* Jan-May 2006
Fresnel is a display vocabulary for RDF, much like XSLT is for XML. The Cognition Lab frequently works with RDF for its research in the Semantic Web, and until now has written custom parser/display programs for each application. We developed a Python implementation of Fresnel to allow RDF to be used with current web tools just like any other backend data store.
(http://sourceforge.net/projects/tobacconist/)

Competencies Working Group, Oct 2004-May 2006
Competencies Implementation Committee: *Olin College*
These groups designed and continue to run a competency-based grading system and school-wide end-of-semester project evaluation expositions. In addition to active participation in discussions, I performed many web-related tasks for the committees, including the development of an internal website to publish meeting minutes and related campus announcements, and designing a template-based web portfolio system deployed across the student body. I also designed the user interface component of a software system automating the creation of the expo schedule. The interface took the form of a web application which used javaScript and MySQL to collect project, poster, and presentation data from students, as well as allowing them to handle schedule conflicts relatively painlessly by trading timeslots with another student. A revision of this system is still in use.

Software Technical Lead: *Vision Agrobotics/ROCONA* Oct 2005-Aug 2006
Olin Senior Capstone and independent consulting

ROCONA is a high-tech agricultural startup company which tasked our team with the conversion of a Kubota tractor into a prototype robotic vehicle to navigate orange orchards. I was active in the design of the sensor and safety systems as well as being the primary programmer for the project. Over the summer, I stayed on to transition to the next year's group of students and continue software tasks, including the development of a SQL-based logging system for the robot.

Student Information System: *Human Factors and Interface Design, Olin College* Jan-May 2005
The Student Information System at Olin, which gives faculty web access to the grades and transcripts of their advisees, was awkward to use. Our team used interviews, task scenarios, paper prototypes, and extensive user testing to come up with a way to present advisee information to complement the way faculty actually performed their advising tasks. The system was implemented in MySQL and javaScript.

MiniATV conversion: *Intelligent Vehicles Lab at Olin College* Jun-Aug 2005
This project employed a multidisciplinary student team to design, fabricate, and manufacture the systems necessary to convert a child-sized ATV into a robotic vehicle platform. The software team started completely from scratch, and produced a system which used a stereo camera to target and follow the movements of nearby obstacles using a servo-controlled laser pointer. My work focused on the central AI, which processes data from other software agents and supplies the motor controller with commands for moving the vehicle. I worked in MATLAB, C, and Python to develop tools for networking and manipulating new data structures as well as the AI code.

Behavior-based robotics: *Intelligent Vehicles Lab at Olin College* Feb-May 2005
This lab was spawned by David Barrett in fall of 2004. As part of the start-up phase for the lab, my project focused on design of a behaviors and arbiter system to attain basic navigation of a robot using sensory data from GPS, stereo vision, and LIDAR. I wrote custom simulations in Python and MATLAB, and also explored a Python package for robotics developed at Bryn Mawr (http://pyrobotics.org).

Lab/Course support: *Software Design, Olin College* Sep-Dec 2003, 2005
Taught in Java. Students did most of their coding for problem sets in a proctored lab. Lab support included answering students' questions or teaching them how to find their own answers, as necessary. Developed an interest in teaching and in methods of distilling complex concepts into key ideas. Course support also included office hours and marking problem sets.

Foundations of CS Curriculum Development: *Cognition Lab at Olin College* Jun-Dec 2004
This new course combining traditional courses in Algorithms, Data Structures, Complexity, and Automata was taught in fall of 2004. Development included assignment prototyping, collecting and evaluating resources, and bringing up course infrastructure (webserver, website, wiki, code development space), in addition to providing input regarding course content.

Activities

Advanced Computing Lab: founding member, internal website developer 2005-2006

Olin Intelligent Vehicles Lab: founding member 2004-2006

FIRST Robotics mentoring team, Hyde Park High School 2004

WHACK (fencing club): co-founder and -captain, webmaster 2003-2004

Needham-Olin Technology Exchange: refurbishing computers for needy families 2002-2003