

Joseph Lawrance

43 Fearing Dr, Westwood, MA • (541) 760-9374 • joey.lawrance@gmail.com • joeylawrance.com

EMPLOYMENT

Associate Professor (tenured) Wentworth Institute of Technology, Boston.	September 2015-Present
Assistant Professor , Wentworth Institute of Technology, Boston.	September 2010-August 2015
Postdoctoral Associate , Massachusetts Institute of Technology.	September 2009-August 2010
Research Assistant , Oregon State University.	June 2005-June 2009
Intern , IBM Research.	June 2006-November 2008
Instructor , Oregon State University.	June-August 2008
Teaching Assistant , Oregon State University.	March-June 2005
Intern , Microsoft.	January-March 2005

EDUCATION

Ph.D., Computer Science Oregon State University. Dissertation: Information foraging in debugging.	2009
M.S., Computer Science Oregon State University. Thesis: How well do professionals test with code coverage visualizations? An empirical study.	2005
B.A., Math & Computer Science Lawrence University, Appleton, WI. Minor: Psychology.	2003

RECENT PROJECTS

Starter Upper (2013-2016) is a git classroom setup automation tool. It configures every user's full name, email, and SSH keys for git, assists in setting up accounts and private repositories on Bitbucket, Github or Gitlab with an interactive checklist, and also generates the course roster for fetching student work.

Logisim (2012-2015) is a free open source digital circuit simulator. My fork replaced the bespoke build system with Gradle and removed over two thousand lines of redundant code. I also merged in pull requests for SVG export of circuit diagrams, keyboard shortcuts for zooming, antialiased rendering, and vector icons.

Seaweed (2009-2010) is a Powerpoint-inspired rapid prototyping tool for creating two-player economic games to deploy on the web. I added support for deploying economic games to Amazon Mechanical Turk, and fixed a race condition related to randomly pairing users that I discovered in the original codebase.

PFIS (2006-2009) is Programmer Flow by Information Scent, a predictive model of programmer navigation through source code. I conducted a three-hour study of twelve professional programmers fixing a bug and implementing a new feature in an open source project. I also developed an Eclipse plug-in to gather data from a larger, seven-month field study of professional programmers working at IBM. From the collected data, I determined that PFIS accurately predicts programmer navigation behavior.

Co-reasoning (2006) is a system that integrates multiple spreadsheet testing and fault-localization systems.

AWARDS & HONORS

Air Force Office of Scientific Research grant (\$600,000)	2009-2012
National Science Foundation supplement (\$99,904)	2009-2010
IBM Invention achievement award	2009
IBM Ph.D. Scholarship	2008-2009
ACM CHI Best paper honorable mention (awarded to 30 of the 714 submitted papers)	2008

SERVICE

Chair , Wentworth Computer Science Curriculum Committee	2011-Present
I redesigned the curriculum by simplifying math and science elective requirements, improving course prerequisites and sequencing, and reducing credits from 141 to 128. I revised the tracking sheet layout to enhance usability and include registration advice. I also created the Computer Science minor.	
Co-chair , Psychology of Programming Interest Group (PPIG)	2010
Co-created http://apiusability.org	2009
Program Committee for the International Workshop on Defects in Large Software Systems	2008
Reviewer	
ACM Transactions on Computer-Human Interaction (TOCHI)	2014
ACM Conference on Human Factors in Computing Systems (CHI)	2008-2014
IEEE International Conference on Intelligence and Security Informatics (ISI)	2011-2012

TEACHING & MENTORING

Lower-level courses: C, C++, Computer Architecture, Data Structures, and Java.

Upper-level courses: Compiler Design, Human Computer Interaction, Linux System Administration, Programming Languages, Software Engineering, and Web Application Development.

Work study students: Nick Allevato, Ben Greenier, Dominic Laudate, Mike Spallino, and Ryan Steinmetz.

Undergraduate researchers: Kyle Rector, Andrew Stucky, and Nick Schultz.

JOURNAL & MAGAZINE ARTICLES

1. Fleming, S., Scaffidi, C., Piorkowski, D., Burnett, M., Bellamy, R., **Lawrance, J.** and Kwan, I. An Information Foraging Theory Perspective on Tools for Debugging, Refactoring, and Reuse Tasks, ACM Transactions on Software Engineering and Methodology, 22(2), March 2013.
2. **Lawrance, J.**, Bogart, C., Burnett, M., Bellamy, R., Rector, K. and Fleming, S. How Programmers Debug, Revisited: An Information Foraging Theory Perspective, IEEE Transactions on Software Engineering, 39(2), February 2013.
3. Jung, S. and **Lawrance, J.** Web Information Retrieval and Filtering course to Undergraduates using Open Source Programming. ACM Inroads Magazine. 2(3), September 2011.
4. Ko, A. J., Abraham, R., Beckwith, L., Blackwell, A., Burnett, M., Erwig, M., **Lawrance, J.**, Scaffidi, C., Lieberman, H., Myers, B., Rosson, M. B., Rothermel, G., Shaw, M. and Wiedenbeck, S. The State of the Art in End-User Software Engineering, ACM Computing Surveys 43(3), Article 21, April 2011.
5. Dagit, J., **Lawrance, J.**, Neumann, C., Burnett, M., Metoyer, R. and Adams, S. Using Cognitive Dimensions: Advice from the Trenches, Journal of Visual Languages and Computing, 17(4), 302-327, August 2006.
6. Robertson, T. J., **Lawrance, J.** and Burnett, M. Impact of High-Intensity Negotiated-Style Interruptions on End-User Debugging, Journal of Visual Languages and Computing, 17(2), 187-202, April 2006.

CONFERENCE PAPERS

7. **Lawrance, J.**, Jung, S. and Wiseman, C. Git on the Cloud in the Classroom, ACM SIGCSE 2013. Denver, Colorado, March 2013, 639-644. (37.8% acceptance rate)
8. **Lawrance, J.**, Burnett, M., Bellamy, R., Bogart, C. and Swart, C. Reactive Information Foraging for Evolving Goals, ACM CHI 2010. Atlanta, Georgia, April 2010, 25-34. (22% acceptance rate)

9. **Lawrance, J.**, Bellamy, R., Burnett, M. and Rector, K. Can Information Foraging Pick the Fix? A Field Study, IEEE VL/HCC, September 2008, 57-64. (28.6% acceptance rate)
10. **Lawrance, J.**, Bellamy, R., Burnett, M. and Rector, K. Using Information Scent to Model the Dynamic Foraging Behavior of Programmers in Maintenance Tasks, ACM CHI 2008, Florence, Italy, April 2008, 1323-1332. (22% acceptance rate) (**Best paper honorable mention**)
11. **Lawrance, J.**, Bellamy, R., and Burnett, M. Scents in Programs: Does Information Foraging Theory Apply to Program Debugging? IEEE VL/HCC 2007, Coeur d'Alène, Idaho, September 2007, 15-22. (32% acceptance rate)
12. **Lawrance, J.**, Abraham, R., Burnett, M. and Erwig, M. Sharing Reasoning to Improve Fault Localization in Spreadsheets, IEEE VL/HCC 2006, Brighton, United Kingdom, September 2006, 35-42. (25% acceptance rate)
13. Beckwith, L., Kissinger, C., Burnett, M., Wiedenbeck, S., **Lawrance, J.**, Blackwell, A. and Cook, C. Tinkering and Gender in End-User Programmers' Debugging, ACM CHI 2006, Montréal, Quebec, Canada, April 2006, 231-240. (23% acceptance rate)
14. **Lawrance, J.**, Clarke, S., Burnett, M. and Rothermel, G. How well do professional developers test with code coverage visualizations? An empirical study, IEEE VL/HCC 2005, Dallas, Texas, September 2005, 53-60. (31% acceptance rate)

MINOR PAPERS

15. **Lawrance, J.** and Jung, S. Quick Git Setup Tutorial, JCSC 30(6), June 2015, 38-40.
16. **Lawrance, J.** and Jung, S. Git on the cloud workshop, JCSC 28(6), June 2013, 14-15.
17. Torosyan, R. and **Lawrance, J.** Making Feedback and Grading More Natural Using Google Docs and Forms, New England Faculty Development Consortium, November 2012.
18. Wiseman, C., **Lawrance, J.** and Suresh, D. Rapidly Gauging Student Comprehension with Online Tools, New England Faculty Development Consortium, June 2012.
19. Burnett, M., Bogart, C., Cao, J., Grigoreanu, V., Kulesza, T. and **Lawrance, J.**, End-User Software Engineering and Distributed Cognition, SEEUP Workshop at ICSE, May 2009, 9-19.
20. **Lawrance, J.**, Bogart, C., Burnett, M., Bellamy, R., and Rector, K. How People Debug, Revisited: An Information Foraging Theory Perspective, IBM TR RC24783, April 2009.
21. **Lawrance, J.** Using Programming by Demonstration to Reorganize User Interfaces, Graduate Student Consortium at IEEE VL/HCC, Brighton, United Kingdom, September 2006, 238-239.
22. **Lawrance, J.**, Burnett, M., Abraham, R. and Erwig, M. Toward Sharing Reasoning to Improve Fault Localization in Spreadsheets, WEUSE II Workshop at ACM CHI 2006.
23. Burnett M., Dagit, J., **Lawrance, J.**, Beckwith, L. and Kissinger, C. Experiences with Cognitive Dimensions, Cognitive Dimensions 10th Anniversary Workshop at IEEE VL/HCC 2005.
24. **Lawrance, J.**, Clarke, S., Burnett, M. and Rothermel, G. How Well Do Professional Developers Test with Code Coverage Visualizations? An Empirical Study, Oregon State University TR 2005-86, March 2005.

INVITED TALKS

Universidad Carlos III de Madrid	2010
Harvard University	
MathWorks	2009
Massachusetts Institute of Technology	
Brown University	
University of Nebraska-Lincoln	2008
Westfield State University	