Nachiappan Nagappan

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SUMMARY

Nachiappan Nagappan is one of the leading researchers in the world in software engineering. He is a Partner Researcher in the Software Analysis and Intelligence (SAINTes) team at Microsoft Research, Redmond, USA. His research interests are in the field of Software Engineering focusing on Software Reliability, Developer Productivity, Software Data Analytics and Empirical Software engineering. More broadly he works on software analytics for improving software engineering practices.

His work is strongly **interdisciplinary** and his current research projects span the spectrum of software analytics ranging from developer productivity, large-scale mining for GitHub, empirical software engineering analytics for the development process, intelligent software design for games; to predicting software service outages for cloud services. As a sign of his strongly interdisciplinary work he has published at the top research venues for **SIGSOFT, SIGPLAN, SIGCHI, SIGCSE, SIGCOMM and SIGMOD**.

His work has received several awards, **four (4) test of time/most influential paper awards** for 10-year, 30-year and 50-year best papers, **four ACM SIGSOFT Distinguished paper awards**, **three IEEE Software best paper awards** and a CHI Honorable Mention. He also won the **IEEE Computer Society's 2020 Harlan D. Mills award** "For outstanding contributions to empirical software engineering and data-driven software development."

He served as Program Co-Chair for ESEM'10, ISSRE'12, the two primary conferences in his area of research. He also has served on numerous PC's of all the top conferences in his area. He is an **Associate editor of IEEE Transactions on Software Engineering (TSE) and IEEE Transactions on Reliability (ToR)**. He has had the honor of serving on two **National Academy of Science (NAS)** committees on software reliability. He received his PhD from North Carolina State University. He is a Distinguished Member of the ACM and a Fellow of the IEEE.

He has published over a 100+ papers of which 11 have won best paper awards. He has 15 patents and according to Google Scholar he has been cited over 13,200 times and a h-index of 54. He takes an active role in mentoring and advising students. His students have gone on to take positions in prestigious industrial and academic organizations including Ivy league universities.

PROFESSIONAL EXPERIENCE

Microsoft Research - Partner Researcher   (Feb 05 – Present)
Previously Researcher, Senior Researcher, Principal Researcher

Research in Software Engineering (SAINT Group)

IIIT – New Delhi – Adjunct Professor   (Oct 13 – Present)

Microsoft Research - Intern - Testing Verification and Measurement Group   (May 04 - Aug 04)

North Carolina State University
Research Assistant – Software Engineering research group   (May 02 - Feb 05)
Teaching Assistant – Department of Computer Science   (Aug 04 - Dec 04)

Coimbatore Stock Exchange (CSX)
Senior Thesis, "nETBROKER"   (Jan 01 - May 01)
Network Engineer Trainee   (Apr 99 - Jun 99)

AWARDS AND HONORS

1. Graduation speaker – Fall 2020 ceremony, Department of Computer Science, North Carolina State University, 2020.

2. IEEE Fellow. Citation: "For Contributions to Software Reliability".

3. Outstanding Alumnus, Department of Computer Science, North Carolina State University. Induction to Alumni hall of Fame., 2020.

4. **2020: IEEE Computer Society Harlan D Mills Award** to recognize researchers and practitioners who have demonstrated long-standing, sustained, and impactful contributions to software engineering practice and research through the development and application of sound theory. Award citation: For outstanding contributions to empirical software engineering and data-driven software development.

   IEEE Press release: https://www.computer.org/press-room/2020-news/2020-ieee-mills-award-nagappan

5. **Most Influential Paper (MIP)/Test of time award. 10-year, 30-year and 50-year best paper awards**.
   a. Most Influential Paper award at ICST 2020, Porto, Portugal. For "Searching for a Needle in a Haystack: Predicting Security Vulnerabilities for Windows Vista", which was published at ICST 2010.
   b. Our ISSRE 2009 paper "Putting it all together: Using socio-technical networks to predict failures" was selected to the 30 years of ISSRE - Most influential papers – 2019.
   c. Ranked #2: Top Ten Computer Science Education Research Papers of the Last 50 Years at ACM SIGCSE.
      ACM press release: https://www.acm.org/media-center/2019/march/sigcse-top-10-papers
   d. Test-of-Time award – ESEC/FSE 2019 for work on Cross-project defect prediction at ESEC/FSE 2009. The Test of Time Award is given annually recognizing highly influential papers published ten years ago in ESEC or FSE.

6. **ACM SIGSOFT Distinguished paper award – Four (4)**

a. For ASE 2020 paper on "Problems and Opportunities in Training Deep-Learning Software Systems: An Analysis of Variance".
b. For FSE 2015 paper on "How practitioners perceive the relevance of software engineering research"
c. For ICSE 2014 paper on "Cowboys, ankle sprains, and keepers of quality: how is video game development different from software development?"
d. For ICSE 2009 paper on "Does distributed development affect software quality? An empirical case study of Windows Vista"

7. **IEEE Software Best paper award – Three (3)**
   a. For ICSE 2019 paper on "Software engineering for machine learning: a case study"
   b. For ICSE 2012 paper on "Characterizing and Predicting which Bugs get Reopened"
   c. For ESEM 2011 paper on "Scrum + Engineering Practices: Experiences of Three Microsoft Teams"

8. **ACM Research Highlights: Invited paper to CACM** (Communications of the ACM) based on "Does Distributed Development Affect Software Quality? An Empirical Case Study of Windows Vista", 2009. **First Software Engineering paper invited.**

9. One of three best papers at PROMISE 2019 for our work on "Leveraging Change Intents for Characterizing and Identifying Large-Review-Effort Changes.", 2019.

10. ESEM 2018: Open Data Award for work on PR acceptance characteristics in GitHub dataset.

11. ACM Distinguished Scientist, 2015.

12. ACM SIGCHI 2013 Best Paper Honorable Mention Award for our Halo work. (top 5% of submitted papers)

13. Best Industry Paper of ICST for CRANE: Failure Prediction, Change Analysis and Test Prioritization in Practice - Experiences from Windows, (ICST 2011) Berlin, Germany, 2011.

14. Gold – Star Award. Early Career Stock Award from Microsoft in recognition of outstanding contributions to Windows.

15. Bench Program 2009. Microsoft High Potential and Fast Track Growth Program – Future leaders at Microsoft. Only 0.2% of company selected (200 out of 80,000 employees).

16. Microsoft Engineering Excellence 2008.

17. Selected Best paper at ISSRE 2008 "Profiling the Operational Behavior of OS Device Drivers" Invited to Special issue of Empirical Software Engineering journal, 2008.

18. Ship-it awards, Microsoft Corporation for: Windows 7, Microsoft Visual Studio 2008 and .net Framework 3.5. For Tech Transfer contributions that shipped commercially to millions of users.

19. Nominee, Department of Computer Science, North Carolina State University, ACM Doctoral Dissertation Award Competition 2005.

20. First place, ACM Student Research Contest, co-located with ACM SIGCSE, Norfolk, VA, for work titled "Software Reliability Estimation using Internal Code Metrics". Results: www.acm.org/src

21. University of Madras, 4th rank in B.Tech degree program, India, 1997-2001.

PATENTS

1. Nikitha Rao, Chetan Bansal, Joe Guan, Mark Wilson-Thomas, Nachiappan Nagappan, Thomas Zimmermann, "EXTRAQUERY CONTEXT-AIDED SEARCH INTENT DETECTION", provisional patent filed with the USPTO 09/25/2020

2. Chandra Maddila, Nachiappan Nagappan, Christian Bird, "CONCURRENT EDIT DETECTION", provisional patent filed with the USPTO 07/16/2020.

3. Arjun Radhakrishna, Gustavo Soares, Mark Wilson-Thomas, Sumit Gulwani, Nachiappan Nagappan, Ashish Tiwari, Alan Leung, Xiang Gao, Shraddha Barke, "Feedback-Driven Semi-Supervised Synthesis of Program Transformations", provisional patent filed with the USPTO 07/10/2020.

4. Manish Shetty, Chetan Bansal, Sumit Kumar, Nikitha Rao, Nachiappan Nagappan, Thomas Zimmermann, "AUTOMATIC RECOGNITION OF ENTITIES RELATED TO CLOUD INCIDENTS" , provisional patent filed with the USPTO 06/19/2020.

5. Foyzul Hassan, Chetan Bansal, Thomas Zimmermann, Nachiappan Nagappan and Ahmed Awadallah, "Automated Exception Featurization and Search", provisional patent filed with the USPTO 10/21/2019.

6. Kim S Herzig, Nachiappan Nagappan, "Method of Detecting False Test Alarms Using Test Step Failure Analysis", Patent US 9,122,490 B2 issued by USPTO

7. Michael Fanning, Christopher Faucon, Nachiappan Nagappan, Benjamin Livshits, Magnus Madsen, Matthew Hall, "CODE DEPENDENCY CALCULATION", Provisional patent application filed with USPTO on 10/16/2012.

8. Thomas Zimmermann, Christian Bird, Nachiappan Nagappan, Syed Emran, Thirumalesh Bhat, Ashish Gupta, "ANALYZING POWER CONSUMPTION IN MOBILE COMPUTING DEVICES", Patent US20130110423A1 issed by USPTO.

9. Thomas Zimmermann, Christian Bird, Nachiappan Nagappan, "SOFTWARE DEVELOPMENT AUTOMATED ANALYTICS", Patent 20120331439 issued by USPTO.

10. Nachiappan Nagappan, Thomas Zimmermann, Brendan Murphy, Andreas Zeller, "PREDICTING DEFECTS IN CODE", Patent 20110041120 issued by USPTO.

11. Srivatsan Laxman, Prasad Naldurg, Nachiappan Nagappan, Jacek Czerwonka, "PROGRAMMING ELEMENT MODIFICATION RECOMMENDATION", Patent 20100299305 issued by USPTO.

12. Michael Fanning, Nachiappan Nagappan, Thomas Ball, Sean Sandys, PRIORITIZING QUALITY IMPROVEMENTS TO SOURCE CODE", Patent 8627287 issued by USPTO.

13. Todd King, Michael Fanning, Nachiappan Nagappan, Marcelo Birnbach, "INTERMEDIATE CODE METRICS", Patent 20080320457 issued by USPTO.

14. Nachiappan Nagappan, Thirumalesh K. Bhat, "TECHNOLOGIES FOR CODE FAILURE PRONENESS ESTIMATION", Patent # 7,926,036 granted 04/12/2011 USPTO.

15. Thirumalesh K. Bhat, Nachiappan Nagappan, Arild E. Skjolsvold, "AUTOMATICALLY EXTRACTING COUPLING METRICS FROM COMPILED CODE", Patent # 7,725,881, granted on 5/25/2010, USPTO.

NATIONAL ACADEMIES COMMITTEE MEMBERSHIPS

1. National Academies' Computer Science and Telecommunications Board sponsored by the Defense Information Systems Agency committee on "Improving Processes and Policies for the Acquisition and Test of Information Technologies in the Department of Defense" - (2008-2009)

   Report Published as: Achieving Effective Acquisition of Information Technology in the Department of Defense, ISBN-10: 0-309-14828-6, National Academies Press.

2. National Academies' Committee on National Statistics committee on "Theory and Application of Reliability Growth Modeling to Defense Systems", 2011- 2014

   Report Published as: Reliability Growth: Enhancing Defense System Reliability, ISBN-978-0-309-31474-9, National Academies Press.

SELECTED PRESS COVERAGE

(Numerous threads in Reddit about various research studies over the years)

1. Venturebeat article, Microsoft's SoftNER AI uses unsupervised learning to help triage cloud service outages
   https://venturebeat.com/2020/07/14/microsofts-softner-ai-uses-unsupervised-learning-to-help-triage-cloud-service-outages/
2. Seeker, which is the Discovery Channel's online news site. March 2017
   http://www.seeker.com/video-game-research-reveals-path-to-advanced-gaming-skills-2295416868.html
3. Yahoo News (March 2017)
   https://www.yahoo.com/news/heres-become-better-gamer-according-134604654.html
4. Digital Trends Full article – March 2017.

http://www.digitaltrends.com/gaming/learn-from-starcraft-2-halo-reach/

5. American Scientist, Empirical Software Engineering, Nov-Dec 2011, Volume 99, number 6, http://www.americanscientist.org/issues/feature/2011/6/empirical-software-engineering/1

6. Defining dangerous developer "defect density", by By Adrian Bridgwater , CWDN: The Computer Weekly Application Developer Network, http://www.computerweekly.com/blogs/cwdn/2011/02/defining-developer-dangerous-defect-density.html

7. C't Magazine (Germany's most popular computer Magazine) Article, Making of Windows 7, c't 2007, Heft 23, Daniel Melanchthon, Oliver Scheer

8. Communications of the ACM, Prof. Dr. Bertrand Meyer, Article: "The Rise of Empirical Software Engineering (I): the Good News", 2009.

9. Story points, Why are they better than hours, Jeff Sutherland, http://scrum.jeffsutherland.com/2010/04/story-points-why-are-they-better-than.html

10. TDD Study (40 plus articles). E.g. http://codedgers.com/blog/2010/feb/21/8/

11. "Exploding Software-Engineering Myths", Highlighted at Reddit and various other blogs.
http://research.microsoft.com/en-us/news/features/nagappan-100609.aspx

12. "Empirical Studies Show Test Driven Development Improves Quality", InfoQ, covers our ESE journal paper on Test Driven Development. Mar 2, 2009.
(http://www.infoq.com/news/2009/03/TDD-Improves-Quality)

13. "Microsoft Pushes Secure, Quality Code", covers our tech transfer to VSTS 2008. *eWeek*, October 5 2007. (http://www.eweek.com/article2/0%2C1895%2C2192515%2C00.asp)

14. The *Frankfurter Allgemeine* covered the work Andreas Zeller did with me on mining Microsoft's bug databases, 2006-3-14.
(http://www.faz.net/s/RubDD681563C93F46A0B1F423E34DC58DAB/Doc~E86A82A38CEA145A1 87ECFF35CBF1E6E3~ATpl~Ecommon~Scontent.html)

PUBLICATIONS

I have published over a 100+ referred conference and journal publications. My work has won 11 best paper awards including 4 ACM SIGSOFT Distinguished paper awards. Four (4) of my papers have also won the test-of-time/ Most Influential paper (MIP) awards, two of which were across 30 year and 50 year time periods. My papers have been cited 13,200+ times with a h-index of 54. My Google Scholar link can be found here: https://scholar.google.com/citations?user=Nzx_7P8AAAAJ&hl=en&oi=ao
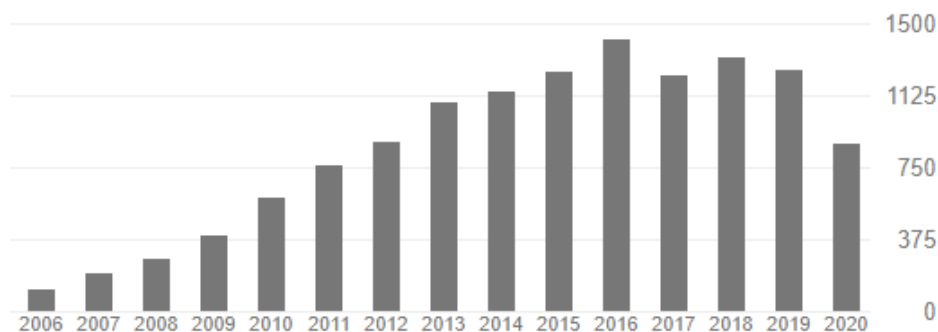
BOOK

1. Nagappan, N., "A Software Testing and Reliability Early Warning (STREW) metric suite", ProQuest Information and Learning, Ann Arbor, MI, 2006. ISBN:978-0-496-96172-6.

BOOK CHAPTER

1. Zimmermann, T., Nagappan, N., Zeller, A., "Predicting bugs from History" in "Software Evolution", pp. 69-88, Eds. Mens, T., Demeyer, S., Springer 2007.

2. Nagappan, N., Ball, T., "Evidence-based Failure Prediction", in "Making Software, What Really works, and Why we believe it", pp.415-434, Addison-Wesley, Eds. Oram, A., Wilson, G., 2010.

INVITED PUBLICATIONS

1. Sarbu, C., Johansson, A., Suri, N., Nagappan, N., "Profiling the Operational Behavior of OS Device Drivers", Empirical Software Engineering Journal, 15 (4), pp. 380-422, 2010.
   Invited Best paper from ISSRE 2008

2. Nagappan, N., "Myths in Sofware Engineering: From the Other Side", Proceedings of the Test, Analysis and Proofs (TAP) conference, Malaga, Spain, 2010.

3. Bird, C., Nagappan, N., Devanbu, P., Gall, H., Murphy, B., "Does Distributed Development affect Software Quality? An Empirical Case Study of Windows Vista", Communications of the ACM (CACM), 52(8), pp.85-93, 2009.
   CACM Research Highlights
   Invited Best paper from ICSE 2009

4. Sarbu, C., Johansson, A., Suri, N., Nagappan, N., "On Equivalence Partitioning of Code Paths inside OS Kernel Components", Proceedings of the 2009 Software Technologies for Future Dependable Distributed Systems (STFSSD), pp.17-19, Tokyo, Japan, 2009.

5. Nagappan, N., Zeller, A., Zimmermann, T., "Mining Software Archives", (guest editors introduction). IEEE Software, 26(1), pp.24-25, 2009

JOURNAL PUBLICATIONS

1. Wang, S., Bansal, C., Nagappan, N., "Large-scale intent analysis for identifying large-review-effort code changes", Accepted. To Appear: Information and Software Technology (IST), 2020.

2. Kochhar, P.S., Kalliamvakou, E., Nagappan, N., Zimmermann, T., Bird, C., "Moving from Closed to Open Source: Observations from Six Transitioned Projects to GitHub", Accepted. To Appear: IEEE Transactions on Software Engineering, 2020.

3. Kochhar, P.S., Lo, D., Lawall, J., Nagappan, N., "Code Coverage and Post-Release Defects: A Large Scale Study on Open Source Projects", IEEE Transactions on Reliability, 66(4): 1213-1228, 2017

4. Huang, J., Yan, E., Cheung, G., Nagappan, N. and Zimmermann, T., Master Maker: Understanding Gaming Skill Through Practice and Habit From Gameplay Behavior. Topics in Cognitive Science, 9, pp. 437–466, 2017. doi:10.1111/tops.12251

5. Xia, X., Lo, D., Pan, S.J., Nagappan, N., Wang, X., "HYDRA: Massively Compositional Model for Cross-Project Defect Prediction" IEEE Transactions on Software Engineering, 42(10), pp. 977-998, 2016.

6. Hindle, A., Bird, C., Zimmermann, T., Nagappan, N., "Do topics make sense to managers and developers?", Empirical Software Engineering, 20(2), pp. 479-515, 2015.

7. Murphy-Hill, E.R., Zimmermann, T., Bird, C., Nagappan, N., "The Design Space of Bug Fixes and How Developers Navigate It", IEEE Transactions on Software Engineering, 41(1), pp. 65-81, 2015.

8. Kim, M., Zimmermann, T., Nagappan, N., "An Empirical Study of Refactoring Challenges and Benefits at Microsoft", IEEE Transactions on Software Engineering, 40(7): 633-649, 2014.

9. Carver, J., Nagappan, N., Page, A., "The Impact of Educational Background on the Effectiveness of Requirements Inspections: An Empirical Study" IEEE Transactions on Software Engineering, 34(6), pp.800-812, 2008.

10. Eaddy, M., Zimmermann, T., Sherwood, K.D., Garg, V., Murphy, G.C., Nagappan, N., Aho, A.V., "Do Crosscutting Concerns Cause Defects?" IEEE Transactions on Software Engineering, 34(4), pp.497-515, 2008.

11. Nagappan, N., Maximilien, E. M., Bhat, T., Williams, L., "Realizing Quality Improvement through Test-Driven Development: Results and Experiences of Four Industrial Teams" To appear: Proceeding of Empirical Software Engineering, an International Journal, 13(3), pp. 289-302, 2008.

12. Zheng, J., Williams, L., Nagappan, N., Snipes, W., Hudepohl, J., Vouk, M., "On the Value of Static Analysis for Fault Detection in Software", IEEE Transactions on Software Engineering, 32(4), pp. 240-253, 2006.

CONFERENCE PUBLICATIONS

1. Rao, N., Bansal, C., Zimmermann, T., Awadallah, A., Nagappan, N., "Analyzing Web Search Behavior for Software Engineering Tasks", Proceedings of the IEEE International Conference on Big Data (BigData), Atlanta, GA (Virtually), USA, 2020.
    Acceptance rate: 15.5%

2. Pham, H., V., Qian, S., Wang, J., Lutellier, T., Rosenthal, J., Tan, L., Yu, Y., Nagappan, N., "Problems and Opportunities in Training Deep-Learning Software Systems: An Analysis of Variance", Accepted to Automated Software Engineering Conference (ASE), Melbourne, Australia, 2020.
    Acceptance rate: 22.5%

3. Hassan, F., Bansal, C., Nagappan, N., Zimmermann, T., Awadallah, A.H., "An Empirical Study of Software Exceptions in the Field using Search Logs", in the Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM), Bari, Italy, 2020.
    Acceptance rate: 21%

4. Gonzalez, D., Zimmermann, T., Nagappan, N., "The State of the ML-universe: 10 Years of Artificial Intelligence & Machine Learning Software Development on GitHub". Proceedings of the IEEE Working Conference on Mining Software Repositories (MSR), Seoul, South Korea, July 2020.
Acceptance rate: 25.7%

5. Wang, S., Bansal, C., Nagappan, N., Philip, A.A., "Leveraging Change Intents for Characterizing and Identifying Large-Review-Effort Changes", Proceedings of the 15th International Conference on Predictive Models and Data Analytics in Software Engineering, pp. 46-55, Porto de Galinas, Brazil, 2019.

6. Maddila, C., Bansal, C., Nagappan, N., "Predicting Pull Request Completion Time: A Case Study on Large Scale Cloud Services", in the Proceedings of the European Software Engineering /Foundations in Software Engineering Conference (SIGSOFT ESEC/FSE), *Industry Track,* pp. 874-882, Tallinn, Estonia, 2019

7. Bhagwan, R., Philip, A., Kumar, R., Maddila, C., Nagappan, N., "FastLane: Test Minimization for Rapidly Deployed Large-scale Online Services", in the Proceedings of the International Conference on Software Engineering (ICSE 2019), pp. 408-418, Montreal, Canada, 2019.
Acceptance rate: 20.6%

8. Amershi, S., Begel, A., Bird, C., DeLine, R., Gall, H., Kamar, E., Nagappan, N., Nushi, B., Zimmermann, T., "Software Engineering for Machine Learning: A Case Study", To APPEAR: International Conference on Software Engineering (ICSE 2019) - Software Engineering in Practice track, pp.291-300, Montreal, Canada, 2019.
Acceptance rate: 25.4%

9. Rastogi, A., Nagappan, N., Gousios, G., Hoek, A., "Relationship between Geographical Location and Evaluation of Developer Contributions in GitHub", in the Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM), Oulu, Finland, 2018
Acceptance rate: 21.4%

10. Ford, D., Zimmermann, T., Bird, C., Nagappan, N., "Characterizing Software Engineering Work with Personas Based on Knowledge Worker Actions" TO APPEAR: , in the Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM), Toronto, Canada, 2017.
Acceptance rate: 19.3%

11. Rastogi, A., Nagappan, N, "On the Personality Traits of GitHub Contributors", Proceedings of the IEEE International Symposium on Software Reliability Engineering (ISSRE), pp.77-86, Ottawa, Canada, 2016.
Acceptance rate: 34.6%

12. Rastogi, A., Nagappan, N., "Forking and the Sustainability of the Developer Community Participation - An Empirical Investigation on Outcomes and Reasons", in the Proceedings of the IEEE 23rd International Conference on Software Analysis, Evolution, and Reengineering (SANER), pp.102-111, Osaka, Japan, 2016.
Acceptance rate: 37.1%

13. Lo, D., Nagappan, N., Zimmermann, T., "How practitioners perceive the relevance of software engineering research", in the Proceedings of the Foundations in Software Engineering Conference (SIGSOFT ESEC/FSE), pp. 415-424, Bergamo, Italy, 2015.
Acceptance rate: 25.4%

14. Rastogi, A., Thummalapenta, S., Zimmermann, T., Nagappan, N., Czerwonka, J., "Ramp-Up Journey of New Hires: Tug of War of Aids and Impediments", in Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM), pp.96-105, Beijing, China, 2015.
Acceptance rate: 25%

15. Harpstead, E., Zimmermann, T., Nagappan, N., Guajardo, J.J., Cooper, R., Solberg, T., Greenawalt, D., "What Drives People: Creating Engagement Profiles of Players from Game Log Data", Proceedings of the ACM SIGCHI symposium on Computer-human interaction in play (CHIPLAY), pp.369-379, London, UK, 2015.
Acceptance rate: 27.8%

16. Herzig, K., Nagappan, N., "Empirically Detecting False Test Alarms Using Association Rules", in Proceedings of the International Conference on Software Engineering (ICSE), SEIP Track, pp.39-48, Florence, Italy, 2015.
Acceptance rate: 22.5%

17. Ray, B., Nagappan, M., Bird, C., Nagappan, N., Zimmermann, T., "The Uniqueness of Changes: Characteristics and Applications", in the Proceedings of the International Conference on Mining Software Repositories (MSR), pp.34-44, Florence, Italy, 2015.
Acceptance rate: 30%

18. Kochhar, P.S., Thung, F., Nagappan, N., Zimmermann, T., Lo, D., "Understanding the Test Automation Culture of App Developers", Proceedings of the International Conference on Software Testing, Verification and Validation(ICST), pp. 1-10, Graz, Austria, 2015.
Acceptance rate: 24%

19. Cheung, G.K., Zimmermann, T., Nagappan, N., "The First Hour Experience: How the Initial Play can Engage (or lose) New Players", Proceedings of the ACM SIGCHI symposium on Computer-human interaction in play (CHIPLAY), pp.57-66, Toronto, ON, Canada, 2014.
Acceptance rate: 29%

20. Herzig, K., Nagappan, N., "The Impact of Test Ownership and Team Structure on the Reliability and Effectiveness of Quality Test Runs", in Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM), pp.1-10, Torino, Italy, 2014.
Acceptance rate: 18.7%

21. Gupta, A., Zimmermann, T., Bird, C., Nagappan, N., Bhat, T., Emran, S., "Mining Energy Traces to Aid in Software Development: An Empirical Case Study", in Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM), pp.40.1-40.8, Torino, Italy, 2014.

22. Bird, C., Ranganath, V-P., Zimmermann, T., Nagappan, N., Zeller, Z., "Extrinsic influence factors in Software Reliability: A Study of 200, 000 Windows Machines" in Proceedings of the International Conference on Software Engineering (ICSE), SEIP Track, Hyderabad, India, 2014.
Acceptance rate: 21%

23. Muslu, K., Bird, C., Nagappan, N., Czerwonka, J., "Transition from centralized to decentralized version control systems: a case study on reasons, barriers, and outcomes", in Proceedings of the International Conference on Software Engineering (ICSE), Hyderabad, India, 2014.
Acceptance rate: 20%

24. Murphy-Hill, E.R., Zimmermann, T., Nagappan, N., "Cowboys, ankle sprains, and keepers of quality: how is video game development different from software development?" in Proceedings of the International Conference on Software Engineering (ICSE), Hyderabad, India, 2014.
Acceptance rate: 20%

25. Zimmermann, Nachiappan Nagappan: Software Analytics for Digital Games. Software Engineering - Fachtagung des GI-Fachbereichs Softwaretechnik, pp. 23-24, Kiel, Germany, 2014

26. Huang, J., Zimmermann, T., Nagappan, N., Philips, B., Harrison, C., Mastering the Art of War: How Patterns of Gameplay Influence Skill in Halo", Proceedings of the International Conference on Computer-Human Interaction (CHI), Paris, France, 2013.
Acceptance rate: 20%

27. Kocaguneli, E., Zimmermann, T., Bird, C., Nagappan, N., Menzies, T., "Distributed Development Considered Harmful?" Proceedings of the International Conference on Software Engineering (ICSE) – Experience Track, San Francisco, CA, USA 2013.
Acceptance rate: 20.4%

28. Murphy-Hill, E., Zimmermann, T., Bird, C., Nagappan, N., "The Design of Bug Fixes", in Proceedings of the International Conference on Software Engineering (ICSE), San Francisco, CA, USA 2013.
Acceptance rate: 18.5%

29. Kim, M., Zimmermann, T., Nagappan, N., A Field Study of Refactoring Challenges and Benefits, in Proceedings of the International Symposium on Foundations of Software Engineering (FSE), Research Triangle Park, NC, USA, 2012.
Acceptance rate: 17.4%

30. Hindle, A., Bird, C., Zimmermann, T., Nagappan, N., Relating Requirements to Implementation via Topic Analysis, in Proceedings of the International Conference on Software Maintenance (ICSM 2012), Riva del Garda, Trento, Italy, 2012.
Acceptance rate: 25.4%

31. Hullett, K., Nagappan, N., Schuh, E., Hopson, J., Empirical Analysis of User Data in Game Software Development, in Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM), pp.89-98, Lund, Sweden, 2012.
Acceptance rate: 25.3%

32. Mandala, N., Walia, G.S., Carver, J.C., Nagappan, N., Application of Kusumoto Cost-Metric to Evaluate the Cost Effectiveness of Software Inspections, in Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM), pp.221-230, Lund, Sweden, 2012.
Acceptance rate: 25.3%

33. Zimmermann, T., Nagappan, T., Guo, P.J., Murphy, B., Characterizing and Predicting which Bugs get Reopened, in Proceedings of the International Conference on Software Engineering (Experience Track) (ICSE), pp. 1074-1083, Zurich, Switzerland, 2012.
Acceptance rate: 18.5%

34. Bird, C., Nagappan, N., Who? Where? What? Examining Distributed Development in Two Large Open Source Projects, in Proceedings of the Working Conference on Mining Software Repositories (MSR), pp. 237-246, Zurich, Switzerland, 2012.
Acceptance rate: 28.1%

35. Guo, P.J., Zimmermann, T., Nagappan, N., Murphy, B., "Not my bug!" and Other Reasons for Software Bug Report Reassignments, in Proceedings of the ACM Conference on Computer Supported Cooperative Work (CSCW), pp. 395-404, Hangzhou, China, 2011.
Acceptance rate: 21.6%

36. Kim, S., Zimmermann, T., Nagappan, N., Crash graphs: An Aggregated View of Multiple Crashes to Improve Crash Triage, in Proceedings of the IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), pp.486-493, Hong Kong, 2011.
Acceptance rate: 17.6%

37. Williams, L., Brown, G., Meltzer, A., Nagappan, N., Scrum + Engineering Practices: Experiences of Three Microsoft Teams, in Proceedings of the Empirical Software Engineering and Measurement Conference (Experience Track) (ESEM), pp. 463-471, Banff, Canada, 2011.

38. Li, P., Kivett, R., Zhan, Z., Jeon, S-o, Nagappan, N., Murphy, B., Ko, A.J., Characterizing the differences between Pre- and Post- release Versions of Software, in Proceedings of the International Conference on Software Engineering (Experience Track) (ICSE), pp. 716-725, Hawaii, USA, 2011.
Acceptance rate: 18.0%

39. Zimmermann, T., Nagappan, N., Herzig, K., Premraj, R., Williams, L., An Empirical Study on the Relationship between Dependency Neighborhoods and Failures, in Proceedings of the International Conference on Software Testing (ICST - Industry), pp. 347-356, Berlin, Germany, 2011.
Acceptance rate: 29.1%

40. Czerwonka, J., Das, R., Nagappan, N., Tarvo, A., Teterev, A., CRANE: Failure Prediction, Change Analysis and Test Prioritization in Practice - Experiences from Windows, in Proceedings of the International Conference on Software Testing (ICST - Industry), pp. 357-366, Berlin, Germany, 2011.
Acceptance rate: 29.1%

41. Gill, P., Jain, N., Nagappan, N., Understanding Network Failures in Data Centers: Measurement, Analysis, and Implications, Proceedings of the ACM SIGCOMM 2011 Conference on Applications,

Technologies, Architectures, and Protocols for Computer Communications, pp.350-361, Toronto, ON, 2011.
<u>Acceptance rate: 14.3%</u>

42. Bird, C., Nagappan,N., Murphy, B., Gall, H., Devanbu, P., Don't Touch my Code!: Examining the Effects of Ownership on Software Quality, in Proceedings of the Foundations in Software Engineering Conference (SIGSOFT ESEC/FSE 2011), pp. 4-14, Szeged, Hungary, 2011.
<u>Acceptance rate: 16.7%</u>

43. Vishwanath, K., Nagappan, N., Characterizing Cloud Computing Hardware Reliability, in Proceedings of ACM Symposium on Cloud Computing (SoCC 2010), pp. 193-204, Indianapolis, USA, 2010.
<u>Acceptance rate: 19.3%</u>

44. Nagappan, N., Zeller, A., Zimmermann, T., Herzig, K., Murphy, B., Change Bursts as Defect Predictors, in Proceedings of the 21st IEEE International Symposium on Software Reliability Engineering (ISSRE), pp.309-318, San Jose, USA, 2010
<u>Acceptance rate: 32.3%</u>

45. Guo, P.J., Zimmermann, T., Nagappan, N., Murphy, B., Characterizing and Predicting Which Bugs Get Fixed: An Empirical Study of Microsoft Windows, in Proceedings of the 32th International Conference on Software Engineering (ICSE), pp.495-504, Cape Town, South Africa, 2010.
<u>Acceptance rate: 13.7%</u>

46. Zimmermann, T., Nagappan, N., Williams, L., Searching for a Needle in a Haystack: Predicting Security Vulnerabilities for Windows Vista, Proceedings of the 3rd International Conference on Software Testing, Verification and Validation (Experience Track) (ICST), pp. 421-428, Paris, France, 2010.
<u>Acceptance rate: 25.7%</u>

47. Bird, C., Nagappan, N., Gall, H., Devanbu, P., Murphy, B., Using Socio-Technical Networks to Predict Failures, Proceedings of the IEEE International Symposium on Software Reliability Engineering (ISSRE), Mysore, India, 2009.
<u>Acceptance rate: 24.7%</u>

48. Williams, L., Kudrjavets,G., Nagappan, N., "On the Effectiveness of Unit Test Automation at Microsoft", Proceedings of the IEEE International Symposium on Software Reliability Engineering (ISSRE), Mysore, India, 2009.
<u>Acceptance rate: 24.7%</u>

49. Mockus, A., Nagappan, N., Dinh-Trong, T., "Test Coverage and Post-Verification Defects: A Multiple Case Study", Proceedings of the ACM-IEEE Empirical Software Engineering and Measurement Conference (ESEM 2009), Orlando, FL, 2009.
<u>Acceptance rate: 39%</u>

50. Zimmermann, T., Nagappan, N., Gall, H. Giger, E., Murphy, B., "Cross-project Defect Prediction", To appear: Proceedings of the ACM SIGSOFT European Software Engineering/Foundations of Software Engineering Conference (ESEC/FSE 2009), Amsterdam, 2009.
Acceptance Rate: 14.7%

51. Bird, C., Nagappan, N., Devanbu, P., Gall, H., Murphy, B., "Does Distributed Development Affect Software Quality? An Empirical Case Study of Windows Vista", Proceedings of the International Conference on Software Engineering (ICSE), Vancouver, Canada, 2009.
Acceptance rate: 12.3%

52. Sarbu, C., Johansson, A., Suri, N., Nagappan, N., "Profiling the Operational Behavior of OS Device Drivers", Proceedings of the IEEE International Symposium on Software Reliability Engineering (ISSRE), pp.127-136, Seattle/Redmond, WA, 2008.
Acceptance rate: 25%

53. Pinzger, M., Nagappan, N., Murphy, B., "Can Developer Social Networks Predict Failures?", Proceedings of the ACM SIGSOFT Foundations of Software Engineering Conference (FSE 2008), pp. 2-12, Atlanta, GA, 2008.
Acceptance rate: 20%

54. Layman, L., Kudrjavets, G., Nagappan, N., "Iterative Identification of Fault-Prone Binaries Using In-Process Metrics" Proceedings of the ACM-IEEE Empirical Software Engineering and Measurement Conference (ESEM 2008), pp.206-212, Kaiserslautern, Germany, 2008.
Acceptance rate < 30%

55. Begel, A., Nagappan, N., "Pair Programming: What's in it for me", Proceedings of the ACM-IEEE Empirical Software Engineering and Measurement Conference (ESEM 2008), pp.120-128, Kaiserslautern, Germany, 2008.
Acceptance rate < 30%

56. Bugde, S., Nagappan, N., Rajamani, S., Ramalingam, G., "Global Software Servicing: Observational Experiences at Microsoft", Proceedings of the IEEE International Conference on Global Software Engineering (ICGSE 2008), pp.182-191, Bangalore, India.
Acceptance rate: 32%

57. Begel, A., Nagappan, N., "Global Software Development: Who Does It?" (short paper), Proceedings of the IEEE International Conference on Global Software Engineering (ICGSE 2008), pp.17-20, Bangalore, India.

58. Bhat, T., Nagappan, N., "Tempest: Towards Early Identification of Failure-prone Binaries", Proceedings of the 38th IEEE/IFIP International Conference on Dependable Systems and Networks (DSN 08), pp.116-121, Anchorage, Alaska, 2008.
Acceptance rate: 23%

59. Layman, L., Nagappan, N., Guckenheimer, S., Beehler, J., Begel, A., "Mining Software Effort Data: Preliminary Analysis of Visual Studio Team System Data" Proceedings of the 5th Working Conference on Mining Software Repositories (MSR '08), pp.43-46, Leipzig, Germany, 2008.

60. Nagappan, N., Murphy, B., Basili, V., "The Influence of Organizational Structure on Software Quality: An Empirical Case Study", Proceedings of the International Conference on Software Engineering (ICSE 2008), pp.521-530, Leipzig, Germany, 2008.
Acceptance rate: 15%

61. Zimmermann, T., Nagappan, N., "Predicting Defects using Social Network Analysis on Dependency Graphs" Proceedings of the International Conference on Software Engineering (ICSE 2008), pp.531-540, Leipzig, Germany, 2008
Acceptance rate: 15%

62. Walia, G., Carver, J., Nagappan, N., "The Effect of the Number of Inspectors on the Defect Estimates Produced by Capture-Recapture Models", Proceedings of the International Conference on Software Engineering (ICSE 2008), pp.331-340, Leipzig, Germany, 2008
Acceptance rate: 15%

63. Nagappan, N., Williams, L., Vouk, M., Osborne, J., "Using In-Process Testing Metrics to Estimate Post-Release Field Quality of Java Programs", Proceedings of the International Symposium on Software Reliability Engineering (ISSRE 2007), pp. 209-214, Trollhattan, Sweden, 2007.
Acceptance rate: 33%

64. Zimmermann, T., Nagappan, N., "Predicting Subsystem Defects using Dependency Graph Complexities" , Proceedings of the International Symposium on Software Reliability Engineering (ISSRE 2007), pp.227-236, Trollhattan, Sweden, 2007.
Acceptance rate: 26%

65. Nagappan, N., Ball, T., "Using Software Dependencies and Churn Metrics to Predict Field Failures: An Empirical Case Study", Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM 2007), pp. 364-373, Madrid, Spain, 2007.
Acceptance rate: 41%

66. Begel, A., Nagappan, N., "Usage and Perceptions of Agile Software Development in an Industrial Context: An Exploratory Study", Proceedings of the Empirical Software Engineering and Measurement Conference (ESEM 2007), pp. 255-264, Madrid, Spain, 2007.
Acceptance rate: 41%

67. Bhat, T., Nagappan, N., "Building Scalable Failure-proneness Models Using Complexity Metrics for Large Scale Software Systems", Proceedings of the Asia-Pacific Software Engineering Conference (APSEC 2006), pp.361-366, Bangalore, India, December 2006.
Acceptance rate: 19%

68. Kudrjavets, G., Nagappan, N., Ball, T., "Assessing the Relationship between Software Assertions and Code Quality: An Empirical Investigation", Proceedings of the *IEEE International Symposium on Software Reliability Engineering* (ISSRE 2006), pp. 204-212, Raleigh, NC, November 2006.
Acceptance rate: 37%

69. Nagappan, N., Ball, T., Murphy, B., "Using Historical In-Process and Product Metrics for Early Estimation of Software Failures", Proceedings of the *IEEE International Symposium on Software Reliability Engineering* (ISSRE 2006), pp. 62-74, Raleigh, NC, November 2006.
Acceptance rate: 37%

70. Bhat. T., Nagappan, N., "Evaluating the Efficacy of Test-Driven Development: Industrial Case Studies", Proceedings of The International Symposium on Empirical Software Engineering (ISESE 2006), pp. 356-363, Rio de Janeiro, Brazil, September 2006.
Acceptance rate: 46%

71. Nagappan, N., Ball, T., Zeller, A., "Mining Metrics to Predict Component Failures", Proceedings of *The International Conference on Software Engineering* (ICSE 2006), pp. 452-461, Shanghai, China, May 2006.
Acceptance rate: 18%

72. Nagappan, N., Williams, L., Osborne, J., Vouk, M., Abrahamsson, P., "Providing Test Quality Feedback Using Static Source Code and Automatic Test Suite Metrics", Proceedings of the *IEEE International Symposium on Software Reliability Engineering* (ISSRE 2005), pp. 85-94, Chicago, IL, November 2005.
Acceptance rate: 33%

73. Nagappan, N., Ball, T., "Use of Relative Code churn Measures to Predict System Defect Density", Proceedings of *The International Conference on Software Engineering* (ICSE 2005), pp. 284-292, St. Louis, MO, May 2005.
Acceptance rate: 14%

74. Nagappan, N., Ball, T., "Static Analysis Tools as Early indicators of Pre-Release Defect Density", Proceedings of *The International Conference on Software Engineering* (ICSE 2005), pp. 580-586, St. Louis, MO, May 2005.
Acceptance rate: 19%

75. Nagappan, N., Williams, L., Hudepohl, J., Snipes, W., Vouk, M., "Preliminary Results On Using Static Analysis Tools For Software Inspection", Proceedings of the *IEEE International Symposium on Software Reliability Engineering* (ISSRE 2004), pp 429-439, St. Malo, France. November 2004.
Acceptance rate: 33%

76. Davidsson, M., Zheng, J., Nagappan, N., Williams, L., Vouk, M., "GERT : An Empirical Reliability Estimation and Testing Feedback Tool", Proceedings of the *IEEE International Symposium on Software Reliability Engineering* (ISSRE 2004), pp 269-280, St. Malo, France. November 2004.
Acceptance rate: 33%

77. Williams, L., McDowell, C., Nagappan, N., Fernald, J., Werner, L., "Building Pair Programming Knowledge through a Family of Experiments", Proceedings of *IEEE International Symposium on Empirical Software Engineering,* (ISESE 2004) pp 143-152. Rome, Italy, September 2003.
<u>Acceptance rate: 46%</u>

78. Nagappan, N., Williams, L., Wiebe, E., Miller, C., Balik, S., Ferzli, M., Petlick, J., "Pair Learning: With an Eye Toward Future Success", Proceedings of *XP Agile Universe* (XP/AU 2003), Springer LNCS 2753, pp 185-198. New Orleans, LA, August 2004.
<u>Acceptance rate: 50%</u>

79. Stotts, D., Williams, L.A., Nagappan, N., Baheti, P.P., Jen, D.S., Jackson, A., "Virtual Teaming: Experiments and Experiences with Distributed Pair Programming", Proceedings of *XP Agile Universe* (XP/AU 2003), Springer LNCS 2753, pp 129-141. New Orleans, LA, August 2004.
<u>Acceptance rate: 50%</u>

80. Weibe, E., Williams, L. A., Petlick, J., Nagappan, N., Balik, S., Miller, C., and Ferzli, M., "Pair Programming in Introductory Programming Labs," Proceedings *American Society for Engineering Education Annual Conference and Exposition,* (ASEE 2003), 2003.

81. Nagappan, N., Williams,L., Ferzli, M., Yang, K., Wiebe,E., Miller,C., Balik,S., "Improving the CS1 Experience with Pair Programming", Proceedings of *ACM Special Interest Group in Computer Science Education,* (SIGCSE 2003), pp 359-362. Reno, NV, February 2003.
<u>Acceptance rate: 32%</u>

SHORT PAPERS, WORKSHOP, DOCTORAL SYMPOSIUM, FAST ABSTRACT PUBLICATIONS

1. Rastogi, A., Thummalapenta, S., Zimmermann, T., Nagappan, N., Czerwonka, J., "Ramp-up Journey of New Hires: Do strategic practices of software companies influence productivity?" ISEC 2017, pp. 107-111, Jaipur, India, 2017.

2. Herzig, K., Nagappan, N., "The Impact of Test Ownership and Team Structure on the Reliability, Effectiveness of Quality Test Runs", Multikonferenz der GI-Fachbereiche Softwaretechnik (SWT) und Wirtschaftsinformatik (WI), pp. 105-106, Dresden, Germany.

3. Das, S., Zimmermann, T., Nagappan, N., Phillips, B., Harrison, C., Revival Actions in a Shooter Game, in the Proceedings of Design and Evaluation of Sociability in Online Games workshop, co-located with CHI 2013, Paris, France, 2013.

4. Huang, J., Zimmermann, T., Nagappan, N., Phillips, B., Harrison, C., Influence of Gameplay on Skill in Halo Reach, in the Proceedings of Design and Evaluation of Sociability in Online Games workshop, co-located with CHI 2013, Paris, France, 2013.

5. Zimmermann, T., Phillips, B., Nagappan, N., Harrison, C., Data-Driven Games User Research, in Proceedings of the CHI Workshop on Game User Research (CHI-GUR 2012), May 2012

6. Bird, C., Murphy, B., Nagappan, N., Zimmermann, T., Empirical software engineering at Microsoft Research, in Proceedings of the ACM Conference on Computer Supported Cooperative Work (CSCW), pp. 143-150, Hangzhou, China, 2011.

7. Hullett, K., Nagappan, N., Schuh, E., Hopson, J., Data analytics for game development. In Proceedings of the International Conference on Software Engineering – New and Emerging Results Track, (ICSE NIER), pp. 940-943, Hawaii, USA, 2011.

8. Das, R., Czerwonka, J., Nagappan, N., "Finding Dependencies from Defect History", Industry Paper, Proceedings of the IEEE International Symposium on Software Reliability Engineering, Mysore, India, 2009.

9. Sarbu, C., Winter, S., Suri, N., Nagappan, N., OS Driver Test Effort Reduction via Operational Profiling", FastAbstract, Proceedings of the IEEE International Symposium on Software Reliability Engineering, Mysore, India, 2009.

10. Zimmermann, T., Nagappan, N., "Predicting Defects with Program Dependencies", Short paper, Proceedings of the ACM/IEEE Empirical Software Engineering and Measurement Conference (ESEM), Orlando, FL, 2009.

11. Begel, A., Nagappan, N., Poile, C., Layman, L., "Coordination in Large-Scale Software Teams" Second Workshop on Cooperative and Human Aspects of Software Engineering, Vancouver, BC, Canada. May 2009.

12. Godefroid, P., Nagappan, N., "Concurrency at Microsoft - An Exploratory Survey", Proceedings of the Workshop on Exploiting Concurrency Efficiently and Correctly -- (EC)^2,collocated with the Computer Aided Verification conference (CAV 2008), Princeton, NJ, 2008.

13. Nagappan, N., Williams, L., Vouk, M., Osborne, J., "Early Estimation of Software Quality Using In-Process Testing Metrics: A Controlled Case Study", Third Software Quality Workshop, *co-located with the International Conference on Software Engineering (ICSE 2005), pp. 46-52, May 2005, St. Louis, MO.*

14. Sherriff, M., Nagappan, N., Williams, L., Vouk, M., "Early Estimation of Defect Density Using an In-Process Haskell Metrics Model", Advances in Model based Software Testing (A-MOST) Workshop, co-located with the International Conference on Software Engineering (ICSE 2005), May 2005, St. Louis, MO.

15. Nagappan, N., Williams, L., Vouk, M., Osborne, J., "Using In-Process Testing Metrics to Estimate Software Reliability: A Feasibility Study", FastAbstract in supplementary proceedings, International Symposium on Software Reliability Engineering (ISSRE 2004), pp. 21-22, St. Malo, France, November 2004.

16. Nagappan, N., "Toward a Software Testing and Reliability Early Warning Metric Suite", Doctoral Symposium, Proceedings of the International Conference on Software Engineering (ICSE 2004), pp 60-62. Edinburgh, Scotland, May 2004.
    Acceptance rate: 31%

17. Nagappan, N., "Software Reliability Estimation using Internal Code Metrics", ACM Student Research Contest (SRC) co-located with ACM Special Interest Group in Computer Science Education, (SIGCSE 2004), Norfolk, VA, March 2004.

18. Nagappan, N., Williams, L., Vouk, M., "Towards a Metric Suite for Early Software Reliability Assessment", Fast Abstract, Supplementary proceedings of the International Symposium on Software Reliability Engineering, (ISSRE 2003), pp 238-239. Denver, CO. November 2003.

19. Nagappan, N., Williams, L., "A Software Reliability Estimation Framework for Extreme Programming", Student Paper in supplementary proceedings, International Symposium on Software Reliability Engineering. (ISSRE 2003), pp 315-316. Denver, CO. November 2003
Acceptance rate: 38%

20. Nagappan, N., Williams, L., Vouk, M., "Good Enough" Software Reliability Estimation Plug-in for Eclipse", *IBM-Eclipse Technology Exchange (ETX) Workshop*, Co-located with Object Oriented Programming Systems Languages and Applications (OOPSLA 2003), October 2003. pp 36-40. Anaheim, CA, October 2003.
Acceptance rate: 43%

THESES

1. Nagappan, N, "A Software Testing and Reliability Early Warning (STREW) Metric Suite", PhD. Thesis, *North Carolina State University*, 2005.

POSITION PAPERS AND OTHER REPORTS

1. Nagappan, N., "Potential of Open Source Systems as Project Repositories for Empirical Studies", Proceedings of the Dagstuhl Seminar on Empirical Software Engineering, Springer LNCS 4336, pp.126-131, 2007.

2. Nagappan, N., "Empirical Case Studies in Industry: Some Thoughts", Position paper, Proceedings of the Dagstuhl Seminar on Empirical Software Engineering, Springer LNCS 4336, pp.154, 2007

SELECTED TECHNICAL REPORTS

1. Gupta, A., Zimmermann, T., Bird, C., Nagappan, N., Bhat, T., Emran, S., Detecting Energy Patterns in Software Development, Microsoft Research Technical Report, # MSR-TR-2011-106, November 2011.

2. Sherriff, M., Boehm, B., Williams, L., Nagappan, N., "An Empirical Process for Building and Validating Software Engineering Parametric Models*",* North Carolina State University Department of Computer Science, Raleigh, NC - CSC TR 2005-45.

3. Zheng, J., Williams, L., Nagappan, N., Hudepohl, J., Snipes, W., Vouk, M., Ngo, K., "On the Effectiveness of Static Analysis Tools for Fault-Detection", North Carolina State University Department of Computer Science, Raleigh, NC - CSC TR 2005-2.

4. Nagappan, N., Williams, L., Vouk, M., Osborne, J., "Initial Results of using in-process testing metrics to estimate software reliability", North Carolina State University Department of Computer Science, Raleigh, NC - CSC TR-2004-05.

5. Nagappan, N., Sherriff, M., Williams, L., "On the Feasibility of Using Operational Profiles to Determine Software Reliability in Extreme Programming", NCSU CSC TR-2003-015.

6. Nagappan, N. Williams, L.,Baheti, P.,Gehringer, E.,Stotts, D., "Virtual Collaboration through Distributed Pair Programming", NCSU CSC TR-2003-02.

REFEREED POSTERS

1. Nagappan, N., "Software Reliability Estimation using Internal Code Metrics" , ACM Student Research Contest, Co-located with the *ACM Special Interest Group in Computer Science Education,* (SIGCSE 2004), Norfolk, VA. March 2004.

2. Williams, L., Nagappan, N., "GERT- Good Enough Reliability Tool", Poster at *IBM-Eclipse Technology Exchange (ETX)* Workshop, Co-located with the *International Conference on Software Engineering,* (ICSE 2003), Portland, OR, May 2003.

PANELS

The Impact of Assertion Research on Industrial Software Development – James C. Browne (Regents Chair in Computer Science – UT Austin), Gary T Leavens (Professor, Iowa State University), Nachiappan Nagappan (Microsoft Research), Sriram Sankar (Google)

Experimentation and Decision making in Software Engineering: How they are related? – Natalia Juristo (Professor, Univ Politecnica de Madrid), Nachiappan Nagappan (Microsoft Research), Forrest Shull (Fraunhofer-Center Maryland), Claes Wohlin (Professor and Deputy Vice-Chancellor, Blekinge Institute of Technology)

SUPERVISION

PhD Advisor

Chandra Shekhar Maddila, Delft University, Delft, The Netherlands. (Co-advised with Prof. Dr. Arie van Duersen). Sept 2019 to now.

Ayushi Rastogi, IIIT New Delhi. Primary advisor. (Co-advisor: Dr. Pankaj Jalote). Defense date: 8/2017. First position: Post-doc at UC Irvine with Dr. Andre Van der Hoek. Current Position: Post-doc at Delft Univ., Netherlands.

Post-docs

Abraham Hindle, Visiting Researcher, University of Waterloo/ UC Davis, Jun 2011 – Sept 2011. Current affiliation: Associate Professor, CS Department, University of Alberta, Canada.

Martin Pinzger, Visiting Researcher, University of Zurich, Sep 2007- Dec 2007. Current affiliation: Professor, Alpen-Adria-Universität Klagenfurt, Austria

Students

Rangeet Pan, Research Mentor, Microsoft Research (May 2020 – Aug 2020), PhD Student at Iowa State University.

Xiang Gao, Research Mentor, Microsoft Research (Jan 2020 – June 2020), PhD Student at National University of Singapore.

Foyzul Hassan, Research Mentor, Microsoft Research (May 2019 – Aug 2019), PhD Student at UTSA, San Antonio, Texas. *Current position: Assistant Professor, University of Michigan, Dearborn.*

Song Wang, Research Mentor, Microsoft Research (May 2018- Aug 2018), PhD student at the University of Waterloo, ON, Canada. *Current position: Assistant Professor, York University, Canada.*

Casey Casalnuovo, Research Mentor, Microsoft Research (May 2017- Aug 2017), PhD student at the University of California, Davis.

Denae Ford, Research Mentor, Microsoft Research (May 2016- Aug 2016), PhD student at North Carolina State University, Raleigh, NC. *Current position: Senior Researcher, Microsoft Research, Redmond, WA.*

Laura Inozemtseva, Research Mentor, Microsoft Research (May 2016- Aug 2016), PhD student at the University of Waterloo, ON, Canada. *Current position: Ghost Locomotion.*

Pavneet Singh Kochhar, Research Mentor, Microsoft Research (May 2015- Aug 2015), PhD student at SMU, Singapore. *Current position: Software engineer, Microsoft Azure.*

Erik Harpstead, Research Mentor, Microsoft Research (May 2014-Aug 2014), PhD student at CMU. *Current position: Research Scientist – CMU.*

Baishakhi Ray, Research Mentor, Microsoft Research (May 2013- Aug 2013), PhD student at UT Austin. *Current Affiliation: Assistant Professor, Columbia University, NY*

Alex Tarvo, Research Mentor, Microsoft Research (May 2012 – Aug 2012), PhD student at Brown University. *Current affiliation: Research Scientist, Google Research.*

Jeff Huang, Research Mentor, Microsoft Research (June 2012-Sep 2012), PhD student at the University of Washington. *Current affiliation: Associate Professor, Brown University, RI*

Kenneth Hullett, Research Mentor, Microsoft Research (May 2010 – Aug 2010), PhD student at UCSC. *Current affiliation: Electronic Arts (EA)*

Kalaikumaran Ramamurthy, Research Mentor, Microsoft Research (May 2010- Aug 2010). Undergraduate at National Institute of Technology, Tiruchirapalli, (Indian intern program). *Current affiliation: Google*

Christian Bird, Research Mentor, Microsoft Research (May-Aug 2008) (Jun-Sep 2009), PhD student at University of California, Davis. *Current affiliation: Principal Researcher, Microsoft Research*

Lucas Layman, Research mentor, Microsoft Research (June-Aug 2007), PhD student at North Carolina State University. *Current affiliation: Assistant Professor, UNC-W.*

Shipa Bugde, Research co-mentor (with Sriram Rajamani and Ganesan Ramalingam), (May-July 2007) MSR Bangalore. MBA student at Symbiosis Institute of Management. *Current affiliation: Deloitte*

Thomas Zimmermann, Research mentor, Microsoft Research, (May-Aug 2006). Doctoral student at Saarland University. *Current affiliation: Sr. Principal Researcher, Microsoft Research.*

Martin H.E. Davidsson, Undergraduate research, North Carolina State University (2004). *Current affiliation: Senior Software Engineer, Google NEST.*

TEACHING EXPERIENCE

CSC 712 - Software Testing and Reliability (NCSU):– Teaching Assistant
- Lectured, created assignments and tests, setup labs, graded projects and tests.
- Course Feedback (on a scale of 1-5)- (Department averages in parentheses)

TA is well informed	TA understands subject	TA understands platforms	TA attends office hours	TA overall
4.92 / (4.21)	**5.0** / (4.24)	**5.0** / (4.21)	**5.0** / (4.16)	**4.77** / (4.21)

Guest Lecturer
- CSC 326 (Undergraduate Software Engineering Fall 2003),
- CSC 510 Graduate Software Engineering, Fall 2002 (Software Reliability), Fall 2003 (Agile Software Development), Fall 2004 (Software Reliability).

Instructor
- Engineering Excellence @ Microsoft. Classes on Code Reviews and Unit Testing for several hundred MSFT employees.

INVITED AND CONFERENCE TALKS

Keynote Presentations

TAP 2010 (Test Analysis and Proofs) Conference, Title: Myths in Software Engineering: From the other side, July 2, 2010, Malaga, Spain.

Invited Presentations

ICSE 2020, Harlan Mills Award Acceptance Talk, 7/2020. Host: Dr. Gregg Rothermel

Facebook, "Data + Software Engineering: Better Together!" , 9/2019. Host: Dr. Satish Chandra.

ING Amsterdam, "Software Productivity and Empirical SE Studies", 4/2019. Host: Dr. Hennie Huijgens.

Indian Institute of Technology, Madras, "Empirical Software Engineering and Data Analytics", 8/2013. Host: Dr. Janakiram Dharanipragada.

Singapore Management University, "Empirical Software Engineering Research at Microsoft", 7/2013. Host: Dr. David Lo.

National University of Singapore, "Empirical Software Engineering Research at Microsoft", 7/2013. Host: Dr. Abhik Roychoudhury.

Cisco Research, "Failure prediction and Empirical Research", 11/2009, Host: Dr. Pete Rotella.

International Conference on Software Engineering, "Do Crosscutting Concerns Cause Defects?". Invited TSE paper to a special session at ICSE 2009 in Vancouver, Canada. Co-presented with Gail Murphy.

University of British Columbia, Vancouver, Canada – "The Influence of Organizational Structure on Software Quality: An Empirical Case Study", 4/2008. Host: Dr. Gail Murphy

Simula Research Labs and University of Oslo - "How dependencies predict failures", 9/2007. Host: Dr. Lionel Briand.

University of Maryland, College Park – "Predicting Software Quality Using Organizational Metrics: An Empirical Case Study", 8/2007. Host: Dr. Victor Basili.

Saarland University, Saarbrucken - "Early Estimation of Software Quality: An Insider View of Software Measurement at Microsoft", 6/2006. Host: Dr. Andreas Zeller.

North Carolina State University, Raleigh - "Explaining Failures Using Software Dependences and Code Churn Metrics in Commercial Software Systems", 6/2006. Host: Dr. Laurie Williams

Conference Presentations

"Cross project defect prediction", Test-of-time award talk at Tallinn, Estonia with Thomas Zimmermann. 8/2019.

"Global Software Servicing: Observational Experiences at Microsoft", ICGSE 2008, Bangalore, India (8/2008).

"The Influence of Organizational Structure on Software Quality: An Empirical Case Study", ICSE 2008, Leipzig, Germany (5/2008).

"Using Historical In-Process and Product Metrics for Early Estimation of Software Failures", ISSRE 2006, Raleigh, NC (11/2007).

"Assessing the Relationship between Software Assertions and Code Quality: An Empirical Investigation", ISSRE 2006, Raleigh, NC (11/2007).

"Evaluating the Efficacy of Test-Driven Development: Industrial Case Studies", ISESE 2006, Rio de Janeiro, Brazil (9/2006).

"Mining Metrics to Predict Component Failures", ICSE 2006, Shanghai, China (5/2006)

"Models for identifying failure-prone binaries in Windows", MSR Mind Swap, Shanghai, China (5/2006).

"Leveraging Software Metrics to Understand Failures", Microsoft Research, Bangalore (2/2006)

"Providing Test Quality Feedback Using Static Source Code and Automatic Test Suite Metrics", ISSRE 07, Chicago, IL (9/2005)

"Use of Relative Code churn Measures to Predict System Defect Density" ICSE 2005, St. Louis, MO (5/05)

"Static Analysis Tools as Early indicators of Pre-Release Defect Density" ICSE 2005, St. Louis, MO (5/05)

"A Software Testing and Reliability Early Warning (STREW) metric suite", Microsoft Research, Redmond, WA (11/04).

"Preliminary Results On Using Static Analysis Tools For Software Inspection" ISSRE 2004, St. Malo, France (11/04).

"Use of Relative Code Churn Measures for Quantification of System Defect Density", PPRC, Microsoft Research, Redmond, WA (07/04).

"Software Reliability Estimation using Internal Code Metrics" ACM Student Research Contest, Norfolk, VA (03/04).

"Pair Learning: With an Eye Toward Future Success", Agile/XP Universe 2004. New Orleans, LA, (8/2004).

"Improving the CS1 Experience with Pair Programming", SIGCSE 03, Reno, NV, (2/2003).

"Early Estimation of Software Quality Using In-Process Testing Metrics: A Controlled Case Study", Third Software Quality Workshop, co-located with the International Conference on Software Engineering (ICSE 2005), St. Louis, MO, (5/2005)

"Using In-Process Testing Metrics to Estimate Software Reliability: A Feasibility Study", (ISSRE 2004), St. Malo, France, (9/2004).

"Towards a Metric Suite for Early Software Reliability Assessment", (ISSRE 2003), Denver, CO. (9/2003).

"A Software Reliability Estimation Framework for Extreme Programming", (ISSRE 2003), Denver, CO. (9/2003)

"Good Enough" Software Reliability Estimation Plug-in for Eclipse", *IBM-Eclipse Technology Exchange (ETX) Workshop*, Co-located with Object Oriented Programming Systems Languages and Applications (OOPSLA 2003), Anaheim, CA, (10/2003).

PROFESSIONAL ACTIVITIES

Professional memberships

- ACM (Distinguished Scientist), ACM SIGSOFT.
- IEEE - Senior Member, IEEE Reliability Society
- ISERN (International Software Engineering Research Network). Since 2006.

Steering Committee Membership

- ESEM: Empirical Software Engineering and Measurement. (2008—2012)
- ISEC: India Software Engineering Conference. (2013-2016)

Editorial activities

- Associate Editor, IEEE Transactions on Software Engineering (TSE) (2020 – present)
- Associate Editor, IEEE Transactions on Reliability (ToR) (2020 – present)
- Editorial Board, Springer Empirical Software Engineering journal (2009 – present)
- Information and Software Technology (2012- 2014)
- Guest editor (With Andreas Zeller and Thomas Zimmermann), IEEE Software, Special Issue on Software Mining, Jan-Feb 2009.

Organizing activities

2021
- Publicity Co-chair, International Conference on Software Engineering, (ICSE), Madrid, Spain, 2021.
2017
- Publicity Co-chair, International Symposium on Software Reliability Engineering, (ISSRE), Toulouse, France, 2017
2013
- Program Co-chair, India Software Engineering Conference (ISEC), New Delhi, India, 2013.
- Organizer, International Workshop on the Engineering of Mobile-Enabled Systems (MOBS 2013), collocated with ICSE, San Francisco, CA, USA.
2012
- Program Co-chair, International Symposium on Software Reliability Engineering, (ISSRE), Dallas, Texas, USA, 2012
2010
- Program co-chair, ICSE 2010 NIER (International Conference on Software Engineering – New and Emerging Results track), Cape Town, South Africa.
- Program co-chair, ESEM 2010 (Empirical Software Engineering and Measurement), Bolzano, Italy
2009

- General Chair, ISERN 2009 (International Software Engineering Research Network Annual Meeting), Lake Buena Vista, Florida, co-located with ESEM 2009.
- Organizer, DEFECTS 2009 workshop, co-located with ISSTA (International Symposium on Software Testing and Analysis), Chicago, IL, 2009.

2008
- Organizer, DEFECTS 2008 workshop, co-located with ISSTA (International Symposium on Software Testing and Analysis), Seattle, WA, 2008.

2007
- Student papers Chair, IEEE International Symposium on Software Reliability Engineering (ISSRE) 2007, Trollhattan, Sweden.
- Short papers Chair, ACM-IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM) 2007, Madrid, Spain.

Program Committee Membership

2020
- ESEM 2020 - Empirical Software Engineering and Measurement
- EASE 2020 - 21st International Conference on Evaluation and Assessment in Software
- ICSME 2020 – International Conference on Software Maintenance and Engineering
- ICSE 2020 SRC – International Conference on Software Engineering, Student Research Contest
- ICSE 2020 DS - International Conference on Software Engineering, Doctoral Symposium
- SANER 2020 - International Conference on Software Analysis, Evolution, and Reengineering

2019
- ESEM 2019 - Empirical Software Engineering and Measurement
- ICSE 2019 - International Conference on Software Engineering
- ISEC 2019 – Innovations in Software Engineering Conference.
- SCAM 2019 - IEEE International Working Conference on Source Code Analysis and Manipulation
- CESSER-IP 2019 (Joint 7th International Workshop on Conducting Empirical Studies in Industry (CESI 2019) and 6th International Workshop on Software Engineering Research and Industrial Practice (SER&IP 2019))
- CESI2019 (International Workshop on Conduction Empirical Studies in Industry 2019)

2018
- ESEM 2018 - Empirical Software Engineering and Measurement
- ICSME 2018 – International Conference on Software Maintenance and Engineering
- EASE 2018 - International Conference on Evaluation and Assessment in Software Engineering
- EAQSE - First international workshop on Empirical Answers to Questions of Software Engineering
- ISEC 2018 - Innovations in Software Engineering Conference
- CESI 2018 - International Workshop on Conducting Empirical Studies in Industry
- ICPC 2018 - IEEE/ACM International Conference on Program Comprehension, Industry track
- ICSE 2018 SEIP - Software Engineering in Practice Track @ the International Conference on Software Engineering
- ISEC 2018 - Innovations in Software Engineering Conference
-

2017
- ESEM 2017 - Empirical Software Engineering and Measurement

- EASE 2017 - 21st International Conference on Evaluation and Assessment in Software Engineering
- CESI2017 - 5th International Workshop on Conducting Empirical Studies in Industry
- ICSE 2017 SEIP - Software Engineering in Practice Track @ the International Conference on Software Engineering 2017
- ISEC2017 - Innovations in Software Engineering Conference

2016
- ICSE 2016 – Program Board – International Conference on Software Engineering, Austin, Texas
- EASE 2016 - 20th International Conference on Evaluation and Assessment in Software Engineering
- ESEM2016 - Empirical Software Engineering and Measurement 2016
- CESI2016 - 4th International Workshop on Conducting Empirical Studies in Industry

2015
- APSEC 2015 - The 22nd Asia Pacific Software Engineering Conference
- ESEM 2015 - 9th International Symposium on Empirical Software Engineering and Measurement
- EASE 2015 - 19th International Conference on Evaluation and Assessment in Software Engineering
- ICGSE2015 - International Conference on Global Software Engineering

2014
- DAPSE 2014 - 2nd International Workshop on Data Analysis Patterns in Software Engineering
- ICST 2014 - IEEE International Conference on Software Testing, Verification, and Validation
- ICSE2014 - demo track, 36th International Conference on Software Engineering - Formal Demonstrations
- ISEC 2014 -7th India Software Engineering Conference 2014

2013
- ACM/IEEE Empirical Software Engineering and Measurement Conference (ESEM), Baltimore, MD, USA
- Workshop on Games and Software Engineering (GAS), collocated with ICSE, San Francisco, CA, USA.
- IEEE International Conference on Software Testing (ICST), Luxembourg.
- ACM/IEEE International Conference on Software Engineering (ICSE 2013), San Francisco, CA, USA.
- ACM/IEEE International Conference on Software Engineering (ICSE 2013) Workshops committee, San Francisco, CA, USA.

2012
- IEEE International Conference on Software Testing (ICST), Montreal, Canada
- ACM/IEEE Empirical Software Engineering and Measurement Conference (ESEM), Lund, Sweden.
- ACM Foundations on Software Engineering (ESEC/FSE) New and Emerging Results Track (NIER), Raleigh, NC, USA.
- Workshop on Games and Software Engineering (GAS), collocated with ICSE, Zurich, Switzerland.

2011
- ACM/IEEE Empirical Software Engineering and Measurement Conference (ESEM), Banff, Canada.
- IEEE International Symposium on Software Engineering (ISSRE), Hiroshima, Japan
- ACM European Conference on Software Engineering/ Foundations on Software Engineering (ESEC/FSE), Szeged, Hungary.
- Workshop on Developing Tools as Plug-ins (TOPI 2011), Hawaii, USA.

- ACM/IEEE International Conference on Software Engineering (ICSE 2010), Honolulu, Hawaii.

2010
- International Working Conference on Mining Software Repositories (MSR 2010), Cape Town, South Africa.
- ACM/IEEE International Conference on Software Engineering (ICSE 2010), Cape Town, South Africa.

2009
- ACM-IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM 2009), Lake Buena Vista, Florida.
- International Working Conference on Mining Software Repositories (MSR 2009), Vancouver, Canada.
- Demo track, Automated Software Engineering (ASE 2009), Auckland, New Zealand.
- Second India Software Engineering Conference (ISEC 2009), Pune, India.

2008
- Integrated Support or Integrated Overhead? Infrastructure for Research in Collaborative Software Engineering, Workshop at Foundations of Software Engineering (FSE) 2008.
- IEEE International Conference on Software Reliability Engineering (ISSRE 2008), Redmond, WA, 2008
- ACM-IEEE Empirical Software Engineering and Measurement Conference (ESEM 2008), Kaiserslautern, Germany, 2008
- Workshop on Software Engineering with Computational Intelligence and Machine Learning (SECIML) 2008, Redwood city, CA.
- Twentieth International conference of Software Engineering Knowledge Engineering (SEKE 2008), Redwood city, CA.
- First India Software Engineering Conference (ISEC 2008), Hyderabad, India.

2007
- IEEE International Symposium on Software Reliability Engineering (ISSRE 2007), Trollhattan, Sweden.
- Fifth Workshop on Software Quality, Collocated with ICSE 2007, Minneapolis, MN.

2006
- IEEE International Symposium on Software Reliability Engineering (ISSRE 2006), Raleigh, NC.
- Fourth Workshop on Software Quality, Collocated with ICSE 2006, Shanghai, China.

2005
- Workshop on Software Assurance Tools, Techniques, and Metrics, Collocated with ASE 2005, Long Beach, CA.

Reviewer
- Funding
  National Science Foundation (2010- present)
  NSERC, Canada (2012 – Present)
  Microsoft PhD Fellowships (2008-Present)
  Microsoft New Faculty Fellowship (NFF) 2006 - Present

- Journal
  ACM Transactions on Software Engineering and Methodology (2006-present)
  IEEE Transactions in Software Engineering (2004 - Present)
  IEEE Transactions on Reliability (2004- Present)

IEEE Software (2003 - Present)
IEEE Computer (2003 - Present)
Information and Software Technology, Elsevier (2006 - present)
Empirical Software Engineering Journal (2006 - present)

- Conference (not on PC)
  International Conference on Object-Oriented Programming, Systems, Languages and
      Applications (OOPSLA) – 2008.
  Foundations of Software Engineering (FSE) - 2008
  Dependable Systems and Networks (DSN) - 2008
  International Symposium on Software Testing and Analysis (ISSTA) – 2007.
  International Conference on Software Engineering (ICSE) - 2004, 2006
  Programming Language Design and Implementation (PLDI) – 2006
  Workshop on Software Assurance Tools, Techniques, and Metrics (SATTM) – 2005
  Workshop on Software Quality, Collocated with ICSE 2006, Shanghai, China. - 2006
  ACM Special Interest Group in Computer Science Education (SIGCSE) - 2004, 2005

Student Volunteer: SIGCSE 2003, Reno, NV 2003, ICSE 2003, Portland, OR 2003, XP/AU, New Orleans, LA 2003.

SOFTWARE

NUDGE: NUDGE is an effort estimation tool operating at the level of pull requests (PRs) in order to nudge developers towards completing their PRs once the open time exceeds the estimated time of effort. Nudge has been deployed to tens of thousands of developers across Microsoft to improve overall developer and team productivity. Published in ESEC/FSE 2019.

CODEMINE: CODEMINE is a Software Analytics Data platform (CODEMINE) for collecting and analyzing engineering process data ranging from Source Code, Bug information, Test data, People and Organizational data, Process data like code review information, code velocity, Code Complexity information, Dependency data and usage telemetry data. All this data is collected for every MS system and is stored in a robust manner to use to make data driven decisions across the spectrum from optimizing builds to empirical questions regarding who should review a change. Published in IEEE Software.

CRANE: CRANE is a risk analysis and impact estimation tool for Windows. Windows invested headcount to build this and I was on loan from MSR to Windows for FY 2008 to build this tool. This tool was used for bug triage, risk analysis and test prioritization for all fixes in Windows Vista SP2 on. [CRANE paper – ICST 2011]

Little Brother: Little Brother is a Failure-prediction tool built using organizational measures to predict failures. It generates easy to navigate reports that reflect the OS development by mining version archives, bug repositories and people management information. It scales to the entire Windows base. It is used in Windows. [Organizational Metrics paper ICSE 2008].

GERT (Good Enough Reliability Tool): GERT is a tool to complement the feedback loops created by continuous unit testing. The tool combines static source code metrics with dynamic test coverage for use throughout development to estimate the reliability for the system under development. Implemented as

an open source plug-in to the Eclipse IDE, the tool facilitates the rapid transition between unit test case completions and testing feedback. The color-coded results highlight inadequate testing efforts as well as weaknesses in overall program structure. (With Martin Davidsson and Jiang Zheng – GERT paper ISSRE 2004).

PET (Peer evaluation tool) V 1.0: Used at NC State University by the classes CSC 116, CSC 326, CSC 517, ECE 521. (Tool used by approx.1000 students). Tool matches students based on their Myer Briggs personality profiles, skill level and compatibility. It allows students to evaluate their partners in order to evaluate equal sharing of load among programming partners [SIGCSE 2003 paper].

FUNDING ADMINISTRATION

SEIF Awards at Microsoft: Software Engineering Innovation Foundation (SEIF) Awards to support academic research in software engineering technologies, tools, practices, and teaching methods. Projects can be related to any of the core areas of interest in software engineering research and education. Co-ran with Dr. Judith Bishop with MSR external relations office. 10-12 awards each year. Ran the program for two years 2010 and 2011. Record proposals submitted both years.

EDUCATION

North Carolina State University, Raleigh   Feb 2005
Ph.D. in Computer Science,
Title: *A Software Testing and Reliability Early Warning (STREW) Metric Suite*
Advisor: Dr. Laurie Williams
Committee: Dr. Mladen Vouk, Dr. Christopher Healey, Dr. Jason Osborne

North Carolina State University, Raleigh   Dec 2002
M.S. in Computer Networking (Computer Science)
Advisor: Dr. Laurie Williams

University of Madras, Madras   May 2001
B.Tech. in Information Technology
First class with Distinction

REFERENCES

Dr. Premkumar T. Devanbu
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Professor
Department of Computer Science
University of California, Davis, USA
Email: ptdevanbu@ucdavis.edu

Dr. Ahmed E. Hassan
IEEE Fellow
Professor and NSERC/RIM Industrial Research
Chair in Software Engineering
IEEE Fellow
Queens University, ON, Canada
Email: ahmed@cs.queensu.ca

Dr. James Larus
ACM Fellow
Professor and Dean of the School of Computer
and Communication Sciences (IC)
EPFL (École Polytechnique Fédérale de Lausanne),
Switzerland
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Dr. Gail C. Murphy
ACM Fellow
Professor in the Department of Computer Science
and Vice-President Research & Innovation
University of British Columbia, Canada.
Email: murphy@cs.ubc.ca

Dr. Thomas Zimmermann
IEEE Fellow
Senior Principal Researcher
Microsoft Research
Redmond, WA, USA
Email: tzimmer@microsoft.com