JOSEPH LAWRANCE, PH.D.
CURRICULUM VITAE

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INTERESTS

Human-Computer Interaction, User experience, Information foraging theory, Software engineering.

EDUCATION

Oregon State University   06/2009
Ph.D., Computer Science
School of Electrical Engineering and Computer Science
Advisor: Dr. Margaret Burnett
Dissertation: *Information foraging in debugging*.

Oregon State University   06/2005
M.S., Computer Science
Advisor: Dr. Margaret Burnett
Thesis: *How well do professional developers test with code coverage visualizations? An empirical study*

Lawrence University, Wisconsin   06/2003
B.A., Mathematics & Computer Science
Dean's list (2000-2001 and 2002-2003)
Minor: Psychology

AWARDS & HONORS

IBM Invention Achievement Award	2009
IBM Ph.D. Scholarship	2008-2009
ACM CHI'08 Best Paper Award Honorable Mention	2008
Lawrence University Trustee Scholarship	1999-2003

GRANTS & SUPPLEMENTS

Air Force Office of Scientific Research: *Information Foraging Theory in Software Maintenance.* Co-authored with my advisor, based on my dissertation work. Grant awarded: $600,000 from 2009-2012.

National Science Foundation: Supplement awarded: $99,904 from 2009-2010. Grant Number IIS-0447800, Amendment Number 005, Proposal Number IIS-0940740.

National Science Foundation: *Information Foraging In Software Maintenance.* Proposal: $499,999. Grant declined.

PATENT APPLICATIONS

A Method of Determining a Prioritized List of Users related to a given Goal   2008
(Accepted by IBM to be filed)

RESEARCH EXPERIENCE

Postdoctoral Associate, Massachusetts Institute of Technology   09/2009-08/2010
Lead the continued development of cWeed (formerly Seaweed), an end-user programming system for developing economic games to deploy on the web and on Amazon Mechanical Turk.
The latest beta release is available at: http://groups.csail.mit.edu/uid/seaweed/release-0.3/

Intern, IBM Research   06/2006-09/2006, 06/2007-09/2007, 01/2008-03/2008, 09/2008-11/2008
Investigated how information foraging theory can explain and predict programmers' navigation through source code during debugging. As part of this work, I developed an Eclipse plug-in, conducted a seven month field study of programmer navigation behavior, conducted a think-aloud lab study of professional programmers, developed predictive information foraging models of programmer navigation, and conducted the statistical analysis of collected data. More information can be found in [4, 5, 6, 7, 12].

Research Assistant (under Dr. Margaret Burnett)   06/2005-06/2009
Conducted research aimed at understanding the needs of end users and assisting end-user programmers. As part of this work, I evaluated the user interface of an end-user application [1, 2, 15], analyzed data collected from studies of end user programmers conducted in a research spreadsheet environment [3, 9, 15], and led the development of a co-reasoning system that integrated multiple spreadsheet testing and fault-localization systems [8, 14].

Intern, Microsoft   01/2005-03/2005
Designed, conducted, and analyzed data on a controlled think-aloud experiment of professional programmers to evaluate the effect of code coverage visualizations on software testing behavior. More information can be found in [10, 16].

Research Assistant (under Dr. Jonathan Herlocker)   06/2004-09/2004
Developed a Japanese-English cross-language *Web-based information retrieval system* (search engine) using Apache Lucene (http://lucene.apache.org/), for Tsunami research.

TEACHING EXPERIENCE

Assistant Professor, Wentworth Institute of Technology	09/2010-Present
COMP120: Computer Science I using C	01/2010-Present
COMP566: Software Engineering	01/2010-Present
COMP278: Computer Architecture. Stimulated thought (4.1)	09/2010-12/2010
Knows subject matter (4.3)	
Strong ability to communicate subject matter (3.8)	
COMP114: Structured Programming for Engineering and Technology.	09/2010-12/2010

Instructor, Oregon State University   06/2008-08/2008
CS 261: Data Structures. Prepared curriculum, lectured, created and graded assignments and exams.

Graduate Teaching Assistant, Oregon State University		
CS 261: Data Structures.	Instructor: Dr. Timothy A. Budd	03/2005-06/2005
CS 161: Introduction to Java.	Instructor: Christine Wallace	09/2004-12/2004

Content tutor & Lab assistant, Lawrence University   04/2000-06/2003
Tutored and assisted students enrolled in Computer Science, Calculus, and Statistics courses.

PUBLICATIONS

Journal Articles (Refereed)

1. **Lawrance, J.**, Bogart, C., Burnett, M., Bellamy, R., Rector, K., How People Debug, Revisited: An Information Foraging Theory Perspective, *Transactions on Software Engineering* (To appear).

2. Ko, A. J., Abraham, R., Beckwith, L., Blackwell, A., Burnett, M., Erwig, M., **Lawrance, J.**, Lieberman, H., Myers, B., Rosson, M. B., Rothermel, G., Scaffidi, C., Shaw, M. and Wiedenbeck, S. The State of the Art in End-User Software Engineering, *ACM Computing Surveys*. (To appear).

3. 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.

4. 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.

Full Conference Papers (Refereed)

5. **Lawrance, J.**, Burnett, M., Bellamy, R., Bogart, C. and Swart, C. Reactive Information Foraging for Evolving Goals, *ACM Conference on Human Factors in Computing Systems (CHI 2010)*, Atlanta, Georgia. (22% acceptance rate) (To appear April 2010).

6. **Lawrance, J.**, Bellamy, R., Burnett, M. and Rector, K. Can Information Foraging Pick the Fix? A Field Study, *IEEE Symposium on Visual Languages and Human-Centric Computing*, September 2008, 57-64. (28.6% acceptance rate)

7. **Lawrance, J.**, Bellamy, R., Burnett, M. and Rector, K. Using Information Scent to Model the Dynamic Foraging Behavior of Programmers in Maintenance Tasks, *ACM Conference on Human Factors in Computing Systems (CHI'08)*, Florence, Italy, April 2008, 1323-1332. (22% acceptance rate) (**Best Paper Honorable Mention,** awarded to 30 of the 714 submitted papers)

8. **Lawrance, J.**, Bellamy, R., and Burnett, M. Scents in Programs: Does Information Foraging Theory Apply to Program Debugging? *IEEE Symposium on Visual Languages and Human-Centric Computing*, Coeur d'Alène, Idaho, September 2007, 15-22. (32% acceptance rate)

9. **Lawrance, J.**, Abraham, R., Burnett, M. and Erwig, M. Sharing Reasoning to Improve Fault Localization in Spreadsheets, *IEEE Symposium on Visual Languages and Human-Centric Computing*, Brighton, United Kingdom, September 2006, 35-42. (25% acceptance rate)

10. Beckwith, L., Kissinger, C., Burnett, M., Wiedenbeck, S., **Lawrance, J.**, Blackwell, A. and Cook, C. Tinkering and Gender in End-User Programmers' Debugging, *ACM Conference on Human Factors in Computing Systems (CHI'06)*, Montréal, Quebec, Canada, April 2006, 231-240. (23% acceptance rate)

11. **Lawrance, J.**, Clarke, S., Burnett, M. and Rothermel, G. How well do professional developers test with code coverage visualizations? An empirical study, *IEEE Symposium on Visual Languages and Human-Centric Computing*, Dallas, Texas, September 2005, 53-60. (31% acceptance rate)

Minor Papers

12. Burnett, M., Bogart, C., Cao, J., Grigoreanu, V., Kulesza, T. and **Lawrance, J.**, End-user software engineering and distributed cognition, *Proceedings of the 2009 ICSE Workshop on Software Engineering Foundations for End User Programming*, May 2009, 1-7.

13. **Lawrance, J.**, Bogart, C., Burnett, M., Bellamy, R., and Rector, K. How People Debug, Revisited: An Information Foraging Theory Perspective, IBM Technical Report RC24783, April 2009.

14. **Lawrance, J.** Using Programming by Demonstration to Reorganize User Interfaces, *Graduate Student Consortium at IEEE Symposium on Visual Languages and Human Centric Computing*, Brighton, United Kingdom, September 2006, 238-239.

15. **Lawrance, J.**, Burnett, M., Abraham, R. and Erwig, M. Toward Sharing Reasoning to Improve Fault Localization in Spreadsheets, *2nd Workshop on End User Software Engineering (WEUSE) at ACM Conference on Human Factors in Computing Systems (CHI'06)*, Montréal, Canada, April 2006.

16. Burnett M., Dagit, J., **Lawrance, J.**, Beckwith, L. and Kissinger, C. Experiences with Cognitive Dimensions, *Cognitive Dimensions of Notations 10th Anniversary Workshop at IEEE Symposium on Visual Languages and Human-Centric Computing*, Dallas, Texas, September 2005.

17. **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 Technical Report 2005-86, March 2005.

Under Review
18. Fleming, S. D., Scaffidi, C., Piorkowski, D., Burnett, M., Bellamy, R., and **Lawrance, J.,** Information Foraging Theory for Software Maintenance: Explaining Successful Approaches, Revealing Patterns, and Opening Up New Research Opportunities,. *Transactions on Software Engineering and Methodology* (submitted).

INVITED TALKS & PRESENTATIONS

Invited Talk	Universidad Carlos III de Madrid	09/2010
Invited Talk	Harvard University	02/2010
Invited Talk	Brown University	05/2009
Invited Talk	Massachusetts Institute of Technology	03/2009
EUSES Consortium	University of Nebraska-Lincoln	10/2008
IEEE VL/HCC 2008	Herrsching am Ammersee, Germany	09/2008
ACM CHI 2008	Florence, Italy	04/2008
Guest Lecture	Westfield State College, Massachusetts	03/2008
IEEE VL/HCC 2007	Coeur d'Alène, Idaho	09/2007
IEEE VL/HCC 2006	Brighton, United Kingdom	09/2006
IEEE VL/HCC 2005	Dallas, Texas	09/2005

PROFESSIONAL EXPERIENCE

Intern, American Airlines Credit Union   06/2002-09/2002, 06/2003-09/2003
Created and deployed the corporate intranet site.

Web Developer, Lawrence University   06/2001-06/2003
Developed a web-based catering reservation & billing system and revised the public-facing web site.

Consultant, Vico Products Mfg. Co., Inc.   06/1996-01/2001
Developed plastic manufacturing cost-analysis software, spreadsheets, and a web site.

SKILLS

Programming:	C, C++, Java, JavaScript, Python, R, S+
Usability:	Card sorting, Cognitive walkthrough, Heuristic evaluation, Paper prototyping, Think-aloud protocol

SERVICE ACTIVITIES

Conferences & Workshops

Co-chair:	*Psychology of Programming Interest Group* (PPIG 2010)	2010
More details at:	http://www.ppig2010.org/	

Program Committee:	*1st Workshop on Defects in Large Software Systems* (DEFECTS 2008)	2008
More details at:	http://pages.cpsc.ucalgary.ca/~zimmerth/defects-2008/	

Reviewer:	*ACM Conference on Human Factors in Computing Systems* (CHI)	2008-2011

Undergraduate Mentoring at Oregon State University

Kyle Rector (Information Foraging)	2007-2008
Andrew Stucky (Co-reasoning project)	2007
Nick Schultz (Co-reasoning project)	2007
Mizuki Kagaya (Tsunami search)	2004

Volunteering

BCOS Program review committee	2010-Present
BCOS Software Capital Planning	2011
Center for Teaching and Learning Tutor	2010-Present
APIUsability.org maintainer	2009-Present
Student volunteer: *ACM Conference on Human Factors in Computing Systems (CHI)*	2008
Lawrence University Web Steering Committee	2002-2003
Lawrence University Chemistry Show	2001-2003

Memberships

Association for Computing Machinery (ACM)	2008
Upsilon Pi Epsilon (Computer Science honor society)	2006
Psi Chi (Psychology honor society)	2002

REFERENCES

Margaret Burnett (Advisor)
Professor
School of Electrical Engineering and Computer Science (EECS)
Oregon State University
1148 Kelley Engineering Center
Corvallis, OR 97331
1-541-737-2539
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Rob Miller
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