Thomas J. Ostrand

Research Associate at Mälardalen University, Västerås, Sweden

Email1: tom.ostrand@mdh.se *Email2*: tostrand@gmail.com
Phone: +1-732-549-8118 *Mobile:* +1-732-429-5851

Research Priorities: Raising the effectiveness and productivity of software testing through application-oriented research. Design and implementation of effective test strategies and test plans for functionality, performance, stability, security, and regression testing. Creation of innovative, productivity-enhancing test tools. Analysis and validation of system and functional requirements.

KEY ACCOMPLISHMENTS:

- Created fault prediction models based on analysis of change and fault data for large AT&T software systems. Designed and implemented DEPICT fault prediction tool, a GUI-based application that provides SW developers accurate predictions of files most likely to contain bugs in future releases (multiple publications and presentations, 2002-2011). U.S. patent granted in April 2012.
- Participated in design and implementation of a tool to measure control-flow and data-flow based test coverage, and carried out an early experiment to compare effectiveness of different coverage metrics (Hutchins, Foster, Goradia and Ostrand, ICSE 1994). The subject programs created for that experiment became known as the *Siemens suite*, and have been a benchmark subject of testing research by many people for over 20 years.
- Created the Category-Partition test design and specification method, one of the first formally defined approaches to systematic and thorough test specification (Ostrand and Balcer, CACM 1988). The approach was first implemented at Siemens Research, and a production version is now used by software testing teams throughout Siemens Corp.
- As Program Chair for *Predictive Models in Software Engineering* (PROMISE) 2007,08,09, played a key role in elevating PROMISE from a local workshop to an internationally recognized professional conference.

EDUCATION

PhD and MSE in Computer and Information Sciences, University of Pennsylvania, U.S.A.
SB in Mathematics, Massachusetts Institute of Technology, U.S.A.

PROFESSIONAL EXPERIENCE

- 2015–present, Research Associate, Mälardalen University, Västerås, Sweden
- 2012–2017, Visiting Scholar, Center for Discrete Mathematics and Computer Science, Rutgers University, New Brunswick, NJ, U.S.A.
- 1998–2012, Principal Member of Technical Staff, AT&T Labs Research, Florham Park, NJ
- 1983–1998, Senior Researcher and Software Testing Group Manager, Siemens Corporate Research, Princeton, NJ
- 1978-83, Sperry Univac Software Research Group, Blue Bell, PA
- 1971-1978, Assistant Professor, Rutgers University Computer Science Department, New Brunswick, NJ

PROFESSIONAL ACTIVITIES

- Program Committee Chair, PROMISE 2007,08,09 (Conference on Predictive Models in Software Engineering).
- Program Committee Chair, ISSTA 1994 (ACM Int. Symposium on Software Testing and Analysis).
- Steering Committees, PROMISE 2007,08,09,10 and ISSTA 1994-2006.

- Program Committees: ISSTA, PROMISE, Conference on Mining Software Repositories, Workshop on Defects in Large Software Systems, Symposium on Empirical Software Engineering and Measurement, Int. Conference on Software Testing, Workshop on Software & Performance, Conference on Software Engineering and Advanced Applications.
- Member-at-large, ACM SIGSOFT Executive Committee 1993-97.
- Editorial Board of *J. Empirical Software Engineering*, *IEEE Trans. on Software Engineering*.
- Reviewer for: IEEE TSE, IEEE Computer, IEEE Software, ACM TOSEM, Empirical Software Engineering, Information and Software Technology.

Invited Lectures and Keynotes

- Lectures at Advanced School on Software Testing, Federal University of the Amazon, Manaus, Brazil, August 2014.
- Reflections and Perspectives on Predictive Modeling in Industry. Keynote address, Crest Open Workshop, University College London, October 2011.
- Predicting Where Bugs Are: A Statistical Model and Tool. Lectures at Int. Summer School on Software Engineering, University of Salerno, July 2010.
- Fault Prediction for Large Software Systems. Lectures at LASER Summer School on Software Engineering, September 2009.
- Software Testing: Principles, Practices, and Problems. Lectures at Int. Summer School for Software Engineering, Lipari, University of Catania, July 2002.

PATENT

- Tool For Predicting Fault-Prone Software Files, U.S. Patent Number 8151146, April 3, 2012

PUBLICATIONS Over 70 publications in peer-reviewed journals and refereed conferences.

Highly Cited and Award PUBLICATIONS

- Experience Report: Automated system level regression test prioritization using multiple factors. Best paper award, *Proc. 27th Int. Symp. on Software Reliability Engineering (ISSRE 2016)*, Ottawa, Canada, October 2016, with P. Strandberg, D. Sundmark, W. Afzal and E. Weyuker.

- The Category-Partition Method for Specifying and Generating Functional Tests. *Comm. ACM*, June 1988, with M.J. Balcer, 1003 Google Scholar citations.

- Experiments on the Effectiveness of Dataflow and Controlflow-Based Test Adequacy Criteria. *Proc. IEEE/ACM Int. Conference on Software Engineering*, May 1994, with M. Hutchins, H. Foster, T. Goradia, 969 Google Scholar citations.

- Predicting the Location and Number of Faults in Large Software Systems *IEEE Trans. on Software Engineering*, Vol 31, No 4, April 2005, with E. Weyuker and R. Bell, 619 Google Scholar citations.

- The Distribution of Faults in a Large Industrial Software System. *Proc. ACM/Int. Symposium on Software Testing and Analysis (ISSTA2002)*, Rome, Italy, July 2002, pp. 55-64, with E. Weyuker, 309 Google Scholar citations.