

Mark S. Sherriff

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RESEARCH AREAS

Software Engineering: Software Engineering Education, Software Reliability Engineering, Software Testing, Agile Software Development, Extreme Programming

TEACHING INTERESTS

Software Engineering, Requirements Engineering, Software Testing and Reliability, Agile Software Development, Database Management Systems, Video Game Design and Production

EDUCATION

North Carolina State University, Raleigh, NC

Doctor of Philosophy, Computer Science

August 2002 – August 2007

Advisor: Dr. Laurie Williams

Topic: Analyzing Software Artifacts through Singular Value Decomposition to Guide Development Decisions

North Carolina State University, Raleigh, NC

Master of Science, Computer Science

August 2002 – May 2004

Advisor: Dr. Laurie Williams

Topic: Estimating Software Reliability in a Haskell Programming Environment

Wake Forest University, Winston-Salem, NC

Bachelor of Science, Computer Science with Honors, Cum Laude

August 1998 – May 2002

Advisor: Dr. Jennifer Burg

Honors Topic: Unix Tutorials to Move Students from PC/Windows to Unix

TEACHING

University of Virginia, Charlottesville, VA

Assistant Professor of Computer Science, Teaching Faculty

Department of Computer Science

August 2007 – Present

Responsible for the development and teaching of Computer Science courses at the University of Virginia. Also serving on the undergraduate curriculum committee.

Courses Taught:

CS 150: Computing – From Euclid and Ada to Quantum Computing and the WWW
(1 section: Spring 2008 – 65 students)

CS 201: Software Development Methods
(8 sections: Fall 2007 – 108 students; Spring 2008 – 70 students; Fall 2008 (2 sections) – 152 students; Spring 2009 – 125 students; Summer 2009 – 13 students; Fall 2009 (2 sections) – 190 students)

CS 340: Advanced Software Development
(1 section: Spring 2009 – 90 students)

CS 462: Database Systems
(2 sections: Fall 2007 – 44 students; Fall 2008 – 54 students)

CS 4501: Special Topics – Web Information Systems Engineering
(1 section: Fall 2009 – 55 students)

All teaching evaluations available on personal website.

North Carolina State University, Raleigh, NC
Adjunct Summer Lecturer

Department of Computer Science
Summer 2003 – Summer 2006

Responsible for the development and teaching of a senior-level Computer Science class at NCSU.

CSC 440: Database Management Systems – Summer 2003, 2004, 2005, and 2006
10-Week Summer Course with average class size of 35

North Carolina State University, Raleigh, NC
Graduate Teaching Assistant

Department of Computer Science
Fall 2002 – Fall 2005

Taught several lab sections along with assisting in the development of course materials and guest lecturing. Responsible for installing and maintaining servers running SVN, Apache, JSP, and MySQL for course purposes.

Fall 2002 – Software Engineering – with Dr. Laurie Williams
Fall 2004 – Software Engineering – with Dr. Laurie Williams
Spring 2005 – Software Engineering – with Dr. Purush Iyer
Fall 2005 – Software Engineering – with Dr. Laurie Williams

North Carolina State University, Raleigh, NC
Coursework in Teaching for College

Faculty Center for Teaching and Learning
Fall 2006 – August 2007

Participant in program offered by the NCSU Faculty Center for Teaching and Learning to promote, develop, and reward excellence in teaching among NC State's graduate students. Took formal coursework in teaching methods and theory for college-level students.

RESEARCH

University of Virginia, Charlottesville, VA
Assistant Professor of Computer Science, Teaching Faculty

Department of Computer Science
August 2007 – Present

Currently performing computer science education and software engineering research.

Transfer of Pair Programming to Other Disciplines

Research has shown that the use of pair programming in industry and low-level CS courses reduces the number of faults introduced into the system. Further research has discussed how the main benefit of pair programming comes mainly out of better understanding requirements and design choices. I am investigating (along with colleagues in other fields) how the concepts we teach about pair programming in CS courses might aid students with group work in other fields. Do the ideas about driver/navigator translate to other activities? If so, does it have an effect on the quality of the work produced? How can we create the “best” pair for paired activities? How can we best evaluate those pairs?

Software Engineering Courseware for Large Courses

Solutions to aid software engineering instructors with everything from source control to team management can be hard to find and configure for a given institution. What resources should we focus on in a comprehensive software engineering course to best prepare students for industrial development? A customized OS distribution with a given set of tools could aid instructors with the deployment of a software engineering course.

Senior Thesis Advisor

Fall 2007 – Present

Currently performing computer science education research related to intro CS and software engineering courses. Advise senior-level students in independent research projects.

Fall 2009 – Spring 2010

Matt Beattie – Bluetooth Identification for Vehicles
Ryan Grigsy – Security for Emergency Announcement Systems
Joshua Joyner – Lego Mindstorm NXT Sensor Simulation
Seth Micalizzi – Mobile GPS Social Applications
Charles Plucker – Mobile Virtual Reality
Emma Rosenfeld – Teaching Time Concepts to Early Elementary Students
John Szmuski – Bluetooth Identification for Vehicles
Steven Trombetta – PairEval v2.0
Jessica Vasconcellos – Student timecard system for Newcomb Hall

Fall 2008 – Spring 2009

Jeffery Gaither – Web Software Source Control Management and Users
Michael Miller – An Analysis of Static Metrics in Open-Source Software Projects
Benjamin Plunkett – UVaCollab: Compliance with FERPA
Joshua Sennett – Compatibility of Partnered Students in Computer Science Education

Fall 2007 – Spring 2008

Eric Bradbury – A New Paradigm for Tutoring at the School of Engineering and Applied Science
Fred Dysart – PHP Based Automated Fix for SQL Injection Attacks
Maureen Maughn – Web-Based Kennel System in PHP and MySQL
Danny Shih – Integrated Querying in C# using Microsoft LINQ

North Carolina State University, Raleigh, NC

Graduate Research Assistant

Department of Computer Science

Fall 2002 – August 2007

Performed research under the advisement of Dr. Laurie Williams in the Laboratory for Collaborative System Development at NCSU. Also responsible for the administration and maintenance of three research servers and several group workstations.

Analyzing Software Artifacts through SVD to Guide Development Decisions

Dr. Laurie Williams, NCSU and Dr. Mike Lake, IBM

July 2006 – August 2007

During the software development process, development artifacts are created either intentionally by the developer, such as source code or design documents, or as a by-product of the process, such as source change records or defect tracking information. These by-product development artifacts contain valuable information about underlying structures in a system that may not normally be apparent. We have created the Software Development Artifact Analysis methodology for illuminating these underlying system structures using development artifacts with the singular value decomposition. These structures can provide valuable information regarding system evolution, impact analysis, and test case prioritization. We are currently working with partners at IBM to gather data for this research on industrial projects.

Utilizing Verification and Validation Certificates to Estimate Software Defect Density

Dr. Laurie Williams

July 2004 – August 2007

During the course of software development, developers will employ several different verification and validation (V&V) practices with their software. However, these efforts might not be recorded or maintained in an effective manner. We have built Defect Estimation with V&V Certificates on Programming (DevCOP), a software certificate management system. With DevCOP, developers can automatically track and maintain a persistent record of the V&V practices used during development via certificates. With this V&V information, developers and managers can better manage their V&V efforts within a system. Detailed information such as coverage of particular V&V techniques over the system or the amount of V&V performed on a single function can be provided.

Extending Extreme Programming

Dr. Laurie Williams and Dr. Mladen Vouk

August 2003 – July 2004

A collaborative research effort with Galois Connections, Inc, focused on estimating defect density in systems programmed in the Haskell language. An ASN.1 compiler system that was under

development by Galois was analyzed, showing that certain metrics gathered on the system could indicate its potential defect density.

Wake Forest University, Winston-Salem, NC
Research Fellowship

Department of Computer Science
May 2001 – May 2002

The goal of this project was to create Unix tutorials for undergraduate CS students to use so that they could learn the new environment quicker. A short study showed that these tutorials were effective in this manner.

REFEREED PUBLICATIONS

Sennett, J. and Sherriff, M. "Compatibility of Partnered Students in Computer Science Education." The 41st ACM Technical Symposium on Computer Science Education, Milwaukee, WI, Mar 10-13, 2010.

Dysart, F. and Sherriff, M. "Automated Fix Generator for SQL Injection Attacks." Student Paper. The 19th IEEE International Symposium on Software Reliability Engineering, Redmond/Seattle, WA, Nov 11-14, 2008.

Sherriff, M. and Williams, L. "Empirical Software Change Impact Analysis using Singular Value Decomposition." First International Conference on Software Testing, Verification, and Validation, Lillehammer, Norway, April 9-10, 2008.

Sherriff, M., Lake, J. M., and Williams, L. "Prioritization of Regression Tests using Singular Value Decomposition with Empirical Change Records." The 18th IEEE International Symposium on Software Reliability Engineering, Trollhättan, Sweden, Nov 5-9, 2007.

Sherriff, M., Heckman, S. S., Lake, J. M., and Williams, L. "Identifying Fault-Prone Files Using Static Analysis Alerts Through Singular Value Decomposition." 17th Annual International Conference of the IBM Center for Advanced Studies, Richmond Hill, Ontario, Oct 22-25, 2007.

Sherriff, M., Heckman, S. S., Lake, J. M., and Williams, L. "Using Groupings of Static Analysis Alerts to Identify Files Likely to Contain Field Failures." Short Paper. The 6th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering, Dubrovnik, Croatia, Sept 3-7, 2007.

Sherriff, M. and Williams, L. "DevCOP: A Software Certificate Management System for Eclipse." 17th Annual International Symposium on Software Reliability Engineering, Raleigh, North Carolina, Nov 6-10, 2006. pp. 375-384.

Sherriff, M. and Williams, L. "A Method for Verification and Validation Certificate Management in Eclipse." Workshop on Software Certificate Management, Long Beach, California, Nov 8, 2005. pp. 19-22

Sherriff, M. and Williams, L. "Certification of Code During Development to Provide an Estimate of Defect Density." Fast Abstract. The 16th International Symposium on Software Reliability Engineering, Chicago, Illinois, Nov 8-11, 2005. pp. 447-448.

Sherriff, M. "Using Verification and Validation Certificates to Estimate Software Defect Density." Doctoral Symposium. Symposium on the Foundations of Software Engineering, Lisbon, Portugal, Sept 6, 2005.

Sherriff, M., Nagappan, N., Williams, L., and Vouk, M. "Early Estimation of Defect Density Using an In-Process Haskell Metrics Model." The First International Workshop on Advances In Model-Based Software Testing, co-located with the International Conference on Software Engineering, St. Louis, MO, May 15-16, 2005.

Sherriff, M. and Williams, L. "Tool Support for Estimating Software Reliability in Haskell Programs." Student Paper. The 15th International Symposium on Software Reliability Engineering, St-Malo, France, Nov 2-5, 2004. pp. 61-62.

Sherriff, M., Williams, L., and Vouk, M. "Using In-Process Metrics to Predict Defect Density in Haskell Programs." Fast Abstract. The 15th International Symposium on Software Reliability Engineering, St-Malo, France, Nov 2-5, 2004. pp. 19-20.

Burg, J., and Sherriff, M. "Unix Tutorials to Move Students from PC/Windows to Unix." ED-MEDIA 2002 Conference, June 30, 2002.

INVITED PRESENTATIONS

Sherriff, M. "Encryption Chase – Assignment for CS2." Nifty Assignments Panel, SIGCSE 2010, Milwaukee, Wisconsin, March 2010.

Sherriff, M. "DevCOP – A Software Certificate Management System for Eclipse." Portland State University, Portland, OR, May 26, 2006.

Sherriff, M. "Defect Density Estimation Through Verification and Validation." The 6th Annual High Confidence Software and Systems Conference, Lithicum Heights, MD, April 17-19, 2006.

TECHNICAL REPORTS

Sherriff, M., Boehm, B. W., Williams, L., and Nagappan, N. "An Empirical Process for Building and Validating Software Engineering Parametric Models." NCSU Technical Report, TR-2005-45, October 19, 2005.

Nagappan, N., Sherriff, M., Williams, L. "On the Feasibility of Using Operational Profiles to Determine Software Reliability in Extreme Programming." NCSU Technical Report, TR-2003-15, August 19, 2003.

RESEARCH POSTERS

Sherriff, M., Williams, L., and Lake, M. "Utilizing Verification and Validation." Poster. Center for Advanced Computing and Communication and IBM University Days, 2006.

Sherriff, M. and Williams, L. "Utilizing Verification and Validation Certificates to Estimate Software Defect Density." Poster. Center for Advanced Computing and Communication and IBM University Days, 2005.

Sherriff, M. and Williams, L. "Estimating Software Reliability in a Haskell Programming Environment." Poster. International Conference on Functional Programming, Snowbird, UT, Sept. 19, 2004. Also IBM University Day, October 15, 2004.

OTHER WORK EXPERIENCE

Consulting, Charlottesville, VA

Software Engineer

Fall 2007 – Present

Developed web software for local companies and performed consulting on database systems. References and examples available on request.

IBM – Software Group, Research Triangle Park, NC

Software Engineer Co-op

Summer 2006 – Spring 2007

Performed research with the ABSM Architecture group in Tivoli on examining software development artifacts to guide test and identify emerging areas of risk.

PointDx, Inc., Winston-Salem, NC

Java Systems Engineer Intern

Summer 2002

Worked with the Java Development Team and Quality Assurance Team in verifying tests and revising and authoring new modules for the REX radiology reporting software.

Knowledge2Work, Winston-Salem, NC

Chief Programmer

Summer 2001 – Spring 2002

Responsible for designing and developing web sites for profit and non-profit customers as part of a student-run web design company. Member of Executive Board.

Wachovia Bank, Winston-Salem, NC

Systems Development Intern

Summer 2000

Worked in Systems Development in the Integrated Testing Support team. Implemented first team web site for other teams to use in dealing with ITS and revamped numerous JCL / COBOL programs.

Appalachia Service Project, Inc, Johnson City, TN

Computer Programmer

Summer 1999

Responsible for maintenance of computer systems in TN, VA, WV, KY. Designed, programmed, and implemented a system called Maple IX to handle mortgages for over 80 homes.

Wake Forest University, Winston-Salem, NC

Student Technology Advisor

Fall 1998-Spring 2002

Worked with numerous faculty members and departments over four years at Wake Forest University with integrating technology into the classroom and assisting professors with technology needs.

PROFESSIONAL/SERVICE ACTIVITIES _____

University/Department Service

- Undergraduate Curriculum Committee Member, Computer Science Department
- Undergraduate TA Hiring Coordinator
- Advisor, Student Game Developers Club
- SEAS Orientation volunteer
- CS Department outreach to middle and high school students (Piedmont Futures program, LEAD program – Summer 2009)

Undergraduate Advisor

- 2008-2009 – 28 Advisees (CS, BACS, First-Year SEAS)
- 2009-2010 – 42 Advisees (17 CS or BACS, 25 First-Year SEAS)

Organizing Committee

- Posters Chair, International Symposium on Empirical Software Engineering and Measurement, Lake Buena-Vista, FL, October 2009
- Web Chair, 19th International Symposium on Software Reliability Engineering, Redmond, WA, November 2008
- Publicity Chair, IEEE Conference on Software Engineering Education and Training, Charleston, SC, April 2008
- Webmaster, Local Arrangements, and Conference Systems Support, 17th International Symposium on Software Reliability Engineering, Raleigh, NC, November 2006

Program Committee

- IEEE International Symposium on Software Reliability Engineering, Seattle/Redmond, WA, November 2008
- IEEE International Symposium on Software Reliability Engineering (Student Papers Track), Seattle/Redmond, WA, November 2008
- IEEE Conference on Software Engineering Education and Training, Charleston, SC, April 2008
- IEEE International Symposium on Software Reliability Engineering (Student Papers Track), Trollhättan, Sweden, November 2007

Conference Booth Organizer

- NSF CCLI Showcase, SIGCSE 2008, Portland, OR (with Prof. Aaron Bloomfield)
- NSF CCLI Showcase, SIGCSE 2009, Chattanooga, TN (with Prof. Aaron Bloomfield)

Conference Volunteer

- Agile Software Development Conference, Salt Lake City, UT, June 2004
- ED-MEDIA, Denver, CO, May, 2002

Conference/Journal/Grant Peer Reviewer

- NSF Panelist
- Transactions on Software Engineering
- IEEE Computer
- The Handbook of Technology Management, John Wiley & Sons, Inc.
- International Conference on Software Engineering 2007
- Asia Pacific Software Engineering Conference
- Agile Development Conference 2006
- International Symposium on Software Reliability Engineering 2005
- International Symposium on Empirical Software Engineering 2005

- Foundations of Software Engineering 2004
- International Conference on Software Engineering 2004

Professional/Honor Memberships and Awards

- Association for Computing Machinery, Member
- IEEE Computer Society, Member
- ACM SIGSOFT, Member
- ACM SIGCSE, Member
- Outstanding Teaching Assistant Award, NCSU, Spring 2006
- Upsilon Pi Epsilon Computer Science Honor Society
- Omicron Delta Kappa Leadership Honor Society
- Eta Sigma Phi Classics Honor Society

Community Service

- Grant awarded to setup broadcast studio at Mt. Energy Elementary School in Creedmoor, NC, to teach fourth and fifth grade students about digital media.
- Grant awarded to setup broadcast studio at Jackson-Via Elementary School in Charlottesville, VA, to teach students about digital media and broadcasting.

PERSONAL _____

Born Nov. 9, 1979 in Salisbury, North Carolina. Interests include travel, cooking, racquetball, and handbell music.