

# Lucas M. Layman, Ph.D.

Department of Computer Science  
601 South College Road  
Wilmington, NC 28403  
+1 (910) 962-3672

Email: [laymanl@uncw.edu](mailto:laymanl@uncw.edu)  
Web: <http://people.uncw.edu/layman/>  
Web: <https://www.ezzoterik.com/>  
[Google Scholar](#), [GitHub](#)

## RESEARCH INTERESTS

My primary areas of interest are: 1) human factors in software development and security; 2) empiricism and analytics to support software development and security; and 3) computer science education. I believe that both human-focused and technical perspectives are essential to improving the state-of-the-art in these areas. I perform applied research with professional software developers, security engineers, and everyday users, which I believe is a critical component to validating research results. I have led research on mobile device cybercrime, empirical software development, human aspects of computer security, data mining in software development, cognitive processes of debugging, and agile software development. I am committed to computer science education, having both taught and conducted research on pedagogy, personality types, and the sociological issues surrounding women and minorities in computer science education.

## EDUCATION

*Doctor of Philosophy*, Computer Science May 2009  
North Carolina State University, Raleigh, NC  
Dissertation title: “Information Needs of Developers for Program Comprehension during Software Maintenance Tasks”

*Master of Science*, Computer Science May 2004  
North Carolina State University, Raleigh, NC

*Bachelor of Science*, Computer Science May 2002  
Loyola College, Baltimore, MD

## PROFESSIONAL EXPERIENCE

**Assistant Professor, Department of Computer Science** July 2017–Present  
*University of North Carolina Wilmington, Wilmington, NC*

### COURSES TAUGHT

- CSC 231 – Introduction to Data Structures
- CSC 242 – Computer Organization
- CSC 315 – Mobile Applications Development
- CSC 350/351 – Secure Programming/Applied Software Security
- CSC 450 – Software Engineering
- CSC 475/592 – Engineering Secure Software

### STUDENTS SUPERVISED

- Undergraduate Honors Thesis Chair, *An Investigation of Trust Loss and Repair in Human-Automation Pairings*, Adan Narvaez Munguia, completed Spring 2022.
- Undergraduate Directed Individual Study, *Cross-Platform Mobile Application Development*, James Dial, Fall 2021.

- Graduate Directed Independent Study, *Cyber Defense Research*, Ahmed Elgazar, Fall 2021.
- Master's Capstone Chair, *Imprnt: A Cross-Platform Mobile Application for Personality-Based Pet Adoption*, Kinsley Sigmund, graduated Spring 2021.
- Undergraduate Directed Individual Study, *Effect of Cognitive Task Load on Cyber Network Defense Research*, Aaron Csetter, Spring 2021.
- Undergraduate Directed Individual Study, *Introduction to macOS App Development*, Kody Deda, Spring 2021.
- Master's Thesis Chair, *An Empirical Study of Factors Impacting Cyber Security Analyst Performance in the Use of IDSeS*, William Roden, graduated Fall 2019.

## PROJECTS

- Human Factors in Cyber Defense – Empirical investigation of factors impacting performance of human-machine pairs in cyber defense.
- [Coastal Eco Explorer](#) with [Dr. Amy Taylor](#) and [Dr. Dennis Kubasko](#) – A cross-platform mobile application that combines biological education, outdoor exploration, and navigation to create an engaging park experience at Carolina Beach State Park.
- *Mild Traumatic Brain Injury Assessment Platform* with [Dr. Alex McDaniel](#) and [Dr. Lindsey Schroeder](#) – A neck-strength assessment device, protocol, and cross-platform mobile application to help predict mild traumatic brain injuries, such as concussions.
- *GeneRx* with [Dr. Crissy Dodson](#) – A responsive web application that delivers pharmacological dosing recommendations based on patient genetic information.

## SERVICE

- Computer Science Undergraduate Curriculum Committee, Committee Member, 2018–present.
- Computer Science Minor Coordinator, 2020–present.
- Task Force on Evaluating the Opportunity for a New College at UNCW, Task Force Member, Jan 2022–present.
- Academic Advisory Council, Committee Member, 2018–present.

## Senior Research Scientist

June 2009–June 2017

*Fraunhofer USA, Inc., College Park, MD*

- Co-PI on the [Pocket Security](#) project – NSF-sponsored research on psycho-social factors of smartphone use contributing to cybercrime using large scale data collection from Android smartphones. [NSF Award #1619084](#)
- Developed security requirements and verification cases for automotive embedded systems software for a US passenger vehicle provider.
- Conducted basic research on human processes for investigating malicious activity in webserver log files.
- Led development of the [InViz tool](#) to visualize network application log files in real time to support attack investigation and monitoring.
- Conducted NSF-sponsored research on software engineering decision making and lessons transfer using machine learning techniques (transfer learning), including analysis of TSP, NASA, and commercial software process and product data. [NSF Award #1302169](#)
- Conducted NASA-sponsored research on improving the utility of post-launch anomaly reporting, and extracting trends and lessons learned from anomaly databases using semi-automated data mining methods to improve software engineering and assurance efforts.
- Applied and reported software quality and productivity metrics for the NASA Space Network Ground Segment Sustainment project.
- Conducted NASA-sponsored research on software safety assessment and process improvement applied to the NASA Constellation program and Global Precipitation Measurement satellite.

- Investigated software process techniques to improve quality, productivity and customer satisfaction in systems engineering with short development lifecycles, high requirements volatility, and high criticality as part of the Department of Defense’s [Systems Engineering Research Center \(SERC\)](#).
- Studied test-driven development and debugging practices and information needs of professional programmers at Microsoft.
- Conducted independent product validation for an external customer producing database analysis software for government clients.
- Modeled dependencies in contingency base operation and planning for the U.S. Army as part of the SERC.
- Led implementation of the Fraunhofer CESE website and internal productivity tools (SharePoint, Subversion, Redmine).

### Research Associate

Jan 2009–May 2009

*National Research Council Canada, Ottawa, ON*

Investigated the feasibility, effectiveness and application of software development methods that emphasize three main traits: agility, communication and collaboration. Assisted in a systematic literature review of test-driven development articles. Also participated in the planning and initial implementation of large, in-depth empirical study on the effectiveness of test-driven development at a major international software development corporation.

### PUBLISHED SOFTWARE

- *Coastal Eco Explorer*: A guide to exploration of Carolina Beach State Park ecological sites. Available for Android and iOS. <https://uncw.edu/ed/coastalecoexplorer/>
- *GeneRx*: A decision support tool for cancer drug recommendation based on genetic markers. <https://generx.herokuapp.com/>
- *Alarm Triage*: A desktop application for assessing cyber analyst performance during divided attention tasks. <https://github.com/uncw-hfcs/alarm-triage>
- *The Cry Wolf IDS Simulator*: An environment for conducting online experiments of cybersecurity analysis tasks. <https://uncw-hfcs.github.io/ids-simulator/>
- *The Cry Wolf Dataset*: A repository of simulated IDS alerts for experimentation. <https://uncw-hfcs.github.io/ids-simulator-analysis/>

### MEDIA APPEARANCES

- “CoastLine: Blockchain, Beyond Bitcoin and Unpacked”, *WHQR Radio*, 14 June 2018.
- “Local expert weighs in on possible repeat of net neutrality”, *WWAY TV3*, 28 November 2017.
- “School system fears repeal of net neutrality”, *WECT News6*, 27 November 2017.
- “Government held hostage: Are your records safe?”, *WECT News6*, 25 October 2017.
- “Beware of scammers, fake links caused by Equifax fallout”, *WECT News6*, 26 September 2017.

## CURRENT AND PAST FUNDING

Recent competitive funding received on projects where serving as Principal Investigator or Co-PI:

Source	Topic	Period	Amount
Friends of UNCW	GazePoint Biometrics System	7/21	\$795
UNCW Office of Applied Learning	Coastal Eco Explorers: Mobile Applied Learning Experiences	7/21–6/24	\$30,000
UNCW SURCA	Telemetry for Learning Analytics in Programming-Intensive Courses	6/20–8/20	\$3,500
UNCW CAS Pilot Award	Anchoring Bias in the Identification of Cyber Attacks	5/20–6/20	\$3,500
Oncology Nursing Foundation	Refinement and Usability Testing of a Pharmacogenomics App for Dosing Guidelines for Oncology	1/20–1/22	\$25,000
UNCW Sustainability's Green Initiative Fund	Island Ecology for Educators: Coastal Eco Explorer Mobile Application Project	1/20–5/20	\$2,000
UNCW CTE	A Safe Environment for Teaching Computer Security in an Adversarial Setting	6/19–7/19	\$3,000
UNCW ETEAL	Island Ecology for Educators: Transitioning Content to Application	5/19–12/19	\$3,500
UNCW CAS	Implementing CSC 315 - Mobile Applications Development	6/18–8/18	\$3,500
UNCW Cahill	A Social Media-based early Warning System for Cyber Threats	1/18–5/18	\$3,270
UNCW ETEAL	IARPA Janus Project Verification	1/18–5/18	\$2,500
Cisco University Research Program Fund	Data Protection Policy Effectiveness Measures	12/16–11/17	\$100,000
NSF	Pocket Security – Smartphone Cybercrime in the Wild	9/16–9/18	\$309,000
US Automotive OEM	Software Reliability Metric Analysis	05/16–11/16	\$40,000
US Automotive OEM	Security Requirements Engineering for Embedded Software	09/14–01/15	\$100,000
NASA OSMA SARP	Software Anomalies: Trending, Analysis, and Lessons Learned	10/13–09/15	\$202,500
NASA OSMA SARP	A JIRA-based Hazard Tracking System	10/13–09/15	\$82,005
NSF	Transfer Learning in Software Engineering	07/13–06/17	\$482,852
NASA OSMA SARP	Improving the Utility of Anomaly Reports	10/12–09/13	\$115,117
Fraunhofer USA	InViz: Instant Visualization of Cyber Attacks	02/12–03/13	\$145,000
SERC UARC	Modeling of Contingency Bases	09/11–11/12	\$62,019
NASA OSMA SARP	NASA Software Standards Improvement - Software Safety Risk Metrics Initiative	06/09–09/12	\$988,000

## PUBLICATIONS

1. L. Layman, A. R. Taylor, D. S. Kubasko Jr., K. A. Sigmund, and A. C. Owen, “Coastal Eco Explorer: A Mobile Application for Ecology Education,” in *Proceedings of IEEE SoutheastCon 2022*, Mobile, AL, USA, 2022, pp. 391–396
2. L. Layman, A. T. McDaniel, and L. H. Schroeder, “A Portable, Bluetooth-Enabled, Isometric Neck Assessment System,” in *Proceedings of IEEE SoutheastCon 2022*, Mobile, AL, USA, 2022, pp. 348–354
3. L. Layman, Y. Song, and C. Guinn, “Toward Predicting Success and Failure in CS2 : A Mixed-Method Analysis,” in *Proceedings of the 2020 ACM Southeast Conference (ACMSE 2020)*, Tampa, FL, USA: ACM, 2020, pp. 218–225. DOI: [10.1145/3374135.3385277](https://doi.org/10.1145/3374135.3385277). [Online]. Available: <https://arxiv.org/abs/2002.11813>
4. W. Roden and L. Layman, “Cry Wolf : Toward an Experimentation Platform and Dataset for Human Factors in Cyber Security Analysis,” in *Proceedings of the 2020 ACM Southeast Conference (ACMSE 2020)*, Tampa, FL, USA: ACM, 2020, pp. 264–267. DOI: [10.1145/3374135.3385301](https://doi.org/10.1145/3374135.3385301). [Online]. Available: <https://arxiv.org/abs/2002.10530>
5. Y. Song, Y. Xiao, J. Stephens, E. Ruesch, S. Roginski, and L. Layman, “Suitability of SCS1 as a Pre-CS2 Assessment Instrument : A Comparison with Short Deliberate-practice Questions,” in *Proceedings of the 2020 ACM Southeast Conference (ACMSE 2020)*, Tampa, FL, USA, 2020, p. 2. DOI: [10.1145/3374135.3385277](https://doi.org/10.1145/3374135.3385277)
6. C. Sabottke, D. Chen, L. Layman, and T. Dumitras, “How to trick the Borg: threat models against manual and automated techniques for detecting network attacks,” *Computers & Security*, vol. 81, pp. 25–40, Mar. 2019. DOI: [10.1016/J.COSE.2018.07.022](https://doi.org/10.1016/J.COSE.2018.07.022). [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0167404818311283>
7. R. Krishna, T. Menzies, and L. Layman, “Less is More: Minimizing Code Reorganization using XTREE,” *Information and Software Technology*, vol. 88, pp. 53–66, 2017. DOI: [10.1016/j.infsof.2017.03.012](https://doi.org/10.1016/j.infsof.2017.03.012). arXiv: [1609.03614](https://arxiv.org/abs/1609.03614). [Online]. Available: <https://arxiv.org/pdf/1609.03614.pdf>
8. L. Layman, A. P. Nikora, J. Meek, and T. Menzies, “Topic Modeling of NASA Space System Problem Reports,” in *Proceedings of the 13th International Conference on Mining Software Repositories (MSR ’16)*, Austin, TX, 2016, pp. 303–314
9. T. Menzies, W. Nichols, F. Shull, and L. Layman, “Are delayed issues harder to resolve? Revisiting cost-to-fix of defects throughout the lifecycle,” *Empirical Software Engineering: An International Journal*, vol. 22, no. 4, pp. 1903–1935, 2016. DOI: [10.1007/s10664-016-9469-x](https://doi.org/10.1007/s10664-016-9469-x). [Online]. Available: <http://dx.doi.org/10.1007/s10664-016-9469-x>
10. F. Peters, T. Menzies, and L. Layman, “LACE2: Better Privacy-Preserving Data Sharing for Cross Project Defect Prediction,” in *37th International Conference on Software Engineering (ICSE ’15)*, vol. 1, Florence, Italy, 2015, pp. 801–811. DOI: [10.1109/ICSE.2015.92](https://doi.org/10.1109/ICSE.2015.92)
11. L. Layman, C. Seaman, D. Falessi, and M. Diep, “Ask the Engineers: Exploring Repertory Grids and Personal Constructs for Software Data Analysis,” in *8th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE 2015)*, Florence, Italy, 2015, pp. 81–84. DOI: [10.1109/CHASE.2015.25](https://doi.org/10.1109/CHASE.2015.25)
12. L. Layman, S. D. Diffo, and N. Zazworka, “Human Factors in Webserver Log File Analysis: A Controlled Experiment on Investigating Malicious Activity,” in *Proc. of the 2014 Symposium and Bootcamp on the Science of Security (HotSoS ’14)*, Raleigh, NC, 2014, 9:1–9:11. DOI: [10.1145/2600176.2600185](https://doi.org/10.1145/2600176.2600185)
13. L. Layman and N. Zazworka, “InViz: Instant Visualization of Cyber Attacks,” in *Proc. of the 2014 Symposium and Bootcamp on the Science of Security (HotSoS ’14)*, Raleigh, NC, 2014, article 9

14. D. Falessi and L. Layman, "Automated classification of NASA anomalies using natural language processing techniques," in *2013 IEEE International Symposium on Software Reliability Engineering Workshops (ISSREW)*, Pasadena, CA: IEEE, Nov. 2013, pp. 5–6. DOI: [10.1109/ISSREW.2013.6688849](https://doi.org/10.1109/ISSREW.2013.6688849)
15. L. Layman, V. R. Basili, and M. V. Zelkowitz, "A Methodology for Exposing Risk in Achieving Emergent System Properties," *Transactions on Software Engineering Methodology*, vol. 22, no. 3, Article 22, 2014. DOI: [10.1145/2560048](https://doi.org/10.1145/2560048)
16. T. Menzies, A. Butcher, D. Cok, A. Marcus, L. Layman, F. Shull, B. Turhan, and T. Zimmermann, "Local versus Global Lessons for Defect Prediction and Effort Estimation," English, *IEEE Transactions on Software Engineering*, vol. 39, no. 6, pp. 822–834, Jun. 2013. DOI: [10.1109/TSE.2012.83](https://doi.org/10.1109/TSE.2012.83). [Online]. Available: <http://ieeexplore.ieee.org/articleDetails.jsp?arnumber=6363444>
17. L. Layman, M. Diep, M. Nagappan, J. Singer, R. DeLine, and G. Venolia, "Debugging Revisited: Toward Understanding the Debugging Needs of Contemporary Software Developers," in *2013 ACM / IEEE International Symposium on Empirical Software Engineering and Measurement*, Baltimore, Maryland, USA: IEEE, Oct. 2013, pp. 383–392. DOI: [10.1109/ESEM.2013.43](https://doi.org/10.1109/ESEM.2013.43)
18. L. Layman and G. Sigurdsson, "Using Amazon's Mechanical Turk for User Studies: Eight Things You Need to Know," in *Proceedings of the 7th International Symposium on Empirical Software Engineering and Measurement (ESEM 2013)*, Baltimore, Maryland, USA, 2013, pp. 275–278
19. L. Layman, M. Zelkowitz, V. Basili, and A. P. Nikora, "Toward Baseline Software Anomalies in NASA Missions," in *2012 IEEE 23rd International Symposium on Software Reliability Engineering Workshops*, Dallas, Texas, USA: IEEE, Nov. 2012, pp. 13–14. DOI: [10.1109/ISSREW.2012.49](https://doi.org/10.1109/ISSREW.2012.49)
20. L. Layman, V. R. Basili, M. V. Zelkowitz, and K. L. Fisher, "A Case Study of Measuring Process Risk for Early Insights into Software Safety," in *Proceedings of the 33rd ACM/IEEE International Conference on Software Engineering (ICSE '11)*, Honolulu, HI, 2011, pp. 623–632. DOI: [10.1145/1985793.1985881](https://doi.org/10.1145/1985793.1985881)
21. V. R. Basili, M. V. Zelkowitz, L. Layman, K. Dangle, and M. Diep, "Obtaining Valid Safety Data for Software Safety Measurement and Process Improvement," in *Proceedings of the 4th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM '10)*, Bolzano, Italy, 2010, Article No. 46. DOI: [10.1145/1852786.1852846](https://doi.org/10.1145/1852786.1852846)
22. L. Layman, F. Shull, P. Compton, S. O'Brien, D. Sabados, A. Carrigy, and R. Turner, "A Methodology for Mapping System Engineering Challenges to Recommended Approaches," in *Proceedings of the 4th Annual IEEE International Systems Conference*, San Diego, CA, 2010, pp. 294–299. DOI: <http://dx.doi.org/10.1109/SYSTEMS.2010.5482336>
23. A. Begel, N. Nagappan, C. Poile, and L. Layman, "Coordination in large-scale software teams," in *2009 ICSE Workshop on Cooperative and Human Aspects on Software Engineering*, Vancouver, BC: IEEE, May 2009, pp. 1–7. DOI: [10.1109/CHASE.2009.5071401](https://doi.org/10.1109/CHASE.2009.5071401)
24. L. Layman, N. Nagappan, S. Guckenheimer, J. Beehler, and A. Begel, "Mining software effort data: A preliminary analysis of Visual Studio Team System Data," in *Proceedings of the 2008 International Working Conference on Mining software repositories - MSR '08*, New York, New York, USA: ACM Press, May 2008, pp. 43–46. DOI: [10.1145/1370750.1370762](https://doi.org/10.1145/1370750.1370762)
25. L. Layman, G. Kudrjavets, and N. Nagappan, "Iterative identification of fault-prone binaries using in-process metrics," in *Proceedings of the Second ACM-IEEE international symposium on Empirical software engineering and measurement - ESEM '08*, Kaiserslautern, Germany: ACM Press, Oct. 2008, pp. 206–212. DOI: [10.1145/1414004.1414038](https://doi.org/10.1145/1414004.1414038). [Online]. Available: <http://portal.acm.org/citation.cfm?doid=1414004.1414038>
26. L. Layman, L. Williams, K. Slaten, S. Berenson, and M. Vouk, "Addressing Diverse Needs through a Balance of Agile and Plan-driven Software Development Methodologies in the Core Software Engineering Course," *International Journal of Engineering Education*, vol. 24, no. 4, pp. 659–670, 2008

27. L. M. Layman, L. A. Williams, and R. St. Amant, "MimEc: Intelligent User Notification of Faults in the Eclipse IDE," in *1st Workshop on Cooperative and Human Aspects of Software Engineering (CHASE '08)*, Leipzig, Germany, 2008, pp. 73–76
28. L. Williams, D. S. McCrickard, L. Layman, and K. Hussein, "Eleven Guidelines for Implementing Pair Programming in the Classroom," in *Agile 2008 Conference*, IEEE, 2008, pp. 445–452. DOI: [10.1109/Agile.2008.12](https://doi.org/10.1109/Agile.2008.12)
29. L. Layman, L. Williams, and R. St. Amant, "Toward Reducing Fault Fix Time: Understanding Developer Behavior for the Design of Automated Fault Detection Tools," in *First International Symposium on Empirical Software Engineering and Measurement (ESEM 2007)*, Madrid, Spain: IEEE, Sep. 2007, pp. 176–185. DOI: [10.1109/ESEM.2007.11](https://doi.org/10.1109/ESEM.2007.11) (**Best Paper Award**)
30. L. Williams and L. Layman, "Lab Partners: If They're Good Enough for the Sciences, Why Aren't They Good Enough for Us?" In *20th Conference on Software Engineering Education and Training (CSEET'07)*, Dublin, Ireland: IEEE, Jul. 2007, pp. 72–82. DOI: [10.1109/CSEET.2007.31](https://doi.org/10.1109/CSEET.2007.31)
31. L. Williams, L. Layman, K. M. Slaten, S. B. Berenson, and C. Seaman, "On the Impact of a Collaborative Pedagogy on African American Millennial Students in Software Engineering," in *29th International Conference on Software Engineering (ICSE'07)*, IEEE, May 2007, pp. 677–687. DOI: [10.1109/ICSE.2007.58](https://doi.org/10.1109/ICSE.2007.58). [Online]. Available: <http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=4222629>
32. L. Layman, L. Williams, D. Damian, and H. Bures, "Essential Communication Practices for Extreme Programming in a Global Software Development Team," *Information and Software Technology*, vol. 48, no. 9, pp. 781–794, 2006
33. L. Layman, L. Williams, and K. Slaten, "Note to self: Make Assignments Meaningful," in *Proceedings of the 28th SIGCSE Technical Symposium on Computer Science Education*, Covington, KY: ACM, Mar. 2007, pp. 459–463. DOI: [10.1145/1227504.1227466](https://doi.org/10.1145/1227504.1227466)
34. L. Williams, L. Layman, J. Osborne, and N. Katira, "Examining the Compatibility of Student Pair Programmers," in *AGILE 2006 (AGILE'06)*, Minneapolis, MN: IEEE, 2006, pp. 411–420. DOI: [10.1109/AGILE.2006.25](https://doi.org/10.1109/AGILE.2006.25)
35. L. Layman, L. Williams, and L. Cunningham, "Motivations and Measurements in an Agile Case Study," *Journal of Systems Architecture*, vol. 52, no. 11, pp. 654–667, 2006
36. L. Layman, "Changing Students' Perceptions: An Analysis of the Supplementary Benefits of Collaborative Software Development," in *19th Conference on Software Engineering Education and Training (CSEET'06)*, IEEE, 2006, pp. 159–166. DOI: [10.1109/CSEET.2006.10](https://doi.org/10.1109/CSEET.2006.10)
37. L. Layman, T. Cornwell, and L. Williams, "Personality Types, Learning Styles, and an Agile Approach to Software Engineering Education," in *Proceedings of the 37th SIGCSE Technical Symposium on Computer Science Education*, Houston, TX, 2006, pp. 428–432
38. L. Layman, L. Williams, J. Osborne, S. Berenson, K. Slaten, M. Vouk, L. L. Williams, J. Osborne, S. Berenson, K. Slaten, and M. Vouk, "How and Why Collaborative Software Development Impacts the Software Engineering Course," in *Proceedings Frontiers in Education 35th Annual Conference*, Indianapolis, Indiana: IEEE, 2005, T4C 9–14. DOI: [10.1109/FIE.2005.1611964](https://doi.org/10.1109/FIE.2005.1611964)
39. L. Williams, L. Layman, and P. Abrahamsson, "On establishing the essential components of a technology-dependent framework," *ACM SIGSOFT Software Engineering Notes*, vol. 30, no. 4, p. 1, Jul. 2005. DOI: [10.1145/1082983.1083179](https://doi.org/10.1145/1082983.1083179)
40. K. M. Slaten, M. Droujkova, S. B. Berenson, L. Williams, and L. Layman, "Undergraduate Student Perceptions of Pair Programming and Agile Software Methodologies: Verifying a Model of Social Interaction," in *Agile Development Conference (ADC'05)*, Denver, CO: IEEE Comput. Soc, 2005, pp. 323–330. DOI: [10.1109/ADC.2005.48](https://doi.org/10.1109/ADC.2005.48)

41. L. Layman, L. Williams, and L. Cunningham, “Exploring Extreme Programming in Context: An Industrial Case Study,” in *Agile Development Conference 2004 (ADC’04)*, Salt Lake City, UT, 2004, pp. 32–41
42. L. Williams, W. Krebs, L. Layman, A. I. Anton, and P. Abrahamsson, “Toward a Framework for Evaluating Extreme Programming,” in *Proceedings of the 8th International Conference on Evaluation and Assessment in Software Engineering (EASE ’04)*, Edinburgh, Scotland: IET Digital Library, 2004, pp. 11–20. [Online]. Available: [http://digital-library.theiet.org/content/conferences/10.1049/ic%7B%5C\\_%7D20040394](http://digital-library.theiet.org/content/conferences/10.1049/ic%7B%5C_%7D20040394)
43. K. Gallagher and L. Layman, “Are decomposition slices clones?” In *Proceedings of the 11th International Workshop on Program Comprehension (IWPC ’03)*, IEEE Comput. Soc, 2003, pp. 251–256. DOI: [10.1109/WPC.2003.1199209](https://doi.org/10.1109/WPC.2003.1199209)

## PROFESSIONAL ACTIVITIES

### Organizing Committees

- Empirical Software Engineering and Measurement (ESEM): Finance Chair - 2023
- Empirical Software Engineering and Measurement (ESEM): Proceedings Chair - 2018
- International Doctoral Symposium on Empirical Software Engineering (IDoESE): Co-chair - 2016
- Symposium and Bootcamp on the Science of Security (HotSoS): Financial Chair - 2014
- Empirical Software Engineering and Measurement (ESEM): Financial Chair - 2009, 2013
- Product-Focused software Process Improvement (PROFES): Publicity Chair - 2012
- International Symposium on Software Reliability Engineering (ISSRE): Student Volunteers Chair and Registrar - 2006

### Conference and Workshop Program Committees

- Empirical Software Engineering and Measurement (ESEM) Industry Track - 2019–2020
- IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER) - 2018
- Mining Software Repositories (MSR) - 2016–2017
- Foundations of Software Engineering (FSE) Industry Track - 2016–2017
- International Conference on Software Engineering (ICSE) - 2016
- Empirical Software Engineering and Measurement (ESEM) Short Papers - 2014–2016
- Int’l Conference on Evaluation and Assessment in Software Engineering (EASE) Short Papers- 2015
- Symposium and Bootcamp on the Science of Security (HotSoS) - 2015
- Empirical Software Engineering and Measurement (ESEM) - 2015
- ACM Technical Symposium on Computer Science Education (SIGCSE) - 2007–2014
- IEEE Systems Conference - 2013–2014
- Agile (Development Conference) Research Track - 2013–2014
- Int’l Doctoral Symposium on Empirical Software Engineering (IDoESE) - 2013–2014
- Workshop on Empirical Requirements Engineering (EmpiRE) - 2012, 2014



- International Symposium on Software Reliability Engineering (ISSRE) - 2012
- Workshop on Empirical Software Engineering in Practice (IWESEP) - 2012
- Workshop on Cooperative and Human Aspects of Software Engineering (CHASE) - 2009, 2011
- Workshop on Defects in Large Software Systems (DEFECTS) - 2009
- Frontiers in Education (FIE) - 2006–2007
- OOPSLA Student Research Competition - 2005

### **Journals and Magazine Reviewer**

- ACM Transactions on Computing Education - 2020
- IEEE Transactions on Software Engineering - 2006, 2008, 2010–2012, 2014, 2016–2018
- Empirical Software Engineering - 2008–2012, 2014–2018
- Information and Software Technology - 2005, 2010–2012, 2014
- IEEE Software (magazine) - 2012
- Computer Science Education - 2010
- International Journal of Engineering Education - 2007

### **Consultant Activities**

- Fraunhofer USA, Inc. - Facilitator for Creativity Workshops. Provide business development service. Created training materials for industry clients.
- State of North Carolina District Attorney’s Office - Expert witness.
- *SAS vs. World Programming* - Amicus brief.

### **Memberships**

- Association for Computing Machinery (ACM), SIGSOFT, SIGCSE
- IEEE Computer Society

## **PROFESSIONAL RECOGNITION**

### **Awards**

- NASA Safety Center Certificate of Appreciation
- 2012 NASA Group Achievement Award - OSMA Software Assurance Research Program

### **Honor Societies**

- Phi Beta Kappa, April 2002
- Upsilon Pi Epsilon, April 2000