

CURRICULUM VITAE

JAMES A. JONES

GENERAL INFORMATION

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RESEARCH INTERESTS

The overall goal of my research is to provide practical, automatic tools that can improve the effectiveness and efficiency of software development and maintenance. In particular, my research to date has employed research areas of program-analysis-based software engineering, testing, machine learning, and information visualization to aid in the process of *fault localization*—finding the faults that cause failures in programs.

EDUCATION

- Ph.D. Program in Computer Science, August 2000–April 2008
Georgia Institute of Technology, Atlanta, GA, USA
- B.S., Computer Science, Summa Cum Laude, December 1996
Ohio State University, Columbus, OH, USA

PROFESSIONAL EXPERIENCE

- Assistant Professor, Donald Bren School of Informatics and Computer Sciences, Department of Informatics, Irvine, CA, USA. 2008-present.
- Graduate Research Assistant, College of Computing, Georgia Institute of Technology, Atlanta, GA, USA. 2000-2007.
- Research Scientist, College of Computing, Georgia Institute of Technology, Atlanta, GA, USA. January-August 2000.
- Systems Engineer/Developer, Computer and Information Sciences, Ohio State University, Columbus, OH, USA. 1996-2000.
- Software Developer Intern, Unisys Corporation, Paoli, PA, USA. January-September 1995.

JOURNAL PUBLICATIONS

- J. A. Jones, A. Orso, and M. J. Harrold. Gammatella: Visualizing Program-Execution Data for Deployed Software. *Palgrave Macmillan Information Visualization*, Volume 3, Number 3, August 2004, pages 173-188.
- J. A. Jones and M. J. Harrold. Test-Suite Reduction and Prioritization for Modified Condition/Decision Coverage. *IEEE Transactions on Software Engineering*, Volume 29, Number 3, March 2003, pages 195-209.
- M. J. Harrold, J. A. Jones, and G. Rothermel. Empirical Studies of Program Dependence Graph Size for C Programs. *Empirical Software Engineering Journal*, Vol 3., March 1998, pages 203-211.

REFEREED CONFERENCE PUBLICATIONS

- H. Hsu, J. A. Jones, A. Orso. Rapid: Identifying Bug Signatures to Support Debugging Activities. Short paper. *Proceedings of the International Conference on Automated Software Engineering*, LAquila, Italy, September 2008, to appear.
- Y. Yu, J. A. Jones, M. J. Harrold. An Empirical Study of the Effects of Test-Suite Reduction on Fault Localization. *Proceedings of the 30th International Conference on Software Engineering*, Leipzig, Germany, May 2008, 201-210.
- J. A. Jones, J. F. Bowring, and M. J. Harrold. Debugging in Parallel. *Proceedings of the International Symposium on Software Testing and Analysis*, London, United Kingdom, July 2007, pages 16-26.
- J. A. Jones, M. J. Harrold. Empirical Evaluation of the Tarantula Automatic Fault-Localization Technique. *Proceedings of the 20th IEEE/ACM International Conference on Automated Software Engineering*, Long Beach, California, USA, November 2005, pages 273-282.
- A. Orso, J. A. Jones, M. J. Harrold. Visualization of Program-Execution Data for Deployed Software. *Proceedings of the ACM Symposium on Software Visualization*, San Diego, California, USA, June 2003, pages 67-76. (This paper was presented with an ACM SIGSOFT Distinguished Paper Award.)
- J. A. Jones, M. J. Harrold, J. Stasko. Visualization of Test Information to Assist Fault Localization. *Proceedings of the 24th International Conference on Software Engineering*, Orlando, Florida, USA, May 2002, pages 467-477.
- J. A. Jones and M. J. Harrold. Test-Suite Reduction and Prioritization for Modified Condition/Decision Coverage. *Proceedings of the International Conference on Software Maintenance*, Florence, Italy, November 2001, pages 92-101.
- J. Eagan, M. J. Harrold, J. A. Jones, and J. Stasko. Technical Note: Visually Encoding Program Test Information to Find Faults in Software. *Proceedings of IEEE Information Visualization 2001*, San Diego, CA, USA, October 2001, pages 33-36.

- M. J. Harrold, J. A. Jones, T. Li, D. Liang, A. Orso, M. Pennings, S. Sinha, S. Spoon, and A. Gujarathi. Regression Test Selection for Java Software. Proceedings of the ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2001), Tampa Bay, Florida, USA, October 2001, pages 312-326.

JOURNAL ARTICLES IN PREPARATION

J. A. Jones, M. J. Harrold. Automatic Software Failure Triage. Clustering Techniques for the Independent Localization of Multiple Faults.

OTHER PUBLICATIONS

- J. A. Jones. Semi-Automatic Fault Localization. Dissertation, Georgia Institute of Technology. April 2008.
- J. A. Jones. Visualization of Test Information to Assist Fault Localization. Doctoral Symposium, International Conference on Software Engineering, May 2004.
- J. A. Jones, M. J. Harrold, and J. Stasko. Visualization for Fault Localization. Proceedings of the Workshop on Software Visualization, 23rd International Conference on Software Engineering, Toronto, Ontario, Canada, May 2001.

GRANT PROPOSAL PREPARATION EXPERIENCE

I contributed significantly in the writing and preparation of these proposals:

- Automatic Fault Localization Using Statistics and Visualization: An Empirical Research Program. National Science Foundation (Division of Computer and Communication Foundations, CCF). \$403,430. April 2006–March 2007. Funded.
- Finding Faults Using Runtime Information and Visualization. IBM Eclipse Innovation Award. \$30,000. January 2003. Funded.

INVITED TALKS

Plenary talk at Tata Consultancy Services (TCS) Architects Conference, “Improved Debugging Using Fault-Localization Techniques,” Dallas, Texas, USA, October 14, 2006

CONFERENCE TALKS AND PRESENTATIONS

- Conference presentation at the International Conference on Software Engineering (ICSE) 2008, Leipzig, Germany
“An Empirical Study of the Effects of Test-Suite Reduction on Fault Localization.”
- Conference presentation at International Symposium on Software Testing and Analysis (ISSTA) 2007, London, England
“Debugging in Parallel.”

- Conference presentation at the International Conference on Automated Software Engineering (ASE) 2005, Long Beach, California, USA
“Empirical Evaluation of the Tarantula Automatic Fault-Localization Technique.”
- Formal demonstration and talk at the International Conference on Software Engineering (ICSE) 2004, Edinburgh, Scotland, United Kingdom
“GAMMATELLA: Visualization of Program-Execution Data for Deployed Software”
- Doctoral symposium presentation at the International Conference on Software Engineering (ICSE) 2004, Edinburgh, Scotland, United Kingdom
“Visualization of Test Information to Assist Fault Localization”
- Conference presentation at the ACM Symposium on Software Visualization (SoftVis) 2003, San Diego, California, USA
“Visualization of Program-Execution Data for Deployed Software.”
- Conference presentation at International Conference on Software Engineering (ICSE) 2002, Orlando, Florida, USA
“Visualization of Test Information to Assist Fault Localization.”
- Conference presentation at the International Conference on Software Maintenance (ICSM) 2001, Florence, Italy
“Test-Suite Reduction and Prioritization for Modified Condition/Decision Coverage.”
- Workshop presentation at the International Conference on Software Engineering (ICSE) 2001 Workshop on Software Visualization, Toronto, Ontario, Canada
“Visualization for Fault Localization.”

STUDENT SUPERVISION

As part of my Ph.D. duties, I assisted with the supervision of the following students.

- Yanbing Yu (Ph.D. current)
- Jai Kejriwal (M.S. 2006)
- Jay Lofstead (M.S. 2004)
- Manas Tungare (M.S. 2003)
- Preeti Bhat (M.S. 2003)

SERVICE

- Program Committee member for International Conference on Software Testing Student Track (ICST) 2008.
- Local Arrangements Chair for International Symposium on the Foundations of Software Engineering (FSE) 2008.

ACADEMIC AWARDS

- President's Fellowship, Georgia Institute of Technology 2000-2005
- DuPont Scholarship, Ohio State University
- Petrarcha Scholarship, Ohio State University
- Technical Education Foundation Scholarship, Ohio State University

REVIEWER

- International Conference On Software Testing, Verification And Validation (ICST) 2008
- IEEE Transactions on Software Engineering Journal (TSE) 2007
- International Symposium on Software Testing and Analysis (ISSTA) 2007
- Automated Software Engineering Journal 2007
- IEEE Transactions on Software Engineering Journal (TSE) 2006
- International Conference on Software Engineering (ICSE) 2006
- International Symposium on Software Testing and Analysis (ISSTA) 2006
- Symposium on the Foundations of Software Engineering (FSE) 2006
- International Conference on Automated Software Engineering (ASE) 2005
- Symposium on the Foundations of Software Engineering (FSE) 2005
- Symposium on the Foundations of Software Engineering (FSE) 2004
- International Conference on Software Engineering (ICSE) 2002

SOFTWARE DEVELOPMENT

- Gammatella – System to instrument, collect, gather, and visualize the usage of deployed software. Implemented in Java.
- Tarantula – Tool to aid in the localization of faults in a faulty program. Being integrated into IBM's Eclipse. Implemented in Java.
<http://www.cc.gatech.edu/~jjones/Tarantula.html>
- Java Architecture for Bytecode Analysis (JABA) – Library to perform static and dynamic program analyses on Java programs. Used as foundation for most research by our research group. Implemented in Java.
<http://www.cc.gatech.edu/aristotle/jaba.php>
- MC/DC Minimizer and Prioritizer – Toolset to provide test suite reduction and prioritization for critical software using modified condition/decision coverage. Implemented in C++.

- Aristotle – Tool to provide program analyses for C programs. Implemented in C and C++.
<http://www.cc.gatech.edu/aristotle/aas.php>
- DejaVOO – Tool to select test cases that must be rerun following a change to a Java program.
Implemented in Java.

PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery (ACM) (also SIGSOFT).

REFERENCES

- **Dr. Mary Jean Harrold**, advisor
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