

## **Premkumar T. Devanbu**

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### **EDUCATION:**

Ph.D., 1994, Computer Science, Rutgers University. Thesis: *Software Information Systems*. Advisor: Professor Alex Borgida. (Part-time student since 1984).

M.S., 1979, Computer Science, Rutgers University. Thesis: *Switching System Design & Sorting Algorithms: Some Parallels*. Advisor: Professor Dave Wilkens.

B.Tech., 1977, Electrical Engineering, Indian Institute of Technology, Madras, India.

### **AREAS OF INTEREST:**

Mining software repositories, Empirical software engineering, software quality, software metrics, reverse engineering, program understanding, software security, and middleware.

## POSITIONS HELD:

- 2005 (July) - Present *Professor, Department of Computer Science, University of California, Davis, CA 95616.*
- 2000 (July) *Associate Professor, Department of Computer Science, University of California, Davis, CA 95616.*
- 1998-2000 (June) *Assistant Professor, Department of Computer Science, University of California, Davis, CA 95616.*
- 1995-1997 *Principal Member of Technical Staff, Information Systems and Services Research Laboratory, AT&T Laboratories - Research, Murray Hill, NJ.*
- 1984-1995 *Member of Technical Staff, Software and Systems Research Laboratory, AT&T Bell Laboratories, Murray Hill, NJ.*
- 1982-1984 *Member of Technical Staff, Software Systems Laboratory, AT&T Bell Laboratories, Piscataway, NJ.*
- 1979-1982 *Member of Technical Staff, Software Development, Perkin-Elmer Corporation.*

## PUBLICATIONS:

### JOURNAL PUBLICATIONS AND BOOK CHAPTERS

- J.1. Hassan, A., Hindle, A., Runeson, P., Shepperd, M., Devanbu, P., Kim, S., What's next in Software Analytics. *IEEE Software*, 2013.
- J.2. Rahman, F., Bird, C., Devanbu, P., Clones: What is that smell? accepted to *Empirical Software Engineering, an International Journal* 2012 Springer-Verlag
- J.3. Posnett, D., Bird, C., Devanbu, P., An Empirical Study on the Influence of Pattern Roles on Change-Proneness, *Empirical Software Engineering, an International Journal* 2011 Springer-Verlag

- J.4. Bird, C., Nagappan, N., Devanbu, P., Gall, H., and Murphy, B., Does Distributed Development Affect Software Quality? An Empirical Case Study of Windows Vista, *Research Highlight, Communications of the Association of Computing Machinery*, August, 2009. Revised version of ICSE 2009 paper (see below).
- J.5. Filkov, V., Saul, Z.M., Roy, S., D'Souza, R.M., and Devanbu, P. Modeling and verifying a broad array of network properties *Euro-Physics Letters*, 86 (2009) 28003
- J.6. Jackson, Stoney, Devanbu, P., Ma, K-L., Scalable, Flexible, Pretty Printing, *Science of Computer Programming*, 72(1), June 2008.
- J.7. Wasserman, G, Gould, S., Su, Z., and Devanbu, P, "Static Checking of Dynamically Generated Queries in Database Applications", accepted to *ACM Transactions on Software Engineering*.
- J.8. Wohlstadter E., Devanbu, P., and Jackson, S., "Aspect-Oriented Development of Crosscutting Features in Distributed, Heterogeneous Systems", accepted to *Transactions on Aspect-Oriented Software Development, Springer-Verlag*, 2006
- J.9. Martel, C., Nuckolls G., Devanbu, P., Gertz, M, " A General Model for Authentic Data Publication". *Algorithmica*, Vol. 39, No. 4, 2004.
- J.10. Devanbu, P., Gertz, M., Kwong, A., Martel, C., Nuckols, G., and Stubblebine, S., "Flexible Authentication of XML Documents", *Journal of Computer Security*, Vol. 12 , No. 4, 2004.
- J.11. Gertz, M., Kwong, A., Martel, C., Nuckolls, G., Devanbu, P., and Stubblebine, S., Databases that tell the Truth: Authentic Data Publication *Bulletin of the Technical Committee on Data Engineering*, March 2004, Vol 7, No 1.
- J.12. Devanbu, P., Gertz, M., Martel, C., Stubblebine, S. , "Authentic Third-Party Data Publication", of *Journal of Computer Security*, 11(3), 2003.
- J.13. Devanbu, P., Stubblebine, S., "Stack and Queue Integrity on Hostile Platforms", *IEEE Transactions on Software Engineering.*, January 2002
- J.14. Devanbu, P., Stubblebine, S., Guest Editors Intruction: Software Engineering and Security, *ACM Transactions on Software Engineering and Security*, 2001
- J.15. Devanbu, P., Desert Island Column , Invited guest column for *Journal of Automated Software Engineering* , 2000

- J.16. Devanbu, P.T.; Perry, D.E.; Poulin, J.S. Guest editors introduction: Next generation software reuse *IEEE Transactions on Software Engineering* May 2000
- J.17. Devanbu, P., "Retargetability in Software Tools" *ACM Applied Computing Review*, 2000
- J.18. Devanbu, P., Stubblebine, S., "Cryptographic Verification of Test Coverage Claims", *IEEE Transactions of Software Engineering*, 2000.
- J.19. Cohen, W., Devanbu, P., "Automatically Exploring Hypotheses about Fault Prediction: a Comparative Study of Inductive Logic Programming Methods" *International Journal of Software Engineering and Knowledge Engineering*, Special Issue on "Knowledge Discovery from Software Engineering Data",
- J.20. Devanbu, P., "GENOA: A Language and Front-End independent Source Code Analyzer", *ACM Transactions in Software Engineering*, 1999.
- J.21. Devanbu, P., Frakes W., "Extracting Formal Domain Models from Existing Code for Generative Reuse", *ACM Applied Computing Review*, 1997.
- J.22. Devanbu P., Jones, M. "The Use of Description Logics in KBSE Systems", *ACM Transactions on Software Engineering*, 1997.
- J.23. Devanbu P., Rosenblum, D., Wolf., A. "Generating Testing and Analysis Tools with Aria", *ACM Transactions on Software Engineering*, 1996.
- J.24. Devanbu, P., Litman, D. "CLASP - a Plan Representation and Classification Scheme for a Software Information System", *Artificial Intelligence*, 1996.
- J.25. Devanbu P., "On a Framework for Source Code Search Using Program Patterns", *IEEE Transactions on Software Engineering*, 1995.
- J.26. Devanbu, P., Brachman, R., Selfridge P., Ballard, B., "LaSSIE - a Knowledge-Based Software Information System", special issue of the *Communications of the ACM*, containing the best papers from the *Twelfth International Conference on Software Engineering*, May 1991.
- J.27. Devanbu, P., Selfridge, P., Ballard, B., Brachman, R., "LaSSIE - a Knowledge-Based Software Information System" (Same material as above) also appears in Prieto-Diaz, R., and Arango, G. (eds) *IEEE Tutorial, "Domain Analysis and Software Systems Modeling"*, *IEEE Computer Society Press*, 1991.

- J.28. Belanger, D., Brachman, R., Chen, Y.-F., Devanbu, P., Selfridge P., "Progress towards a Software Information System", *AT&T Technical Journal*; Summer/Fall 1990.
- J.29. Devanbu, P., Selfridge, P., Ballard, B., Brachman, R., "A Knowledge-Based Software Information System", (originally appearing Proceedings of the *International Joint Conference in Artificial Intelligence 89*, Detroit, August 1989), in "Automating Software Design", R. McCartney and M. Lowry (Eds), *MIT Press*; Winter 1990.
- J.30. Agrawal, R., Devanbu, P. "Selections in Linear Least Fixpoint Queries", Special section of *IEEE Transactions on Data and Knowledge Engineering* 1(4), December 1989, featuring the best papers from the *Fourth and Fifth IEEE Conferences on Data Engineering*.

## CONFERENCE PUBLICATIONS

**Summary:** *Some conferences are selective, with rigorous peer review, and archival published proceedings, they are numbered in bold. Acceptance rates shown in parentheses when available.*

- C\*.1.** Tu, Z., Su, Z., and Devanbu, P, On the Localness of Software, *Accepted, ACM SIGSOFT FSE 2014 (22%)*
- C\*.2.** Mani, S., Sankaranarayanan, K., Sinha, V., Devanbu, P., Panning Requirement Nuggets in Stream of Software Maintenance Tickets , *Accepted, ACM SIGSOFT FSE 2014 (22%)*
- C\*.3.** Barr, E., Brun, Y., Devanbu, P., Harman, M., and Sarro, F., The Plastic Surgery Hypothesis, *Accepted, ACM SIGSOFT FSE 2014 (22%)*
- C\*.4.** Xuan, Q., Okanao, A., Devanbu, P., and Filkov, V., Focus-Shifting Patterns of OSS Developers and Their Congruence with Call Graphs *Accepted, ACM SIGSOFT FSE 2014 (22%)*
- C\*.5.** Ray, B., Posnett, D., Filkov, V., and Devanbu, P. A Large Scale Study of Programming Languages and Code Quality in Github *Accepted, ACM SIGSOFT FSE 2014 (22%)*
- C\*.6.** Vasilescu, B., Serebrenik, A., Devanbu, P., Filkov, V., How social Q&A sites are changing knowledge sharing in open source software communities. *CSCW 2014 (27%)*

- C\*.7. Rahman, F., Barr, E., Khatri, S., Devanbu, P., Comparing Static bug finders and Statistical defect prediction, (*ICSE 2014*), (20%)
- C.8. Asking for (and about) permissions used by Android apps Stevens, R., Ganz., J., Filkov, V., Devanbu, P., Chen, H., MSR 2013
- C\*.9. Rahman, F., Posnett, P., Herraiz, I., Devanbu, P., Sample size vs. bias in defect prediction. *ESEC/FSE 2013* (20%)
- C\*.10. Kavalier D., Posnett, D., Gibler, C., Chen, H., Devanbu, P., and Filkov, V., Using and Asking: APIs Used in the Android Market and Asked about in StackOverflow  
*Proceedings, Social Informatics Confernce, 2013* (24%)
- C\*.11. Rahman, F., and Devanbu, P., How and why process metrics are better. ICSE 2013 (18%)
- C\*.12. Daryl Posnett, Prem Devanbu and Vladimir Filkov Dual ecological measures of focus in Software Development ICSE 2013 (18%) **Winner ACM SIGSOFT Distinguished Paper**
- C\*.13. Ferdian Thung, Lucia, David Lo, Lingxiao Jiang, Lucia Lucia, Foyzur Rahman and Prem Devanbu To what extent could we detect field defects? an empirical study of false negatives in static bug finding tools. *ASE 2012*, (15%)
- C\*.14. Ferdian Thung, David Lo, Lingxiao Jiang, Lucia Lucia, Foyzur Rahman and Prem Devanbu When Would This Bug Get Reported? *Accepted to ICSM 2012* (25%)
- C\*.15. Rahman, F., Devanbu, P., Recalling the “Imprecision” of cross-project defect prediction. *Accepted to FSE 2012* (17%)
- C\*.16. Posnett, D., Devanbu, P., Filkov, V., MIC Check: A Correlation Tactic For ESE Data, *MSR 2012* (28%)
- C\*.17. Hindle, A., Barr, E., Gabel, M., Su, Z., Devanb, P., On the “Naturalness” of software, *ICSE 2012* (21%)
- C\*.18. Barr, E., Bird, C., Rigby, P., Hindle, A., German, G., Devanbu, P., Cohesive and Isolated Development with Branches, *FASE 2012* (27%)
- C\*.19. Xuan, Q., Gharehyazie, M., Devanbu, P., Filkov, V., Measuring the Effect of Social Communications on Individual Working Rhythms: A Case Study of Open Source Software. *Social Informatics, 2012* (25%)

- C.20. Posnett, D., Warburg, E., Devanbu, P., Filkov, V., Mining Stack Exchange: Expertise Is Evident from Initial Contributions *Social Informatics, 2012* (short paper)
- C.21. Posnett, D., Hindle, A., Devanbu, P., Got Issues? Do New Features and Code Improvements Affect Defects? *WCRE 2011*
- C\*.22. Posnett, D., Filkov, V., and Devanbu, P., Ecological Inference in Empirical Software Engineering, *ASE 2011, (15%) Winner ACM SIGSOFT Distinguished Paper* and *Best paper of ASE 2011* awards.
- C\*.23. Rahman, F., Posnett, D., Barr, E., Hindle, A., Devanbu, P., BugCache for Inspections: hit or miss? *FSE 2011, (17%) Nominated for ACM SIGSOFT Distinguished Paper Award*
- C\*.24. Bird, C., Nagappan, N., Murphy, B., Gall, H., Devanbu, P., Don't Touch My Code! Examining the Effects of Ownership on Software Quality *FSE 2011, (17%)*
- C\*.25. Rahman, F., and Devanbu, P., Ownership, Experience and Defects: A fine-grained study of Authorship *ICSE 2011 (14%)*
- C.26. Posnett, D., Hindle, A., Devanbu, P., A Simpler Model of Software Readability *MSR 2011 (30%)*.
- C.27. Wang, X., Baik, E., Devanbu, P., Operating System Compatibility Analysis of Eclipse and Netbeans, based on bug data, *MSR Mining Challenge 2011*.
- C\*.28. Bachmann, B., Bird, C., Rahman, F., Devanbu, P., Berstein, A., The Missing links: bugs and bug-fix commits, *SIGSOFT FSE 2010 (20%)*
- C.29. Nia, R., Bird, C., Devanbu, P., Filkov, V., Validity of Network Analyses in Open Source Projects. *MSR 2010 (31%)*
- C.30. Rahman, M.F., Bird, C., Devanbu, P., Clones: What is that Smell? *Best Paper Award, MSR 2010 (31%)*
- C.31. Posnett, D., Bird, C., Devanbu, P., Thex: Mining Metapatterns in Java. *MSR 2010* (short paper) **(31%)**
- C\*.32. Bird, C., Nagappan, N., Devanbu, P., Gall, H., and Murphy, B., Putting it All Together: Using Socio-Technical Networks to Predict Failures, *ISSRE 2009 (19%)*

- C\*.33. Bird, C., Bachmann, A., Aune, E., Duffy, J., Bernstein, A., Filkov, V., Devanbu, P., Fair and Balanced? Bias in bug-fix datasets, *SIGSOFT ESEC-FSE 2009*. (15%)
- C.34. Bird, C., Rigby, P., Barr, E., Hamilton, D., German, D., and Devanbu, P. The Promises and Perils of Mining Git *Proceedings, Sixth IEEE International Working Conference on Mining Software Repositories* (30%) 2009
- C\*.35. Bird, C., Nagappan, N., Devanbu, P., Gall, H., and Murphy, B., Does Distributed Development Affect Software Quality? An Empirical Case Study of Windows Vista *ICSE 2009, Proceedings* (to appear). (12%) *ACM SIGSOFT Distinguished Paper, also invited to appear in CACM Research Highlights*.
- C\*.36. Bird, C., Barr, E., Nash, A., Devanbu, P., Filkov, V., Su, Zhendong, Structure and Dynamics of Research Collaboration in Computer Science, *Proceedings, SIAM International Conference on Data Mining 2009*.
- C\*.37. Bird, C., Pattison, D., De Souza, R., Filkov, V., and Devanbu, P., Community Structure in Open-source Developer Social networks, *ACM SIGSOFT FSE 2008 Proceedings*, 2008. (20%)
- C\*.38. Shroff, G., Agrawal, P., Devanbu, P., Instant Multi-Tier Web Applications without Tears. *Indian Software Engineering Conference 2009* (13%)
- C\*.39. Pattison, D., Devanbu, P., Gertz, M. Talk and work: a preliminary report *MSR '08: Proceedings of the 2008 international workshop on Mining software repositories*, (short paper) 2008.
- C\*.40. Alonso, O., Bird, C., Devanbu, P., Expertise identification and visualization from CVS *MSR '08: Proceedings of the 2008 international workshop on Mining software repositories*, (short paper) 2008.
- C\*.41. Michael Ogawa, Kwan-Liu Ma, Christian Bird, Premkumar T. Devanbu, Alex Gourley: Visualizing social interaction in open source software projects. *APVIS 2007*
- C\*.42. Saul, Z., Filkov, V., Devanbu, P, and Bird, C. "Recommending Random Walks" *Proceedings of the 2007 ACM ESEC/SIGSOFT Foundations of Software Engineering Conference Nominated for ACM SIGSOFT Distinguished Paper Award* (17%)
- C.43. Bird, C., Gourley, A., Devanbu P, Swaminathan, A., and Hsu, G. "Open Borders? Immigration in Open Source Projects", *Proceedings of the 2007 ICSE International workshop on Mining software repositories* (38%)



- C.44. Bird, C., Gourley, A., Devanbu P, Swaminathan, A., and Hsu, G. "Detecting Patch Submission and Acceptance in OSS Projects", *Proceedings of the 2007 ICSE International workshop on Mining software repositories* (Short paper)
- C\*.45. Demir, O, Devanbu, P, Wohlstadter, E., Tai, S, "Aspect-oriented approach to bypassing in Middleware" *Proceedings of the 2007 Aspect-oriented Software Development Conference*, (18%)
- C.46. Bird, C., Gourley, A., Devanbu, P., Swaminathan, A., and Gertz, M., "Mining E-mail Social Networks", *Proceedings of the 2006 ICSE International workshop on Mining software repositories* (31% )
- C.47. Demir, O.E., Devanbu, P., Wohlstadter, E., and Tai, S., Optimizing Layered Middleware, *SEM '05: Proceedings of the 5th international workshop on Software engineering and middleware*, 2005.
- C.48. Gould, C.R., Su, Z., Devanbu, P.T., JDBC Checker: A Static Analysis Tool for SQL/JDBC Applications. Research Demonstrations Track, *ICSE 2004*
- C.49. Wohlstadter, E., Jackson, S., Devanbu, P.T: Design and Implementation of Distributed Crosscutting Applications, Research Demonstration Track, *ICSE 2004*.
- C\*.50. Gould, C.R., Su, Z., Devanbu, P., "Static Checking of Dynamically Generated Queries in Database Applications", *ICSE 2004*, Edinburgh, UK. (13%). *ACM SIGSOFT Distinguished Paper*
- C\*.51. Wohlstadter, E., Tai, S., Thomas, A., Rouvellou, I., Devanbu P., "GlueQoS: Middleware to Sweeten Quality-of-Service Policy Interactions", *ICSE 2004*, Edinburgh, UK. (13%)
- C.52. Alonso, O., Gertz. M., Devanbu, P., Database Techniques for the Analysis and Exploration of Software Repositories *MSR '04: International Workshop on Mining Software Repositories*, Edinburgh, UK, 2004.
- C.53. Dahlgren, T., Devanbu, P. Adaptable Assertion Checking for Scientific Software Components, *International Workshop on Software Engineering for High Performance Computing System Applications*, Edinburgh, UK 2004.
- C.54. Wohlstadter, E., Devanbu, P., "DADO: a novel programming model for distributed, heterogeneous, late-bound QoS implementations", *Proceedings, Workshop on Secure Reliable Middleware (SRM)* , Catania, Italy, 2003.

- C\*.55. Devanbu, P., Gertz, M., Toone, B., "Static type-inference for Trust in Distributed Information Systems", *Tenth International Conference on Co-operative Information Systems (COOPIS)*, Catania, Italy, 2003. (23%)
- C\*.56. Toone, B., Gertz, M., Devanbu, P., "Trust Mediation for Distributed Information Systems", *Eighteenth International Information Security Conference*, 2003, (27%)
- C\*.57. Wohlstadter, E., Jackson, S., Devanbu, P., "DADO: Enhancing middleware to support cross-cutting features in distributed, heterogeneous systems", *ICSE 2003* (13%) *Nominated for the ACM SIGSOFT Distinguished paper*
- C.58. Premkumar T. Devanbu, Bob Balzer, Don S. Batory, Gregor Kiczales, John Launchbury, David Lorge Parnas, Peri L. Tarr: Modularity in the New Millennium: A Panel Summary. *ICSE 2003*
- C.59. Wohlstadter, E., Toone, B., and Devanbu, P., A Framework for Flexible Evolution in Distributed Heterogeneous Systems, *International Workshop on Principles of Software Evolution*, 2002.
- C.60. Jackson, S., Devanbu, P., Splicing Views for Programmers, *OOPSLA Workshop on Software Visualization*, 2001.
- C.61. Devanbu, P., and Wohlstadter, E., Managing Evolution in Distributed Heterogeneous Systems, *NFS Workshop on New Visions for Software Design and Productivity: Research and Applications*, 2001.
- C.62. Wohlstadter E., Keen, A., Jackson, S., Devanbu, P., "Accommodating Evolution in AspectJ" *Workshop on Advanced Separation of Concerns, OOPSLA 2001*
- C\*.63. Devanbu, P., Gertz, M., Kwong, A., Martel, C., Nuckols, G., and Stubblebine, S., "Flexible Authentication of XML Documents", *ACM Conference on Computer and Communications Security*, 2001, (17%) Philadelphia, USA.
- C.64. Knight, J., D. Heimbigner, A. Wolf, A. Carzaniga, J. Hill, and P. Devanbu, "The Willow Survivability Architecture". *Proc. of the Fourth Information Survivability Workshop*, 2001
- C.65. Keen, D., Chong, F., Devanbu, P., Farrens, M., Brown, J., Hollfelder, J., and Zhuang, X., "Memory issues in hardware-supported software safety" *ISCA 2001 Workshop on Memory Performance issues*, Goteborg, Sweden.

- C.66. Wohlstadter, E., Devanbu, P., "A Lazy approach to modeling higher-order connectors", *ICSE 2001 Workshop on Advanced Separation of Concerns in Software Engineering*, Toronto, Canada.
- C\*.67. Wohlstadter, E., Jackson, S., Devanbu P., "Generating Wrappers for Command-line Programs: The Cal-Aggie Wrap-O-Matic project." *Proceedings, ICSE 2001 (18%)*, Toronto, Canada
- C.68. Devanbu, P., Gertz, M., Martel, C., Rogaway, P., Stubblebine, S.G., "Authentic Re-Publication by Untrusted Servers: A Novel Approach to Database Survivability", *Third IEEE Information Survivability Workshop (ISW-2000)*, 2000.
- C.69. Wolf, A., Heimbinger, D., Carzaniga, A., Knight, J., Devanbu, P., Gertz, M., "Bend, Don't Break: Using Reconfiguration to Achieve Survivability", *Third IEEE Information Survivability Workshop (ISW-2000)*, 2000
- C\*.70. Devanbu, P., Gertz, M., Martel, C., Stubblebine, S., "Authentic Third-Party Data Publication", *Fourteenth IFIP 11.3 Conference on Database Security*, 2000, (42%)
- C.71. Devanbu, P., Stubblebine, S., Uschold M., "The Next Revolution: Free, Full, Open Person-2-Person (P2P) E-commerce" *TWIST-2000: The workshop on Internet-Scale Technologies*, Irvine, CA, 2000.
- C.72. Devanbu P., Stubblebine, S., "Security and Software Engineering: A Roadmap", *Twenty-second International Conference on Software Engineering*, 2000.
- C\*.73. Borgida, A., Devanbu, P. "Adding more DL to IDL: towards more Knowledgeable Component Inter-Operability", *Twenty-first International Conference on Software Engineering*, 1999. (17%).
- C\*.74. Devanbu, P., Chen, Y-F., Gansner, E, Muller, H., Martin, J., "Chime - Customizable Hyperlink Insertion and Maintenance Engine for Software Engineering Environments", *Twenty-first International Conference on Software Engineering*, 1999. (17%).
- C.75. Malabarba, S., Devanbu P., Stearns, A., "MoHCA-JAVA—A tool to support C++ to Java Conversion", Reviewed Research Demonstration Track, *Twenty-first International Conference on Software Engineering*, 1999.
- C.76. Sitaraman, M., Davis, M., Devanbu, P., Poulin, J., Ran A., Weide B., "Reuse Research: Contributions, Problems and Non-Problems", *ACM Symposium on Software Reuse*, 1999. (Invited panel summary).

- C.77. P. Devanbu, M. Gertz, S. Stubblebine. "Security for Automated, Distributed Configuration Management", *Proceedings, ICSE 99 Workshop on Software Engineering over the Internet*, 1999.
- C.78. Sant'anna. M., Leite, J., Baxter, I., Wile, D., Biggerstaff, T., Batory, D., Devanbu, P., Burd L., "International Workshop on Software Transformation Systems (STS'99)", *Twenty-first International Conference on Software Engineering* 1999. (Invited workshop summary).
- C\*.79. Devanbu, P., Stubblebine, S., "Stack and Queue Integrity on Hostile Platforms", *IEEE Symposium on Security and Privacy*, 1998. (17%).
- C\*.80. Devanbu P., Fong, P., Stubblebine, S. "Techniques for Trusted Software Engineering" *Twentieth International Conference on Software Engineering*, 1998. (19%)
- C\*.81. Devanbu P., Stubblebine S., "Research Directions for Automated Software Verification: Using Trusted Hardware", *Conference on Automated Software Engineering*, 1997. (29%).
- C\*.82. Devanbu P., Stubblebine, S., "Cryptographic Verification of Test Coverage Claims", *Fifth ACM SIGSOFT Conference on the Foundations of Software Engineering*, 1997. (14%).
- C\*.83. Cohen, W., Devanbu, P., "A Comparative Study of Inductive Logic Programming Methods for Software Fault Prediction", *Fourteenth International Conference on Machine Learning*, 1997. (34%).
- C\*.84. Briand L., Devanbu, P., Melo, W., "An Investigation into Coupling Measures for C++", *19<sup>th</sup> International Conference on Software Engineering*, 1997. (19%).
- C.85. Devanbu, P., "Research Issues in Software Development with Distributed Objects", *Second OOPSLA workshop on distributed objects and the World Wide Web*, <http://www.eng.uci.edu/~peilei/index.html> 1996.
- C\*.86. Devanbu, P., Karstu, S., Melo, W., Thomas, D. "Analytical and Empirical Validation of Reuse Benefit Measures", *18<sup>th</sup> International Conference on Software Engineering*, 1996. (24%).
- C.87. Devanbu, P., Karstu, S., "Measuring the Benefits of Software Reuse", *Workshop on Institutionalizing Software Reuse*, 1995.
- C\*.88. Devanbu, P., Rosenblum, D., Wolf, A., "Automated Construction of Testing and Analysis Tools", *16<sup>th</sup> International Conference on Software Engineering*, 1994. (11%).

- C\*.89. Devanbu, P., Jones, M. "The Use of Description Logics in KBSE Systems", *16<sup>th</sup> International Conference on Software Engineering*, 1994. (11%).
- C.90. Devanbu, P., "Research issues in Applications Generators", *Workshop on Institutionalizing Software Reuse*, 1993.
- C\*.91. Devanbu, P., "Translating Description Logics into Information Server Queries", *Second International Conference on Information and Knowledge Management*, 1993. (43%).
- C.92. Borgida, A., Devanbu, P., "Knowledge Base Management Systems using Description Logics and their role in Software Information Systems" (invited paper), *Information Processing 92 (Vol.3)*, pp.171–181, Elsevier Science Publishers, 1992.
- C.93. Devanbu, P. "Terminological Languages in Software Information Systems", in the *International Workshop on Uses of Terminological Logics*, .
- C.94. Devanbu, P. "Knowledge Based Software Information Systems", in the *Workshop on Applying Artificial Intelligence to Software Problems: Assessing Promises and Pitfalls*
- C\*.95. Devanbu, P. "GENOA- a language and front-end independent source code analyzer generator", *14<sup>th</sup> International Conference on Software Engineering*, 1992. (12%). **Nominee and first-runner up for ICSE 2002 Ten-year most influential paper award.**
- C.96. Devanbu, P. "Knowledge Acquisition for Reuse", in the *First International Workshop on Software Reuse*, 1991.
- C\*.97. Devanbu, P., Litman, D., "Plan-Based Terminological Reasoning", *Second International Conference on Principles of Knowledge Representation*, Boston, Mass., 1991. (27%).
- C\*.98. Devanbu, P., Brachman, R., Selfridge P., Ballard, B., "LaSSIE - A Classification-Based Software Information System". *Twelfth International Conference on Software Engineering*, 1990. (10%).
- C.99. Devanbu, P. "Re-Use of Software Knowledge: a Progress Report", in *Workshop on Institutionalizing Software Reuse*, 1990.
- C.100. Brachman, R., Devanbu, P., "Domain Modeling in a Software Information System" *Proceedings, Domain Modeling Workshop*, in conjunction with OOP-SLA '89 1989.

- C.101. Devanbu, P., Brachman, R., "Inference in Support of Retrieval for Re-Use in Large Software Systems", *Workshop on Institutionalizing Software Reuse*, 1989.
- C\*.102. Devanbu, P., Selfridge, P., Ballard, B., Brachman, R., "A Knowledge-Based Software Information System", *Proceedings of the Ninth International Joint Conference in Artificial Intelligence*, 1989. (21%).
- C\*.103. Agrawal, R., Devanbu, P., "Moving Selections into Linear Least Fixpoint Queries", *Proceedings, Fourth International Conference on Data Engineering*, 1988. (31%).
- C\*.104. Devanbu, P., Freeland, M., Naqvi, S., "A Procedural Approach to Search Control in Prolog" *Proceedings, European Conference on Artificial Intelligence*, 1986. (24%).

## ADVISEES

Name	Degree	Role	Years	Current Position, if Known
Howard Louie	M.S	Co-Advisor	1999-2000	JD, Patent Attorney
Kimberly Knowles	M.S.	Advisor	1998-2000	Graduated
Ricardo Anguiano	M.S	Advisor	2000-2002	Graduated
Eric Wohlstadter	M.S., Ph.D	Advisor	1999-2004	Assoc. Professor, UBC, Vancouver
Brian Toone	M.S., Ph.D	Co-Advisor	2000-2004	Assoc. Professor, Samford University
Stoney Jackson	M.S., Ph.D	Advisor	2000-2004	Assoc. Professor, Western New England College
Tammara Dahlgren	Ph.D	Committee	2002-2008	Scientist, LLNL.gov
Derrick Pallas	M.S.	Co-Advisor	2003-2005	Graduated
Omer Demir	Ph.D	Advisor	2004- 2007	Google
Zach Saul	Ph.D	Co-Advisor	2006-2008	Retronyms.com
Yu Wang	M.S.	Advisor	2006 - 2007	Graduated
Chris Bird	Ph.D	Advisor	2005- 2010	Researcher, Microsoft Research
Bharathi Seshadri	M.S.	Advisor	2008 -2009	Cisco
Daryl Posnett	Ph.D.	Advisor	2007 - 2012	Post-Doc, UC Davis
Amrinder Singh	M.S.	Advisor	2009 - 2010	NVidia
Foyzur Rahman	Ph.D.	Advisor	2009 - 2013	Pivotal
Dr. Abram Hindle	Post-Doc	Supervisor	2010 -2011	Asst. Professor, Univ. of Alberta
Dr. Earl Barr	Post-Doc	Co- Supervisor	2010-2012	Lecturer (Asst. Professor) University College, London.
Ming Xiao	M.S.	Advisor	2011-2013	Graduated
Rachel Aurand	M.S.	Advisor	2011 - 2013	UC Davis Staff
Stephen Raymond	M.S.	Advisor	2011 - 2012	NVidia
Baishakhi Ray	Post-Doc	Supervisor	2013 -	Current
Zhaopeng Tu	Post-Doc	Supervisor	2013 -	Current
David Kavalier	Ph.D	Advisor	2013 -	Current
Saheel Godhane	Ph.D	Advisor	2013 -	Current
Casey Casalnewvo	Ph.D	Advisor	2013 -	Current
Xue Wu	M.S.	Advisor	2013 -	Current

## PROFESSIONAL ACTIVITIES:

1. Keynote, Microsoft SEIF Summit, 2013.
2. Program Committee, ICSE 2013, 2014, and FSE 2014.
3. Keynote, ISEC Conference, New Delhi, India, 2013
4. Keynote, SEKE Conference, Redwood City, California, 2012.
5. Keynote, ICSE Doctoral Symposium, Zurich, Switzerland, 2012.
6. Keynote, International Workshop on Principles of Software Evolution, Szeged, Hungary, 2011.
7. Keynote, PASED Summer School on Empirical Software Engineering, Montreal, Canada, 2011
8. Program Committee, ICSE 2011.
9. Invited Plenary Talk, *Empirical Software Engineering Conference*, Bolzano, Italy, 2010.
10. Keynote, *International Conference on Software Engineering and Data Engineering*, San Francisco, USA, 2010.
11. Keynote, *Ascona Workshop on Mining Software Repositories*, Ascona, Switzerland, 2010.
12. Associate Editor, *Wiley Journal of Software Maintenance & Evolution, Research & Practice*, 2010-present.
13. Associate Editor, *Springer-Verlag Empirical Software Engineering Journal*, 2009-present.
14. Program Chair (with Seb Uchitel) for ICSE 2010, planned for Capetown, South Africa.
15. Associate Editor, *IEEE Transactions on Software Engineering*, 2006-2010.
16. Keynote, *Working Conference on Reverse Engineering*, Antwerp, Belgium, 2008
17. Program Committee, *ACM SIGSOFT FSE*, 2008
18. Program Committee, *ACM SIGSOFT FSE/ESEC*, 2007



19. Program Chair, *ACM SIGSOFT Foundations of Software Engineering*, 2006.
20. Associate Editor, *ACM Transactions on Software Engineering*, 2002-2005
21. Reviewer, National Science Foundation Panels, including regular, ITR, SoD, and SBIR panels, 2000, 2001,2002,2003,2004, 2005,2007.
22. Guest Editor, *ACM Transactions on Software Engineering*, Special issue on Software Engineering and Security.
23. Guest Editor, *IEEE Transactions on Software Engineering*, Special issue on Software Reuse.
24. Program Committee, *ACM SIGSOFT Conference on Foundations of Software Engineering*, 2005.
25. Program Committee, *ACM Middleware*, 2004.
26. Program Committee, *ACM SIGSOFT Conference on Foundations of Software Engineering*, 2004.
27. Program Committee, *Twenty-Sixth International Conference on Software Engineering*, 2004.
28. Program Committee, *Twenty-Fifth International Conference on Software Engineering*, 2003.
29. Program Committee, *Twenty-Fourth International Conference on Software Engineering*, 2002.
30. Program Committee, *ACM SIGSOFT Conference on Foundations of Software Engineering*, 2002.
31. Program Committee, *ACM SIGSOFT Conference on Foundations of Software Engineering*, 2001.
32. Co-Chair (with Prof. J. Mylopoulos), Workshops Committee, *Twenty-Third International Conference on Software Engineering*, 2001.
33. Invited Keynote Speaker, International Workshop on Description Logics (DL 2000), Aachen, Germany.
34. Program Committee, *Twenty-Second International Conference on Software Engineering*, 2000.

35. Program Committee, *ACM SIGSOFT Conference on Foundations of Software Engineering*, 2000.
36. Program Committee, *Twenty-first International Conference on Software Engineering*, 1999.
37. Panel Participant, "Reuse research: contributions, problems and non-problems", ACM Symposium on Software Reuse, 1999.
38. Program Committee, *Twentieth International Conference on Software Engineering*, 1998.
39. Program Co-Chair, *Fifth International Conference on Software Reuse*, 1998.
40. Program Committee of the *IEEE International Conferences on the Engineering of Complex Computer Systems*, 1996, 1997.
41. Advisory and Program Committees of the *International Conference on Software Reuse*, Orlando, 1993, 1994, 1996, 2000.
42. Program Committee of the *Working Conferences on Reverse Engineering*, 1995, 1996, 1997, 1998, 1999.
43. Program Committee of the *Workshops on Program Comprehension*, 1995, 1996, 1997, 1998, 1999.
44. Program Committee of the *Sixth Knowledge-Based Software Engineering Conference*, 1996.
45. Frequent Reviewer for *IEEE Transactions on Software Engineering* and *ACM Transactions on Software Engineering and Methodology*.
46. Reviewer for *Journal of the ACM*.
47. Reviewed grant and project proposals from Canadian National Research Council, and Office of Technology Assessment (DOD).
48. Presented a tutorial survey on "Generative Methods of Software Reuse" at the *International Conferences on Software Reuse*, 1994, 1996.
49. Panel on the "Relative benefits of generative and object-based reuse" (with Ira Baxter, Jim Neighbors, and Bjarne Stroustrup) *International Conference on Software Reuse*, Orlando, 1996.

50. Panel on Program Understanding, at the *Seventh Annual Knowledge-Based Software Engineering Conference*, Washington, DC, September 1992
51. Panel on Domain Modeling, at the *Sixth Annual Knowledge-Based Software Engineering Conference*, Syracuse, NY., September 1991
52. Invited Speaker at Second Workshop on Domain Modeling, in conjunction with *Thirteenth International Conference on Software Engineering*, Austin TX., May 1991.

### **Intramural Service:**

- **Departmental Service:** Industrial Relations Committee (1998-1999), Undergraduate Affairs Committee (1998-2001), Accreditation Co-ordinator, (1999-2001), Recruiting Committee (2000-2001,2007), Visibility Committee, (Founding Chair) (2001-2002), Recruiting Committee Chair (2004-2006). Graduate Admission Committee Chair (2007).
- **College Level:** Program Planning and Assessment Committee, College of Engineering Executive Committee.
- **University Level:** Alternate departmental representative, Representative Assembly of the Academic Senate, Committee on Privilege & Tenure, Academic Senate.
- **Extramural:** ACM SIGSOFT representative to the Curriculum Undergraduate Curriculum Committee on Software Engineering (2001-2002).

## Invited colloquia:

*In 2014:* Distinguished Lectures at University of Maryland (BC), University of Nebraska. *In 2013:* Distinguished Lecture at University of Massachusetts, Amherst *In 2011:* IBM Research, Bangalore, Singapore Management University, National University, Singapore. *In 2010:* University of Texas, Dallas, North Carolina State University, Microsoft Research, USA. *In 2009:* Iowa State University, Microsoft Research India, Universidad Rey Juan Carlos III, Brigham Young University. *In 2008:* University of Zurich, University of Lugano. *In 2007:* Iowa State University, Accenture. *In 2004:* Fudan University, Shanghai, China; Chinese Academy of Science, Beijing, China. *In 2003:* University of Texas, Austin; AT&T Labs—Research, NJ; University of California, Irvine; University of Lincoln, Nebraska. *Prior years:* Chiang Mai University, Thailand; Indian Institute of Technology, Madras; Oracle Corporation, Center for Research in Information Science (CRIM), Montreal; University of Montreal; University of Toronto; University of Oregon; Oregon State University; University of Maryland; IBM Yorktown Heights Research Facility; Microsoft Research; George Mason University; Software Productivity Consortium; Hewlett Packard Laboratories; UNISYS Paoli Research Centre; Washington State University; Rutgers University.

## Funding:

*Note:* I have no research funding prior to 1998, when I first took an academic position; hence all the grants/gifts listed below began after 1998. Grants on which I was PI are listed first, ordered earliest first.

1. PI, \$37,000 Gift, from Microsoft Research to support research into static analysis (1998).
2. PI, \$15,000 Gift, from Hewlett-Packard Laboratories to support research into distributed configuration management, and \$9,750 matching funds from the University of California MICRO Program (1999). (Co-PI: Michael Gertz)
3. PI, \$52,766 grant, NSF “SGER: a Framework debugging domain-specific languages” (1998-2000).
4. PI, \$249,446, DARPA Subcontract, “Secure Mediation”, sub-contract to University of Colorado (2000-2003). (Co-PI: Michael Gertz)

5. PI, \$786,465, NSF, "ITR: Scalable and Secure Information Re-publication", (Co-PIs: Michael Gertz, Chip Martel, Phillip Rogaway), (2000-2003)
6. PI, \$150,000, NSF, "Managing evolution in distributed, heterogeneous systems" (2002-2005)
7. PI, \$40,000, IBM Faculty Partnership Award. (Gift from IBM corporation) "Building Adaptable Systems". (2004)
8. PI, \$131,000, NSF, "Mining Problem-solving Behaviour from Open-Source Repositories". (2005-2007)
9. PI, \$750,000, NSF, "SoD-TEAM: Longitudinal effects of Design in Open Source Projects", (2006-2010)
10. PI, \$20,000, IBM Faculty Partnership Award. (2009-2010)
11. PI, \$10,000 Gift, Microsoft Research (2010-2011)
12. PI, \$700,118, "SHF: Medium: How Do Static Analysis Tools Affect End-User Quality" (2010-2014)
13. PI, \$600,000, "EAGER: Exploiting the Naturalness of Software", joint with Carnegie-Mellon University and UT Dallas, (UC Davis is lead, our portion is \$310,000). (2012-2014)
14. PI \$2,000,000 " SHF: Large: Collaborative Research: Exploiting the Naturalness of Software" joint with Carnegie-Mellon University and Iowa State, (UC Davis is lead, our portion is \$1,000,000). (2014-2018)
15. Co-PI, \$130,000 sub-contract to Boeing (DARPA funding) "Multi-Community Cyber Defense", (1999-2001). (Co-PI: Michael Gertz)
16. Co-PI \$366,800, NSF, "ITR: Improving System Functionality using monitoring processors", (PI: Matt Farrens, and Co-PI: Fred Chong) (2001-2004)
17. Co-PI \$170,000, NSF " CISE Research Resources: Infrastructure for Research in Parallel and Distributed Computing" (2002-2004), (PI: Raju Pandey; CoPIs: Demet Aksoy, Ron Olsson)
18. Co-PI, \$698,621, AFOSR, "Structure and Function of Task-Oriented Social Networks". (PI: Vladimir Filkov; Co-PIs: Raissa D'Souza, Diane Felmlee).
19. Co-PI \$300,000, "Toward Numerically Robust Software" (PI: Zhendong Su, Co-PIs: Zhaojun Bai).

20. Co-PI \$300,000, “ EAGER: Effective Detection of Vulnerabilities and Linguistic Stratification in Open Source Software” (PI: Raul Aranovich, Co-PIs: Vladimir Filkov)

## Patents and Awards:

1. United States Patent No. 5,826,256. Issued 10/20/1998. *Apparatus and methods for source code discovery.*, (Assignee: Bell Laboratories/Lucent Technologies).
2. United States Patent No. 5,832,271. Issued 11/3/1998. *Determining dynamic properties of programs.*, (Assignee: Bell Laboratories/Lucent Technologies).
3. United States Patent No. 5,909,577. Issued 6/1/1999. *Determining dynamic properties of programs* (Uses a different realization than that used in No. 5,832,271). , (Assignee: Bell Laboratories/Lucent Technologies).
4. United States Patent No. 6,098,170. Issued 8/1/2000. *System and method for using a second resource to store a data element from a first resource in a first-in first-out queue*, (Continued as 6,237,094, issued May 22, 2001) (Assignee: AT&T Corporation)
5. United States Patent No. 6,101,603. Issued 8/8/2000. *System and method for using a second resource to store a data element from a first resource in a first-in first-out stack*, (Continued as 6,249,871, issued June 19, 2001) (Assignee: AT&T Corporation)
6. United States Patent No. 6,148,401. Issued 11/14/2000, *System and method for providing assurance to a host that a piece of software possesses a particular property*, (Assignee: AT&T Corporation) (Continued as 6,381,698, issued April 30, 2002)
7. United States Patent No. 6,681,371, Issued 01/20/2004, *System and method for using container documents as multi-user domain clients* , *Assignee: AT&T Corporation.*
8. National Merit Scholar, Govt. of India. (1971-1977).
9. AT&T Bell Labs Doctoral Support Scholar, Fall 1990 - Spring 1994.
10. ICSE 92 paper on GENOA: nominee and first runner-up, ICSE 2002 “Ten-year Best Paper Award”.

11. *ICSE 2003* paper on DADO: one of six nominees for an ACM Distinguished Paper Award.
12. *ICSE 2004* paper on the JDBC checker: winner of an ACM Distinguished Paper Award.
13. *ICSE 2007* paper on Coupling Metrics: nominee, *ICSE 2007* "Ten-year Best Paper Award".
14. *ESEC/FSE 2007* paper on recommender systems, nominee for an ACM SIGSOFT Distinguished Paper Award.
15. *ICSE 2009* paper on distributed development, ACM Distinguished Paper award, also the first software engineering paper to appear in *CACM Research Highlights*.
16. *MSR 2010* Best paper award.
17. *ESEC/FSE 2011*, paper on the evaluation of FixCache: nominee for ACM SIGSOFT Distinguished Paper
18. *ASE 2011*, paper on Ecological Inference in Empirical Software Engineering, Best paper award.
19. *ASE 2011*, paper on Ecological Inference in Empirical Software Engineering, ACM SIGSOFT Distinguished Paper award.
20. *ICSE 2013*, paper on Dual Ecological Measures of Ownership, ACM SIGSOFT Distinguished Paper award.

## Teaching:

1. Nominated for the ASUCD (Associated Students of UC Davis) Distinguished Teaching award, 2011.
2. Introduction to Programming (ECS 30) Freshman Basic C programming, enrollments up to 300.
3. Undergraduate Software Engineering (ECS 160). (Typically offered twice a year ) A core software-engineering class, including a major design project. Concepts emphasized include object-oriented software engineering, teamwork, web service construction and design. A high-demand class, required for CS&E majors, with enrollments occasionally exceeding 100. My teaching ratings are generally around 8/10, indicating a high level of student acceptance.
4. Graduate Software Engineering (ECS 260). (Typically offered once a year) Lecture and project class emphasizing advanced programming techniques and component-based technologies. . My teaching ratings are around 9/10, indicating excellent student acceptance.
5. Seminar on Open Source and Empirical Software Engineering (ECS 289x) . Occasional small-enrollment advanced graduate seminar.