

Co-Director, Center for Advanced Computers and Communications, NC State University
January 2008 to 2010

Director, Center for Open Software Engineering, North Carolina State University
June 2007 to Present

Area Technical Director, Secure Open Systems Initiative, North Carolina State University, May 2008 to present

Director, Laboratory of Collaborative System Development, North Carolina State University
Fall 2002 to Present

- Students Graduated (PhD)
 - Michael Gegick (2009)
Using Automated Static Analyzer Alerts to Predict Vulnerability- and Attack-prone Components
 - Sarah Smith Heckman (2009, North Carolina State University)
Adaptive Model for Prioritizing Code-based Static Analysis Alerts
 - Chih-wei Ho (2008, EMC)
Performance Requirements Improvement with an Evolutionary Model
 - Lucas Layman (2008, Fraunhofer Institute)
Information Needs of Developers for Program Comprehension during Software Maintenance Tasks
 - Andrew Meneely (2011, Rochester Institute of Technology)
Investigating the Relationship between Developer Collaboration and Software Security
 - Nachiappan Nagappan, (2005, Microsoft Research)
Software Testing and Reliability Early Warning (STREW) Metric Suite
 - Mark Sherriff (2007, University of Virginia)
Analyzing Software Artifacts through Singular Value Decomposition to Guide Development Decisions
 - Yonghee Shin (2010, DePaul University)
Exploring Complexity Metrics as Indicators of Software Vulnerabilities
 - Hema Srikanth (2005, IBM)
Value-Driven System Level Test Case Prioritization
 - Jiang Zheng (2007, ABB Corporate Research)
In Regression Testing Without Code
- Students Graduated (MS)
 - Prashant Baheti, (2003, Google)
Evaluating a Software Engineering Knowledge Base
 - Michael Gegick (2003, NCSU PhD student)
Analyzing Security Attacks to Generate Signatures from Vulnerable Architectural Patterns
 - Bobby George, MS (2002, Microsoft)
Analysis and Quantification of Test Driven Development Approach
 - Lauren Hayward (2009, IBM)
Students' Perception of Distributed Pair Programming in an Upper-Level Undergraduate Software Engineering Course
 - Neha Katira, (2004, Accenture)
Pair Programming Compatibility
 - David Palmieri (2002, IBM)
Knowledge Management Through Pair Programming
 - Vinay Ramachandran (2002, HP Enterprise Services)
An Extreme Programming (XP) Process Analysis and Project Management Tool
 - Anuja Shukla (2002, Microsoft)
Pair Programming and the Factors Affecting Brooks' Law.

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- Harmanpreet Singh (2002, founder Sikhya Solutions)
Developing and eLearning Model for an Industrial Enterprise
 - Raza Abbas Syed (2011, SAS)
Investigating Intermittent Software Failures
 - Stephen Thomas (2007, IBM)
Using Automated Fix Generation to Mitigate SQL Injection Vulnerabilities
 - Dylan Wilson (2003, Becton Dickinson)
An Empirical Study of the Tacit Knowledge Management Potential of Pair Programming
 - Kai Yang, (2002)
Pair Learning in Undergraduate Computer Science Education
- Current Thesis/Dissertation Advising
 - Andrew Austin (MS)
 - Patrick Francis (PhD)
 - Eric Helms (PhD)
 - Andy Meneely (PhD)
 - Jason King (PhD)
 - David Moye (PhD)
 - John Slankas (PhD)
 - Ben Smith (PhD)
 - Will Snipes (MS)
- Sponsored Research (\$4.3M; \$4.3 as lead PI, indicated by * after title)
 - *On Educational Materials for Secure and Privacy-Preserving Development of Healthcare IT Electronic Health Record Applications* *
IBM (\$10,000)
January 2011 – December 2011
 - *Planning Poker and Automated Acceptance Testing Support for Jazz**
IBM (\$20,000)
August 2010 – August 2011
 - *IBM PhD Fellowship for Ben Smith**
IBM (\$25,000)
August 2010 – August 2011
 - *Use of Affordable Open Source Systems by Rural/Small-Practice Health Professionals**
Agency for Healthcare Research and Quality (\$298,712)
September 2009-September 2011
 - *Defect Observability**
ABB (\$170,234)
August 2009 – May 2012
 - *On the Use of Software Metrics as a Predictor of Software Security Problems**
Army Research Office (\$117,413)
July 2008 – December 2009
 - *Open Source Health Care and the Virtual Computing Laboratory*
IBM (\$20,000)
September 2009 – August 2010
 - *On Agility in Software Reliability and Software Security Engineering**
Center for Advanced Computing and Communications (\$40,000)
July 2008 – July 2009
 - *Supporting Pair Programming and Virtualization of the Jazz Development Environment**
IBM (\$25,000)
with Michael Devetsikiotis
January 2008 – December 2008
 - *On the Use of Security Metrics to Predict Vulnerability- and Attack-Prone Software Components**
Center for Advanced Computing and Communications (\$99,908)
January 2008 – December 2008

- *On the Use of Security Metrics to Identify and Rank the Risk of Vulnerability- and Exploit-Prone Components**
National Science Foundation (\$193,563)
August 2007 – August 2009
- *IBM PhD Fellowship for Sarah Smith Heckman*
IBM (\$72,000)
August 2006 – August 2009
- *Hot Spot Identification and Test-Driven Development**
Nortel (\$45,982)
August 2006 – December 2007
- *Software Testing Curricular Materials Development*
IBM
July 2006 – June 2007 (\$27,000)
- *On Expediting Software Engineering AWAREness of Anomalous Code**
with Tao Xie
Center for Advanced Computing and Communications (\$40,000)
July 2006 – June 2007
- *The STARS Alliance: A Southeastern Partnership for Diverse Participation in Computing**
National Science Foundation (\$491,711)
January 2006 – January 2011
- *Academy for Software Engineering Educators and Trainers **
National Science Foundation (\$10,000)
Sept. 2005 – Sept. 2006
- *Using Validation and Verification Certificates to Estimate Software Defect Density**
National Science Foundation (\$150,000)
May 2005 – August 2006
- *Continuous Checking of Static Analysis and Automated Unit Tests for Java Programs**
with Jun Xu
Center for Advanced Computing and Communications (\$40,000)
July 2005 – June 2006
- *Supporting Evidence-Based Software Engineering**
Center for Advanced Computing and Communications (\$40,000)
July 2005 – June 2006
- *In Regression Testing without Code**
ABB, Inc. (\$115,067)
January 2005 – May 2007
- *Test Case Prioritization**
with Annie Anton
ABB, Inc. (\$14,500)
September 2004 – December 2004
- *Incorporating Automated Inspection into the Emerald Decision Support System**
with Mladen Vouk
Nortel Networks (\$15,354)
May 15, 2004 – December 31, 2004
- *On the Identification of Agile and Plan-Driven Best Practices**
with Carla Savage and Jason Osborne
Center for Advanced Computing and Communications (\$40,000)
July 2004 – June 2005
- *CAREER: The Test-Driven Development of Secure and Reliable Software Applications**
National Science Foundation (\$400,000)
Duration: April 2004 – February 2009
- *Establishing an OpenSeminar for Eclipse-based Software Engineering Education*
with Michael Rappa
IBM Eclipse Innovation Award (\$21,000)
Duration: January 2004 – December 2004
- *Distributed Extreme Programming with Eclipse*

- with Ed Gehringer
 IBM Eclipse Innovation Award (\$20,000)
 Duration: January 2004 – December 2004
- *On Assessing Transitions to Extreme Programming**
 Tekelec, Inc. (\$35,735)
 January 2004 – August 2004
 - *Serviceability Enhancements: Comprehensive or Needs Based?**
 IBM University Partnership Award (\$40,000)
 November 2003 – November 2004
 - *Agile Software Dependability**
 with Mladen Vouk
 Nortel (\$21,265)
 September 2003-May 2004
 - *Mapping CMMI to ISO Standard 12207-15504*
 with Annie Antón
 ABB, Inc. (\$25,000)
 September 2003-May 2004
 - *Extending Extreme Programming**
 with Mladen Vouk
 Center for Advanced Computing and Communication (\$47,893)
 July 2003-May 2004
 - *Collaboration through Agile Software Development Practices: A Means for Improvement in Quality and Retention of the IT Workforce**
 with Mladen Vouk, Sarah Berenson, Winser Alexander, Virginia Knight, Barrett Koster, Sung Yoon, Jason Osborne
 National Science Foundation (\$812,587)
 August 2003-August, 2006
 - *Agile Quality Assurance: Agile Practices or Best Practices?**
 with Mladen Vouk
 Center for Advanced Computing and Communication (\$42,894)
 July 1, 2003-June 30, 2004
 - *Good Enough Reliability Tool**
 with Mladen Vouk
 IBM Eclipse Innovation Award (\$28,000)
 January 1, 2003-December 31, 2003
 - *A Metrics Suite for a Software Engineering Knowledge Management System**
 with Annie Antón
 ABB, Inc. (\$25,000)
 August 15, 2002 – May 15, 2003
 - *Assessing Agile Requirements Practices**
 with Annie Antón
 Center for Advanced Computing and Communications(\$43,419)
 July 2002 – June 2003
 - *An Investigation of Learning Content Objects in the Industrial Learning Context**
 with Annie Antón
 ABB, Inc. (\$20,000)
 August 2001 – May 2002
 - *Analyzing Emerging Software Development Methodologies and Practices**
 with Annie Antón
 Center for Advanced Computing and Communication Core Project (\$47,000)
 July 2001 – June 2002
 - *Pair-Learning in Undergraduate Computer Science Education**
 National Science Foundation (\$227,110)
 January 2001 – December 2003
 - *Incorporating the Collaborative Software Process^{SM*}*
 Eyecast, Inc. (\$108,107)
 September 2000 – August 2001

- *Integrating Collaborative Programming into a Disciplined Software Process**
Nortel, (\$65,000)
November 2000 – November 2001
- Gifts
 - Student Lab for Agile Software Development
\$20,000 from the Agile Alliance

**Graduate Student, University of Utah, Salt Lake City, UT
Fall 1996 – Spring 2000**

- Development and validation of the Collaborative Software ProcessSM (CSPSM). CSP is a defined and disciplined process for two programmers to work collaboratively on one software artifact. Empirical research results have shown that pairs of programmers using the CSP produce higher quality products faster than individual programmers using a similar process, the Personal Software Process (PSP) developed by Watts Humphrey at the Software Engineering Institute (SEI).
- Sponsored Research
 - *Incorporating Software Engineering in the Undergraduate Computer Science Curriculum*
University of Utah Teaching Assistantship Grant (\$10,850)
August 1997 – May 1998

TEACHING EXPERIENCE

Professor, North Carolina State University, Raleigh, NC

Fall 2011 to Present

- Software Security (Fall 2011)
- Software Engineering (Fall 2011)

Associate Professor, North Carolina State University, Raleigh, NC

Fall 2006 to Summer 2011

- Analytics Practicum (Spring 2008)
- Software Security (Fall 2009, Fall 2010)
- Software Testing and Reliability (Fall 2006, Fall 2007)
- Software Engineering (Fall 2006, Fall 2007, Fall 2008, Fall 2009)

Assistant Professor, North Carolina State University, Raleigh, NC

Fall 2000 to Summer 2006

- Software Testing and Reliability (Fall 2002, Fall 2004, Fall 2005)
- eCommerce Practicum (Spring 2003, Fall 2003)
- Software Engineering (Spring 2001, Fall 2001, Fall 2002, Fall 2003, Fall 2004, Fall 2005)
- Software Process and Risk Management (Spring 2003)
- Launching the Digital Enterprise (Fall 2000, Fall 2001)

Graduate Student, University of Utah, Salt Lake City, UT

Fall 1996 – Spring 2000

- Senior Software Engineering (Instructor, Fall 1999)
- The Collaborative Development of Active Server Pages (Instructor, Summer 1999)
- Software Engineering (Teaching Assistant, Fall 1998)
- Defect Prevention Software Engineering (Instructor, Fall 1997)
- CS/1 and CS/2 (Teaching Assistant and Special Lecturer, Fall 1996-Spring 1997)

PROFESSIONAL EXPERIENCE

Independent Consultant, Cary, NC

2007 to present, Consultant services include industrial training, seminars, and coaching in software reliability engineering, agile software development, and software security to Fortune 500 organizations; and expert witness services.

IBM Corporation, Research Triangle Park, NC

1993, **Project Manager**. Responsible for managing the technical activities involved in producing two operating systems software products for the retail industry. Implemented a development process in compliance with ISO 9001 requirements.

1990-1992, **Software Test Manager**. Responsible for personnel and technical management for the testing of operating systems and applications software product for the retail industry. Initiated a focused effort on development unit test involving a widespread education program, which resulted in increased product quality.

1989, **Assistant to Lab Director**. Assistant to lab director of Store Systems hardware and software development lab. During this time, the lab director exceeded every business, financial, and employee morale objective.

1987-1988, **Production Control Manager**. Responsible for personnel and technical management for the ordering and delivery of production parts to a mid-range computer manufacturing line. Successfully delivered manufacturing parts, which resulted in a flawless, on-time customer shipment record.

1986, **Production Control Planner**. Responsible for managing the inventory level and parts turnover of production parts for communication controllers. Coordinated first successful just-in-time delivery at Research Triangle Park of major manufacturing component in a build-to-customer-order environment.

1984-1985, **Cost Engineer**. Responsible for management of manufacturing costs for approximately ten communication products. Coordinated the introduction of a new financial system into the cost management process.

PROFESSIONAL ACTIVITIES:

- Editorial Board
 - Empirical Software Engineering (2006-present)
 - IEEE Transactions on Software Engineering (2011-present)
- Steering Committee Member
 - IEEE Conference on Software Engineering Education and Training (CSEET) (2005-2010)
 - IEEE Symposium on Empirical Software Engineering and Measurement (ESEM) (2008-2012)
- Guest Editor:
 - *Empirical Software Engineering Journal*, best papers from ISSRE 2008, TBD 2009
 - *IEEE Computer* Special Issue on Agile Software Development, June 2003 with Alistair Cockburn (Humans and Technology)
 - *IEEE Software* Special Issue on Extreme Programming, May/June 2003
 - *Computer Science Education* Journal Special Issue on Agile Software Development, September 2002 with James Tomayko (Carnegie Mellon)
- General Chair:
 - IEEE Empirical Software Engineering and Measurement (ESEM) 2009, Lake Buena Vista, FL
 - IEEE Conference on Software Engineering Education and Training (2008), Charleston, SC
- Program Co-Chair and Co-Founder:
 - XP Universe/Agile Universe, Chicago, IL, August 2002

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- XP Universe: Conference on Flexible Software Processes, Raleigh, NC, July 2001
- Program Chair:
 - Agile 2011, Salt Lake City, UT
 - International Workshop on Security Measurement and Metrics (MetriSec) 2011, Balzano-Bozen, Italy.
 - IEEE International Symposium on Software Reliability Engineering (ISSRE) 2008, Redmond, WA
 - IBM Academy of Technology Agile Methods and Practices Conference, San Jose, CA 2007; Raleigh, NC 2008
 - IEEE Conference on Software Engineering Education and Training (CSEET) 2006, Hawaii
- Program Committee:
 - ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE) 2010
 - ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE) Workshop on the Future of Software Engineering Research 2010
 - Agile 2005-10
 - Agile Alliance Academic Program, 2007-9
 - Agile Development Conference 2003, 2004
 - Asia Pacific Software Engineering Conference (APSEC) 2006
 - International Conference on Computer-based Systems 2008
 - International Conference on Empirical Software Engineering (ISESE) 2005, 2006
 - International Conference on Empirical Software Engineering and Measurement (ESEM) 2007, 2008, 2010, 2011
 - International Conference on Extreme Programming and Agile Processes in Software Engineering 2002-2009; tutorial committee 2008
 - International Conference on Software Engineering Workshop Human and Social Factors of Software Engineering (HSSE) 2005
 - International Conference on Software Engineering (ICSE) Experience Track 2007; Industry Track 2009, Research Track 2011, 2012; Education Track 2008, 2010
 - International Conference on Software Engineering and Knowledge Engineering (SEKE) 2008
 - International Conference on Software Process (ICSP) 2007, 2008
 - International Conference on Software Testing, Verification and Validation (ICST) 2008-10
 - International Symposium on Software Reliability Engineering (ISSRE) 2005-2007, 2009-2011
 - Foundations of Software Engineering Workshop Quantitative Techniques for Software Agile Process (QTE-SWAP) ACM 2004
 - International Conference on Software Science, Technology & Engineering 2003, 2006, 2007
 - International working Conference on Mining Software Repositories (MSR) 2010, 2011
 - International Workshop on Predictor Models in Software Engineering (PROMISE) 2006-8
 - International Workshop on Realizing Evidence-Based Software Engineering (REBSE) 2007, 2008
 - International Workshop on Security Testing 2008
 - Mutation 2009
 - Research-in-progress Workshop on Agile Software Engineering (RWASE '07)
 - Workshop on Knowledge Management for Distributed Agile Processes: Models, Techniques, and Infrastructure (WET ICE) 2003
 - Workshop on Software Engineering in Health Care (SEHC) 2010, 2011
 - XP/Agile Universe 2003, 2004
- Research Proposal Panel or Reviewer:
 - National Science Foundation (2004, 2005, 2007, 2009, 2010, 2011)
 - Engineering and Physical Sciences Research Council, UK (2004)
 - Science Foundation, Ireland (2005)

- Steering Committee Member
 - Empirical Software Engineering and Metrics (ESEM) 2009-2012
 - IEEE Conference on Software Engineering and Training (CSEET) 2005-2010
- Doctoral Symposium:
 - Panel, ACM SIGSOFT Foundation of Software Engineering (FSE) 2011, Szeged, Hungary.
 - Panel, 12th International Conference on Product-Focused Software Development and Process Improvement (Profes) 2011, Torre Canne, Italy.
 - Chair, ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) 2004, Vancouver, November 2004
- Other:
 - Education Track Chair, International Conference on Software Engineering (ICSE) 2006, Shanghai, May 2006; 2013 San Francisco
 - Local Arrangements Chair, International Symposium on Software Reliability Engineering (ISSRE) 2005, Raleigh, NC, November 2006; ACM SIGSOFT Foundations in Software Engineering (FSE) 2012, Raleigh, NC.
 - Publicity Chair, International Symposium on Software Reliability Engineering (ISSRE) 2005, Chicago, November 2005
 - Poster Chair, ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) 2002, Seattle, WA, November 2002
 - Poster Committee, ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) 2007, Montreal, Canada, October 2007
 - Workshop Committee, ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) 2002, Seattle, WA, November 2002
 - ACM Student Research: Chair, 2003 (OOPSLA); Committee, 2011 (ICSE); Chair 2012 (ICSE)
 - Coordinator, Annual NSF Grant Principle Investigator Meeting (Information Technology Workforce), April 2006
 - Scholarship Reviewer, Grace Hopper conference, 2007, 2009, 2010
 - Student Contest on Software Engineering (SCORE) program committee in conjunction with the International Conference of Software Engineering (ICSE) 2011.
 - ACM SIGSOFT Influential Educator Award Selection Committee, 2010, 2011.
- Reviewer for:
 - ACM Transactions on Software Engineering and Methodology (2008-2010), Communications of the ACM (2004, 2006, 2008), Computer Science Education (2003, 2004), Computers and Security (2005), Empirical Software Engineering (2004, 2005), Foundations in Software Engineering (2004), IEE Proc. Software (2005), IEEE Privacy and Security (2003), IEEE Software (2001-2006, 2008-9), IEEE Technology and Society (2004, 2007), IEEE Transactions on Software Engineering (2003-2011), IET Software (2008), Information and Software Technology (2003-2005, 2008), International Journal on Engineering Education (2007), Microprocessors and Microsystems (2006), Requirements Engineering Conference (2002), and International Journal of Human Computer Studies (2005), Software Quality Journal (2008, 2009), Software Process: Improvement and Practice Journal (2008), Software Testing, Verification, and Reliability (2007).
- North Carolina State Faculty Representative, AT&T Education Alliance, 2001.

PUBLICATIONS

Note: Most of the papers below can be viewed from <http://collaboration.csc.ncsu.edu/laurie/publications.html>

REFEREED JOURNAL PUBLICATIONS

- Meneely, A., Smith, B., and Williams, L., ACM Transactions on Software Engineering, *Validating Software Metrics: A Spectrum of Philosophies*, to appear.

Updated July 2011

- Srikanth, H. and Williams, L., *Towards the Prioritization of System Test Cases*, Software Testing, Verification and Reliability, to appear.
- Meneely, A. and Williams, L., *On the Use of Issue Tracking Annotations for Improving Developer Activity Metrics*, Advances in Software Engineering, to appear.
- Heckman, S. and Williams, L., *A Systematic Literature Review of Actionable Alert Identification Techniques for Automated Static Code Analysis*, Information and Software Technology, to appear.
- Shin, Y., Meneely, A., Williams, L., Osbourne, J., *Evaluating Complexity, Code Churn, and Developer Activity Metrics as Indicators of Software Vulnerabilities*, IEEE Transactions in Software Engineering, to appear.
- Williams, L., Meneely, A., and Shipley, G., *Protection Poker: The New Software Security "Game"*, IEEE Security and Privacy, Vol. 8, Number 3, May/June 2010, pp. 14-20.
- Smith, B. and Williams, L., *On Guiding the Augmentation of an Automated Test Suite via Mutation Analysis*, Empirical Software Engineering, Volume 14, Issue 3, Page 341-369, June 2009.
- Smith, B. and Williams, L., *Should Software Testers Use Mutation Analysis to Augment a Test Suite*, invited to Journal of Software and Systems, vol. 82, no. 11, pp. 1819-1832, 2009.
- Thomas, S., Williams, L. and Xie, T., *On an Automated Solution to Mitigating SQL Injection Vulnerabilities*, Information and Software Technology, Volume 51, Issue 3, March 2009, Pages 589-598.
- Nagappan, N., E. M. Maximilien, Bhat, T., and Williams, L. *Realizing Quality Improvement Through Test Driven Development: Results and Experiences of Four Industrial Teams*, Empirical Software Engineering, Vol. 13, No. 3, pp. 289-302, June 2008.
- Layman, L., Williams, L., Slaten, K., Berenson, S., and Vouk, M., *Addressing Diverse Needs through a Balance of Agile and Plan-Driven Software Development Methodologies in the Core Software Engineering Course*, International Journal on Engineering Education, to appear.
- Johnson, M., Ho, C-w, Maximilien, M., and Williams, L., *Incorporating Performance Testing in Test-Driven Development*, IEEE Software, Vol. 24., No. 3, pp. 67-73, May/June 2007.
- Gegick, M. and Williams, L., *On the Design of Secure Software-Intensive Systems by Use of Attack Patterns*, Information and Software Technology, in press, available online 6 August 2006.
- Zheng, J., Williams, L., Snipes, W., Nagappan, N., Hudepohl, J., Vouk, M., *On the Value of Static Analysis Tools for Fault Detection*, IEEE Transactions on Software Engineering, Vol. 32, No 4, pp. 240-253, April 2006.
- Layman, L., Williams, L., Damian, D., Bures, H., *Essential Communication Practices for Extreme Programming in a Global Software Development Team*, Information and Software Technology, accepted June 20, 2005.
- George, B. and Williams, L., *A Structured Experiment of Test-Driven Development*, Information and Software Technology, Vol. 46, No. 5, pp. 337-342, April 2004.
- Berenson, S., Slaten, K., Williams, L., and Ho, Chih wei. *Voices of Women in a Software Engineering Course: Reflections on Collaboration*, ACM Journal of Educational Resources in Computing (JERIC), Vol. 4, No. 1, March 2004, Article 3.
- Erdogmus, H. and Williams, L., *A Value-Based Analysis of Pair Programming*, Engineering Economist, Vol. 48, No. 4, pp. 283-319, 2003.
- Williams, L. and Cockburn, A., *Agile Software Development: It's About Feedback and Change*, IEEE Computer, Vol. 36, No. 6, pp. 39-43, 2003.
- Williams, L. *The XP Programmer: The Few Minutes Programmer*, IEEE Software, Vol. 20, No. 3, pp. 16-20 May/June 2003.
- Williams, L., Wiebe, E., Yang, K., Ferzli, M., Miller, C., *In Support of Pair Programming in the Introductory Computer Science Course*, Computer Science Education, Vol. 12, No. 3, pp. 197-212, September 2002.
- Hislop, G., Lutz, M., Naveda, J. F., McCracken, M., Mead, N., Williams, L., *Integrating Agile Practices into Software Engineering Courses*, Computer Science Education, Vol. 12, No., 3, pp. 169-185, September 2002.
- Borstler, J. Carrington, D. Hislop, G.W. Lisack, S. Olson, K. Williams, L. *Teaching PSP: challenges and lessons learned*, IEEE Software, Vol. 19, No.5, pp. 42-48, Sept/Oct 2002.
- Williams, L., and Kessler, R., *Experimenting with Industry's "Pair-Programming" Model in the Computer Science Classroom*, Computer Science Education, Vol. 11, No. 1, pp. 7-20, March 2001.

- Williams, L., Kessler, R., Cunningham, W., and Jeffries, R., *Strengthening the Case for Pair-Programming*, IEEE Software, Vol. 17, No. 4, pp. 19-25, July/Aug 2000. **January 2009 update: IEEE Software 25th Anniversary Top Pick Paper; on the list of Most Cited IEEE Software Articles for a 25-year period.**
- Williams, L. and Kessler, R., *All I Really Need to Know about Pair Programming I Learned In Kindergarten*, Communications of the ACM, Vol. 43, No. 5, pp. 108-114, May 2000.

BOOKS/BOOK CHAPTERS

- Meneely, A., Smith, B., and Williams, L., "iTrust", in *Software and Systems Traceability*, to appear.
- Williams, L., Pair Programming, in *Making Software: What Really Works, and Why We Believe It*, O'Reilly Media, Inc., O'Reilly Media, Inc., 2011.
- Williams, L., *Agile Software Development Methodologies and Practices*, Advances in Computers, Volume 80, pp. 1-44, 2010.
- Murphy, B. and Williams, L., (eds.), *Proceedings of 19th International Symposium on Software Reliability Engineering*, IEEE Computer Society Press, 2008.
- Williams, L., "Pair Programming" in *Encyclopedia of Software Engineering*, Taylor & Francis Group, in press.
- Saiedian, H. and Williams, L., (eds.), *Proceedings of 21th Conference on Software Engineering Education and Training*, IEEE Computer Society Press, 2008.
- Berenson, S., Williams, L., and Slaten, K., "Using Pair Programming and Agile Development Methods in a University Software Course to Develop a Model of Social Interaction" in *Hacking the Firewall: A Cross-Cultural Context for Recruiting Women to IT*, Wellesley, MA: A K Peter, Ltd., to appear.
- Port, D. and Williams, L. (eds.), *Proceedings of 19th Conference on Software Engineering Education and Training*, IEEE Computer Society Press, 2006.
- Williams, L. and Vouk, M., "Agile Software Development" in *Wiley Encyclopedia of Computer Science and Engineering*, John Wiley & Sons, Inc., revision requested March 28, 2005, revision submitted June 27, 2005.
- Williams, L., *Software Engineering for Internet Applications*, in *Practical Handbook of Internet Computing*, Munindar Singh (ed), Chapman & Hall/CRC Press, invited, 2005, pp. 43-1 – 43-13.
- Williams, L. and Kessler, R., *Pair Programming Illuminated*, Addison Wesley, 2003.
- Marchesi, M., Succi, G., Wells, D. and Williams, L., eds. *Extreme Programming Perspectives*, Addison Wesley, 2003.
- Wells, D. and Williams, L. (eds). *Extreme Programming and Agile Methods - XP/Agile Universe 2002*, Springer Lecture Notes in Computer Science 2418, 2002.
- Cockburn, A. and Williams, L., *The Costs and Benefits of Pair Programming in Extreme Programming Examined*, Addison Wesley, 2001.

REFEREED CONFERENCE PUBLICATIONS

- Meneely, A., Rotella, P., and Williams, L., *Does Adding Manpower Also Affect Quality? An Empirical, Longitudinal Analysis*, ACM Foundations of Software Engineering (FSE) 2011, submitted April 3, 2011.
- Austin, A. and Williams, L., *One Technique is Not Enough: An Empirical Comparison of Vulnerability Discovery Techniques*, International Symposium on Empirical Software Engineering and Metrics (ESEM) 2011, Calgary, Canada to appear.
- Smith, B. and Williams, L., *Using SQL Hotspots in a Prioritization Heuristic for Detecting Web Application Vulnerabilities*, International Conference on Software Testing, Validation and Verification (ICST) 2011 Research Track, Berlin, Germany, pp.220-229.
- Zimmermann, T., Nagappan, N., Herzig, K., Premraj, R. and Williams, L., *An Empirical Study on the Relation between Dependency Neighborhoods and Failures*, International Conference on Software Testing, Validation and Verification (ICST) 2011 Industry Track, Berlin, Germany, pp. 347 - 356.
- Meneely, A. and Williams, L., *Socio-Technical Networks: Should We Trust Our Measurements*, International Conference on Software Engineering (ICSE) 2011, Honolulu, Hawaii, to appear.

- Meneely, A. and Williams, L., Strengthening the Empirical Analysis of the Relationship between Linus' Law and Software Security, Empirical Software Engineering and Measurement (ESEM) 2010, Bolzano-Bozen, Italy, Article 9.
- Williams, L., Rubin, K., and Cohn, M., Driving Process Improvement Via Comparative Agility Assessment, Agile 2010, Orlando, FL, pp. 3-11.
- Syed, R. A., Williams, L., Robinson, B., Does Hardware Configuration and Processor Load Impact Software Fault Observability?, International Conference on Software Testing, Verification, and Validation (ICST) 2010, Paris, France, pp.285-294.
- Zimmermann, T., Nagappan, N. and Williams, L., Searching for a Needle in a Haystack: Predicting Security Vulnerabilities for Windows Vista, International Conference on Software Testing, Verification, and Validation (ICST) 2010, Paris, France, pp.421-428.
- B. Smith, L. Williams, A. Austin, "Idea: Using System Level Testing for Revealing SQL Injection-Related Error Message Information Leaks", Lecture Notes in Computer Science, vol. 5965, Engineering Secure Software and Systems (ESSoS 2010), Pisa, Italy, pp. 192-200, 2010.
- Williams, L., Kudrjavets G., Nagappan, N., On the Effectiveness of Unit Test Automation at Microsoft, International Symposium on Software Reliability Engineering (ISSRE) 2009, Mysuru, India, pp. 81-89.
- Meneely, A. and Williams, L., Secure Open Source Collaboration: An Empirical Study of Linus' Law, ACM Conference on Computers and Communication Security (CCS) 2009, Chicago, IL, 453-462.
- Gegick, M., Rotella, P. and Williams, L., *Predicting Attack Probabilities to Prioritize Security Fortifications*, International Conference on Software Testing, Verification, and Validation (ICST) 2009, Denver, CO, pp. 181-190.
- Heckman, S. and Williams, L., *A Model Building Process for Identifying Actionable Static Analysis Alerts*, International Conference on Software Testing, Verification, and Validation (ICST) 2009, Denver, CO, pp. 161-170.
- Williams, L., Gegick, M., and Meneely, A., *Protection Poker: Structuring Software Security Risk Assessment and Knowledge Transfer*, International Symposium on Engineering Secure Software and Systems (ESSoS) 2009, Leuven, Belgium, pp. 122-134.
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- Ho, Chih-wei, Slaten, Kelli, Williams, L., Berenson, S., *Extreme Examining the Impact of Pair Programming on Female Students*, NCSU CSC Technical Report, TR-2004-20, June 17, 2004.
- Williams, L., Krebs, W., Layman, L. *Extreme Programming Evaluation Framework for Object-Oriented Languages – Version 1.4*, NCSU CSC Technical Report, TR-2004-18, June 17, 2004.
- Berenson, S., Slaten, K. M., Williams, L., *Collaboration through Agile Software Development Practices: Student Interviews and Lab Observations*, NCSU CSC Technical Report, TR-2004-12, April 26, 2004.
- Williams, L., Krebs, W., Layman, L. *Extreme Programming Evaluation Framework for Object-Oriented Languages – Version 1.3*, NCSU CSC Technical Report, TR-2004-11, April 6, 2004.
- Williams, L., Layman, L., Krebs, W., Antón, A., *Exploring the Use of a .Safe Subset. of Extreme Programming: An Industrial Case Study* NCSU CSC Technical Report, TR-2004-3, January 20, 2004
- Williams, L., Krebs, W., Layman, L. *Extreme Programming Evaluation Framework for Object-Oriented Languages – Version 1.2*, NCSU CSC Technical Report, TR-2004-1, January 5, 2004.
- Williams, L., Krebs, W., Layman, L. *Extreme Programming Evaluation Framework for Object-Oriented Languages – Version 1.1*, NCSU CSC Technical Report, TR-2003-20, October 8, 2003.
- Nagappan, N., Sherriff, M., Williams, L., *On the Feasibility of Using Operational Profiles to Determine Software Reliability in Extreme Programming*, NCSU CSC Technical Report, TR-2003-15, August 19, 2003.

- Weibe, E., Williams, L., Yang, K., Miller, C., *Computer Science Attitude Survey*, NCSU CSC Technical Report, TR-2003-1, January 10, 2003.
- Ferzli, M., Wiebe, E., Williams, L., *Paired Programming Project: Focus Groups with Teaching Assistants and Students*, NCSU CSC Technical Report, TR-2002-16, November 25, 2002.
- Baheti, P., Williams, L., Gehringer, E., Stotts, D., and Smith, J., *Distributed Pair Programming: Empirical Studies and Supporting Environments*, UNC-CH Technical Report TR02-010, March 15, 2002.
- Antón, A., Carter, R., Srikanth, H., Sureka, A., Williams, L., Yang, K., Yang, L., *Tailored CMM for a Small e-Commerce Company- Level 2: Repeatable*, NCSU CSC Technical Report, TR-2001-09, August 23, 2001.
- Antón, A., Carter, R., Earp, J. and Williams, L., *EPRAM: Evolutionary Prototyping Risk Analysis & Mitigation (e-Commerce Software Development Process Document)*, NCSU CSC Technical Report, TR-2001-08, August 20, 2001.
- Williams, Laurie, *A Collaborative Software Process* PhD Dissertation, University of Utah, 2000.

OTHER CONFERENCE INVOLVEMENT

- Agile 2010 Workshop, *Comparative Agility: How Agile You Are and How Agile is the Industry*, August 2010.
- XP/Agile Universe Workshop Empirical Evaluation of Agile Processes (Refereed), August 2002 and August 2003.
- Agile Development Conference Technical Exchange on *What We Have Learned about Agile Methods* (Refereed) with Forrest Shull (Fraunhofer Institute), June 2003.
- OOPSLA Workshop on Distributed Pair Programming (Refereed) with David Stotts (University of North Carolina – Chapel Hill), November 2002.
- XP/Agile Universe Workshop on Distributed Pair Programming (Refereed) David Stotts (University of North Carolina – Chapel Hill), August 2002.
- CSEET Workshop: *Integrating Agile Practices into Software Engineering Courses* (Refereed), with five other professors, February 2002.
- SIGCSE Tutorial: *Examining Extreme Programming (Refereed)* with Joseph Bergin (Pace University), February 2002.
- OOPSLA Workshop: *Agile Software Development Methodologies: Raising the Floor or Lowering the Ceiling* with Steven Fraser (Nortel Networks), October 2001.
- OOPSLA Tutorial: *Pair Programming: Experience the Difference* with Robert Kessler (University of Utah), October 2001.
- Conference on Software Engineering Education and Training, *Teaching PSP and TSPi in Universities* Workshop (Refereed), February 2001.
- SIGCSE *Collaboration Versus Plagiarism in CS Programming Courses* Panel (Refereed), February 2001.
- OOPSLA Panel, *Hacker or Hero: Extreme Programming Today* Panel (Refereed), October 2000.
- OOPSLA Poster Display, *The Collaborative Software Process*, November 1999.
- OOPSLA Doctoral Symposium, *The Collaborative Software Process*, November 1999, including a travel grant.
- IEEE Frontiers in Education Faculty Fellow Award, November 1999
- SIGCSE Doctoral Symposium, *The Collaborative Software Process*, March 1999.
- SIGCSE Doctoral Symposium, *Object-Oriented Meets Cleanroom Software Engineering*, March 1998.

INVITED TALKS

- *Teaching and Mentoring Students*, International Conference on Software Engineering (ICSE) 2012 New Faculty Symposium.
- **Keynote.** *International Conference on Predictive Models for Software Engineering (PROMISE)* 2011, Banff, Alberta, Canada, September 2011.

- NetApp “Women in Technology”, *After All These Years, What Does It Mean to Be Agile: An Industry and Personal Retrospective*, December 2010.
- Agile Practices East, *Pairing in Software Development*, Orlando, FL, November 2010.
- AgileTour, *After All These Years, What Does It Mean to Be Agile*, Durham, NC, October 2010.
- TechEngage, *Agile Software Development*, Raleigh, NC, July 2010.
- AHRQ Health IT Grantee and Contractor Meeting, *Discussion of the Use and Evaluation of Open Source Software*, Washington, DC, June 2010.
- Overture Networks, *Agile Software Development*, May 2010.
- Panel, Software Assurance Forum, *Lessons Learned from Evaluating Open Source Software*, McLean, VA, March 2010.
- **Keynote. Developer Days**, *Let’s Play Poker: Effort and Software Security Risk Estimation in Software Engineering*, Durham, NC, February 2010.
- Agile RTP, *Let’s Play Poker: Effort and Software Security Risk Estimation in Software Engineering*, June 2009.
- IBM, *Test Driven Development: Case Studies from the Industry*, Research Triangle Park, NC, June 2009
- Nortel, *Protection Poker*, Durham, NC, June 2009
- Nortel, *Pair Programming*, Durham, NC, May 2009
- Red Hat, *Test Driven Development*, Durham, NC, April 2009
- Nortel, *Test Driven Development*, Durham, NC, April 2009
- **Spring Seminar Series Speaker**, University of Kentucky Center for Computation Sciences, *Let’s Play Poker: Effort and Software Security Risk Estimation in Software Engineering*, Lexington, KY, March 2009.
- Triangle Information Systems Quality Association, *Agile Testing for the Whole Team*, Raleigh, NC, March 2009.
- North Carolina Chapter of the Society for Information Management (SIM), *Agile Software Development*, March 2009.
- Fraser, S. Beck, K., Cunningham, W., Crocker, R., Fowler, M., Rising, L., Williams, L., *Privacy and Security: What are you Doing to Keep the Community Safe?*, ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) Panel 2008, Nashville, TN, Companion pp 5-7.
- Microsoft, *Agile Testing for the Whole Team*, Redmond, WA, September 2008.
- IBM Agile Software Development Conference, *Combining the Best of Traditional and Test Driven Development*, Raleigh NC, June 2008.
- Mayo Clinic, *Agile Software Development*, via teleconference, April 2008.
- Nortel, *Agile Software Development*, Research Triangle Park, March 2008.
- Directors Meeting at SAS, *Agile Software Development Methods and Practices*, Cary, NC, February 2008.
- Channel Advisor, *Empirical Studies of Agile Practices*, Morrisville, NC, December 2007.
- Agile Development Practices Conference, *Empirical Studies of Agile Practices*, Orlando, FL, December 2007.
- Panelist, *Anything You Want To Ask About Software Reliability Engineering*, International Symposium on Software Reliability Engineering (ISSRE) 2007, November 2007.
- Agile RTP, *Empirical Studies of Test-driven Development*, Raleigh, NC, May 2007.
- Agile-Carolinas, *Empirical Studies of Test-driven Development*, Charlotte, NC, March 2007.
- University of Wilmington, *Pair Programming: Why, Where, When, and How To*, Wilmington, NC, March 2007.
- NetApp, *Agile Software Development*, Research Triangle Park, NC, February 2007.
- ACM Computer Science Teachers Association Computer Science and Information Technology Symposium, *Responding to Millennials’ Learning Preferences with Pair Programming*, San Diego, July 2006.
- University of California, Irvine Institute of Software Research **Distinguished Speaker**, *Industrial Case Studies of Extreme Programming Teams*, Irvine, CA, March 2006.
- Harris, Corp., *Agile/Extreme Programming*, Research Triangle Park, February 2006.

- Microsoft, *Empirical Evaluation of Agile Software Development Processes: Industrial Case Studies*, Redmond, WA, September 2005.
- **Keynote**, *Crossing the Chasm in Agile Software Engineering Education*, Agile 2005 Educator's Symposium, Denver, CO, July 2005.
- Panelist, Microsoft Faculty Summit, *How to Accomplish Successful Software Engineering Research in Universities*, Redmond, WA, July 2005.
- Fraunhofer Center – Maryland (FC-MD), *Case Study Retrospectives: Kent Beck's Extreme Programming 1 and 2*, College Park, MD, June 2005.
- Panelist, IFIP 8.6, *Agile Methods: When and why do they work*, Atlanta, GA, May 2005.
- **Keynote**, *Debunking the Geek Stereotype with Software Engineering Education*, Conference on Software Engineering Education, Ottawa, CA, April 2005.
- University of Southern California Center for Software Engineering, *Extreme Programming 2*, Los Angeles, CA, March 2005.
- RTP SPIN, Triangle XP User Group, *Extreme Programming 2: Is That What Teams Were Doing Anyway?* Raleigh, NC, February 2005.
- Old Dominion, *Agile Software Development*, February 2005.
- IBM, *XP Practices: Top Candidates for Agile/Plan-Driven Hybridization*, Raleigh, NC, November 2004.
- IBM University Day, *Open Seminar and its Application to Software Engineering Education*, Raleigh, NC, October 2004.
- CASCON (14th Annual IBM Centers for Advanced Studies Conference), *Open Seminar*, Toronto, Canada, October 2004.
- Telcordia, *Agile Software Development*, Piscataway, NY, July 2004.
- University of Southern California Center for Software Engineering, *A Tale of Two XP Teams*, Los Angeles, CA, March 2004
- IBM University Day, *"Good Enough Reliability Tool" Plug-In for Eclipse*, Research Triangle Park, NC, February 2004.
- IBM, *Extreme Programming*, NCTEC/PSI Symposium, Research Triangle Park, NC, October 2003.
- PinPoint, *A Survey of Agile Software Development*, Research Triangle Park, NC, October 2003
- Intel Agile Software Development Research Group, *Pair Programming*, September 2003.
- Tekelec, *A Survey of Agile Software Development*, Research Triangle Park, NC, September 2003.
- Sabre, *Pair Programming*, Dallas, TX, July 2003
- University of Southern California Center for Software Engineering, *Agile Practices or Best Practices?*, March 2003.
- IEEE Women in Computing, *Pair Programming*, Cary, NC, January 2003.
- Microsoft, *Agile Software Development*, Redmond, WA, November 2002.
- IBM Technical Vitality, Research Triangle Park, NC, *Agile Software Development*, October 2003.
- **Keynote**, Agile Software Development Conference, Wellington, NZ, *An Empirical Analysis of Agile Methodologies*, September 2002.
- Motorola, *Agile Software Development Panel*, Chicago, IL, August 2002.
- Ericsson, Research Triangle Park, NC, *Agile Software Development*, May 2002.
- University of North Carolina – Chapel Hill, *Pair Programming: Why Have Two Do the Work of One?*, April 2002.
- **Keynote**, ACM SIGPLAN Mid-Atlantic Student Workshop on Programming Languages and Systems (MAPLAS '02), *Pair Programming: Why Have Two Do the Work of One?*, April 2002.
- NCR, Cary, NC, *Pair Programming and Test-First Programming*, April 2002.
- National Research Center of Canada, *Pair Programming*, March 2002.
- University of Southern California Center for Software Engineering, *Extreme Programming and Pair Programming*, March 2002.

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- NASA Goddard, Software Assurance Technology Center, *Extreme Programming and other Agile Software Development Methodologies*, February 2002.
- University of Maryland, *A Survey of Agile Software Development Methodologies and Practices and Methodologies*, February 2002.
- IBM, Research Triangle Park, NC, *Agile Software Development*, September 2001
- **Keynote**, XP Universe, *Pair Programming: Why Have Two Do the Work of One?*, July 2001.
- XP Immersion VII, *Pair Programming*, June 2001.
- Rochester Institute of Technology, *Agile Software Development*, May 2001.
- NASA Langley, *Pair Programming*, May 2001.
- Research Triangle Park SPIN, *Pair Programming*, April 2001.
- North Carolina State University, Department of Electrical and Computer Engineering Seminar, *Pair Programming*, January 2001.
- SAS Institute, Cary, NC, *Pair Programming*, January 2001.
- Nortel Design Forum, RTP, NC, *Pair Programming*, December 2000.
- General Dynamics, Greensboro, NC, *Pair Programming*, November 2000.
- Allianz Insurance, Vienna, Austria, *Organizational Patterns Workshop*, November 2000.
- Blue Cross/Blue Shield, Chapel Hill, NC, *Pair Programming*, November 2000.
- Research Triangle Institute, RTP, NC, *Pair Programming and Extreme Programming*, October 2000.
- IBM Corp., Raleigh, NC, *Pair Programming*, October 2000 and November 2000.
- Advisor Technology Services, Charlotte, NC, *Pair Programming and Extreme Programming*, October 2000.
- IBM Corp., Raleigh, NC, *Pair Programming and Extreme Programming*, October 2000.
- Goto.com, Durham, NC, *Pair Programming and Extreme Programming*, September 2000.
- Duke University, Durham, NC, NSF First Year of Instruction Workshop, *Pair Programming*, July 2000.
- Salt Lake Object-Oriented Roundtable, Salt Lake City, *The Collaborative Software Process*, October 1999.
- Embry-Riddle University Computer Science Department, Daytona Beach, FL, *The Collaborative Software Process*, February 1999.