Christian Bird

CONTACT INFORMATION

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RESEARCH INTERESTS

Empirical software engineering, Open Source Software communities, social networks, communication and collaboration in software engineering, software tools

EDUCATION

University of California, Davis, Davis, California, USA
Ph.D., Computer Science, June 2010

- Dissertation Topic: "Sociotechnical Collaboration and Coordination in Open Source Software"
- Advisor: Prof. Premkumar Devanbu
- GPA: 3.98

University of California, Davis, Davis, California, USA
M.S., Computer Science, 2008

- Advisor: Prof. Premkumar Devanbu
- GPA: 3.98

Brigham Young University, Provo, Utah, USA
Bachelor of Science in Computer Science, 2003

- GPA : 3.78

HONORS AND AWARDS

ACM SIGSOFT Distinguished Paper
- ACM SigSoft Symposium on Foundations of Software Engineering, "Assessing the Value of Branches with What-If Analysis", 2012

ACM SIGSOFT Distinguished Paper
- International Conference on Software Engineering, "Does Distributed Development Affect Software Quality? An Empirical Case Study of Windows Vista", 2009

Mining Software Repositories Best Paper Award
- International Working Conference on Mining Software Repositories, "Clones: What *is* that smell?", 2010

Best Student Talk
- Mining Software Archives, "The Effect of Change Semantics on Coordination Requirements", 2010

Best Graduate Researcher Award
- U.C. Davis, Dept. of Computer Science, 2008 – 2009

Brigham Young University Dean's List
- Awarded in 1996, 2001, 2002

Golden Key Honor Society
- Member, 2000 – present

US National Merit Scholar and Scholarship
- Awarded in 1996 for complete undergraduate career.

Refereed Publications

37. Ekrem Kocaguneli, Thomas Zimmermann, **Christian Bird**, Nachiappan Nagappan, and Tim Menzies. Distributed development considered harmful? In *Proceedinsg of the International Conference on Software Engineering (Software Engineering in Practice track)*

36. Alberto Bacchelli, and **Christian Bird**. Expectations, outcomes, and challenges of modern code review. In *Proceedings of the International Conference on Software Engineering*, 2013, IEEE. (18%)

35. Emerson Murphy-Hill, Thomas Zimmermann, **Christian Bird**, Nachiappan Nagappan, and Michael Barnett. The design of bug fixes. In *Proceedings of the International Conference on Software Engineering*, 2013, IEEE. (18%)

34. Chris Parnin, **Christian Bird**, and Emerson Murphy-Hill. Adoption and Use of Java Generics. *Empirical Software Engineering, An International Journal*, to appear

33. **Christian Bird**, and Thomas Zimmermann. Assessing the value of branches with what-if analysis. In *Proceedings of the 20th International Symposium on Foundations of Software Engineering*, 2012, ACM. (17% ACM Distinguished Paper Award)

32. Abram Hindle, **Christian Bird**, Thomas Zimmermann, and Nachiappan Nagappan. Relating requirements to implementation via topic analysis: Do topics extracted from requirements make sense to managers and developers? In *Proceedings of the 28th IEEE International Conference on Software Maintenance*, 2012, IEEE. (25%)

31. Emad Shihab, **Christian Bird**, and Thomas Zimmermann. The effect of branching strategies on software quality. In *Proceedings of the Sixth International Symposium on Empirical Software Engineering and Measurement*, 2012, ACM/IEEE. (25%)

30. **Christian Bird**, and Nachiappan Nagappan. Who? where? what? examining distributed development in two large open source projects. In *Proceedings of the International Working Conference on Mining Software Repositories*, 2012, IEEE. (28%)

29. Earl T. Barr, **Christian Bird**, Peter C. Rigby, Abram Hindle, Daniel M. German, and Premkumar Devanbu. Cohesive and Isolated Development with Branches. In *Proceedings of the International Conference on Fundamental Approaches to Software Engineering*, 2012, Springer. (24%)

28. Thomas Zimmermann, and **Christian Bird**. Collaborative Software Development in Ten Years: Diversity, Tools, and Remix Culture. In *Proceedings of the Workshop on The Future of Collaborative Software Development*, 2012

27. Foyzur Rahman, **Christian Bird**, and Premkumar Devanbu. Clones: What **is** that Smell? *Empirical Software Engineering, An International Journal*, 2012

26. Tim Menzies, **Christian Bird**, Tom Zimmermann, Wolfram Schulte, and Ekrem Kocaganeli. The Inductive Software Engineering Manifesto: Principles for Industrial Data Mining. In *Proceed-*

ings of the International Workshop on Machine Learning Technologies in Software Engineering, 2011, ACM

25. Andreas Zeller, Thomas Zimmermann, and **Christian Bird**. Failure is a Four Letter Word: A Parody in Empirical Research. In *Proceedings of the 7th International Conference on Predictor Models in Software Engineering*, 2011

24. Qiaona Hong, Sunghun Kim, S. C. Cheung, and **Christian Bird**. Understanding a Developer Social Network and its Evolution. In *Proceedings of the 27th IEEE International Conference on Software Maintenance*, 2011, IEEE. (28%)

23. **Christian Bird**, Nachiappan Nagappan, Brendan Murphy, Harald Gall, and Premkumar Devanbu. Don't Touch My Code! Examining the Effects of Ownership on Software Quality. In *Proceedings of the the eighth joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on The Foundations of Software Engineering*, 2011, ACM. (17%)

22. Chris Parnin, **Christian Bird**, and Emerson Murphy-Hill. Java Generics Adoption: How New Features are Introduceded, Champion, or Ignored. In *Proceedings of the International Working Conference on Mining Software Repositories*, 2011. (33%, invited to Journal special issue: 10%)

21. **Christian Bird**, Thomas Zimmermann, and Alex Teterev. A Theory of Branches as Goals and Virtual Teams. In *Proceedings of the International Workshop on Cooperative and Human Aspects of Software Engineering*, 2011

20. Daryl Posnett, **Christian Bird**, and Premkumar Devanbu. An Empirical Study on the Influence of Pattern Roles on Change-Proneness. *Empirical Software Engineering, An International Journal*, 2010, 1–28

19. Earl Barr, **Christian Bird**, Eric Hyatt, Tim Menzies, and Gregorio Robles. On the Shoulders of Giants. In *FSE/SDP Workshop on the Future of Software Engineering Research*, 2010. (65%)

18. Adrian Bachmann, **Christian Bird**, Foyzur Rahman, Premkumar Devanbu, and Abraham Bernstein. The Missing Links: Bugs and Bug-fix Commits. In *SIGSOFT '10/FSE-18: Proceedings of the 16th ACM SIGSOFT Symposium on Foundations of Software Engineering*, 2010, ACM. (20%)

17. Daryl Posnett, **Christian Bird**, and Premkumar Devanbu. Thex: Mining Metapatterns in Java. In *Proceedings of the Seventh Working Conference on Mining Software Repositories*, 2010, IEEE Computer Society. (31%)

16. Roozbeh Nia, **Christian Bird**, Premkumar Devanbu, and Vladimir Filkov. Validity of network analyses in open source projects. In *Proceedings of the Seventh Working Conference on Mining Software Repositories*, 2010, IEEE Computer Society. (31%)

15. Foyzur Rahman, **Christian Bird**, and Premkumar Devanbu. Clones: What *is* that Smell? In *Proceedings of the Seventh Working Conference on Mining Software Repositories*, 2010, IEEE Computer Society. (31% Best Paper Award 1%)

14. **Christian Bird**, Nachiappan Nagappan, Premkumar Devanbu, Harald Gall, and Brendan Murphy. Putting it All Together: Using Socio-Technical Networks to Predict Failures. In *Proceedings*

of the 17th International Symposium on Software Reliability Engineering, 2009, IEEE Computer Society. (25%)

13. **Christian Bird**, Adrian Bachmann, Eirik Aune, John Duffy, Abraham Bernstein, Vladimir Filkov, and Premkumar Devanbu. Fair and Balanced? Bias in Bug-Fix Datasets. In *Proceedings of the the Seventh joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on The Foundations of Software Engineering*, 2009, ACM. (14%)

12. **Christian Bird**, Nachiappan Nagappan, Premkumar Devanbu, Harald Gall, and Brendan Murphy. Does Distributed Development Affect Software Quality? An Empirical Case Study of Windows Vista. *Communications of the ACM 52*, 8, August 2009, 85–93. (Revised edition of ICSE paper invited to Research Highlights in CACM)

11. **Christian Bird**, Nachiappan Nagappan, Premkumar Devanbu, Harald Gall, and Brendan Murphy. Does Distributed Development Affect Software Quality? An Empirical Case Study of Windows Vista. In *Proceedings of the 31st International Conference on Software Engineering*, 2009, IEEE Computer Society, pp. 518–528. (12% Best Paper Award 1%)

10. **Christian Bird**, Peter C. Rigby, Earl T. Barr, David J. Hamilton, Daniel M. German, and Prem Devanbu. The Promises and Perils of Mining Git. In *Proceedings of the Sixth Working Conference on Mining Software Repositories*, 2009, IEEE Computer Society. (28%)

9. **Christian Bird**, Earl Barr, Andre Nash, Premkumar Devanbu, Vladimir Filkov, and Zhendong Su. Structure and Dynamics of Research Collaboration in Computer Science. In *Proceedings of the Ninth SIAM International Conference on Data Mining*, 2009, SIAM, pp. 826–837. (29%[1])

8. **Christian Bird**, David Pattison, Raissa D'Souza, Vladimir Filkov, and Premkumar Devanbu. Latent Social Structure in Open Source Projects. In *SIGSOFT '08/FSE-16: Proceedings of the 16th ACM SIGSOFT Symposium on Foundations of Software Engineering*, 2008, ACM, pp. 24–35. (20%)

7. David Pattison, **Christian Bird**, and Premkumar Devanbu. Talk and Work: a Preliminary Report. In *Proceedings of the Fifth International Working Conference on Mining Software Repositories*, 2008, ACM, pp. 113–116. (40%)

6. Zachary M. Saul, Vladimir Filkov, Premkumar Devanbu, and **Christian Bird**. Recommending Random Walks. In *ESEC-FSE '07: Proceedings of the the Sixth joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on The Foundations of Software Engineering*, 2007, ACM, pp. 15–24. (17%, nominated for Best Paper)

5. **Christian Bird**, Alex Gourley, and Prem Devanbu. Detecting Patch Submission and Acceptance in OSS Projects. In *Proceedings of the Fourth International Workshop on Mining Software Repositories*, 2007, IEEE Computer Society, pp. 26–35. (38%)

4. **Christian Bird**, Alex Gourley, Prem Devanbu, Anand Swaminathan, and Greta Hsu. Open Borders? Immigration in Open Source Projects. In *Proceedings of the Fourth International Workshop on Mining Software Repositories*, 2007, IEEE Computer Society, p. 6. (38%)

3. Michael Ogawa, Kwan-Liu Ma, **Christian Bird**, Premkumar T. Devanbu, and Alex Gourley.

[1]SDM paper accepted in full as a poster presentation paper. 15% of papers accepted for presentation and 14% were accepted as for poster presentation.

Visualizing Social Interaction in Open Source Software Projects. In *Sixth International Asia-Pacific Symposium on Visualization*, 2007, pp. 25–32. (45%)

2. **Christian Bird**, Alex Gourley, Prem Devanbu, Michael Gertz, and Anand Swaminathan. Mining Email Social Networks. In *Proceedings of the Third International Workshop on Mining software repositories*, 2006, ACM, pp. 137–143. (35%)

1. **Christian Bird**, Alex Gourley, Prem Devanbu, Michael Gertz, and Anand Swaminathan. Mining Email Social Networks in Postgres. In *Proceedings of the Third International Workshop on Mining software repositories (Challenge Track)*, 2006, ACM, pp. 185–186

Book Chapters

1. **Christian Bird**. Conway's Corollary. In *Making Software: What Really Works, and Why We Believe It*, A. Oram and G. Wilson, Eds. O'Reilly, 2010

Invited Papers, Demo papers, etc.

4. **Christian Bird**. Sociotechnical Coordination and Collaboration in Open Source Software. In *Doctoral Symposium, Proceedings of the 27th IEEE International Conference on Software Maintenance*, 2011, IEEE

3. **Christian Bird**, Brendan Murphy, Nachiappan Nagappan, and Thomas Zimmermann. Empirical Software Engineering at Microsoft Research. In *Showcase Track, Proceedings of the ACM Conference on Computer Supported Cooperative Work*, 2011

2. Foyzur Rahman, **Christian Bird**, and Premkumar Devanbu. Clones: What *is* that Smell? In *Proceedings of the fourth International Symposium on Empirical Software Engineering and Measurement*, 2010, IEEE Computer Society. (invited paper)

1. **Christian Bird**, Adrian Bachmann, Foyzur Rahman, and Abraham Bernstein. Linkster: Enabling Efficient Manual Mining. In *Demonstration Track, Proceedings of the 17th SIGSOFT Symposium on Foundations of Software Engineering*, 2010, ACM. (accepted for formal demonstration, 21%)

Invited Talks

Branch Analytics at Microsoft — November, 2012
University of Victoria
Victoria, British Columbia, Canada

Empirical Software Engineering at Microsoft Research: Transitioning Research into practice — September, 2011
Brigham Young University
Provo, Utah, U.S.A.

SocioTechnical Effects in Software Teams — April, 2011
Hong Kong University of Science and Technology
Hong Kong

SocioTechnical Effects in Software Teams — February, 2010
Microsoft Research
Bangalore, India

Does Distributed Development Affect Software Quality? — February, 2010
Third India Software Engineering Conference
Mysore, India

Jazz Anthropology — January, 2010
T. J. Watson Research Center, IBM
Hawthorne, New York, U.S.A.

On the Effect of Ownership in Varying Software Processes — September, 2009
Microsoft Research
Redmond, Washington, U.S.A.

Latent Social Structure in Open Source Projects — October, 2008
INFORMS Annual Meeting
Washington, D.C., U.S.A.

Does Distributed Development Affect Software Quality? — August, 2008
Microsoft Research
Redmond, Washington, U.S.A.

Social Organization in Open Source Software — March, 2008
T. J. Watson Research Center, IBM
Hawthorne, New York, U.S.A.

Social Network Analysis in Software Teams — May, 2006
Guest Lecture, MAE 298, Understanding Networks: Theory and Applications
University of California, Davis, U.S.A.

Research Experience

Researcher — October, 2011 – present
Empirical Software Engineering Group
Microsoft Research
Redmond, Washington, USA

Postdoctoral Researcher — August, 2010 – October, 2011
Empirical Software Engineering Group
Microsoft Research
Redmond, Washington, USA

Research Assistant — October, 2005 – June, 2010
Software Engineering under Prof. Premkumar Devanbu
University of California, Davis,
Davis, California, USA

Designed and implemented data mining software for study of OSS projects. Statistically analyzed OSS project data in the fields of social networking, change analysis, longitudinal social effects, acceptance of work gifts, etc. Continued background research in the area of empirical software engineering.

Researcher — November 2009 – January 2010
Governance Science Research Group under Clay Williams
T. J. Watson Research Center, IBM
Hawthorne, New York, USA

Developed a research amenable database schema for Jazz development data and implemented a

mining framework for extracting relevant development data from Jazz repositories.

Researcher June – September 2009

Research in Software Engineering Group under Nachiappan Nagappan
Microsoft Research
Redmond, Washington, USA

Examined the effect of code ownership levels on software quality in various development contexts, including Windows Vista, Eclipse, and Firefox. Also examined distributed development in the context of different development process domains. This research resulted in an internal report, an external tech report, and two planned submissions to FSE 2010.

Researcher May – August 2008

Research in Software Engineering group under Nachiappan Nagappan
Microsoft Research
Redmond, Washington, USA

Conducted quantitative analysis on defect data related to development of Windows Vista and examined many sociotechnical factors and their relationship with defects. Examined the effect of geographical distributed development on software quality which resulted in a top tier publication at ICSE, earned a best paper award at ICSE, and was invited to appear in CACM Research Highlights. Also performed a study of the ability of network measures on sociotechnical networks to predict failures, which resulted in a paper in ISSRE.

Research Assistant June – October, 2005

Software Engineering under Prof. Raju Pandey
University of California, Davis,
Davis, California, USA

Worked on a framework for component oriented binary level synthesis for embedded systems. Wrote a static analysis tool for extracting type dependencies in GCC compliant C.

Teaching Experience

Teaching Assistant October, 2004 – June, 2005

Programming Languages under Dr. Ron Olsson and Dr. Raju Pandey
University of California, Davis
Davis, California, USA

Led discussion sections of senior level programming languages course for three quarters. Provided individual assistance to students during regularly scheduled office hours. Helped in the creation of homework assignments and exams. Evaluated students written work, programming projects, and exams.

Teaching Assistant August, 1997 – December, 1997

Advanced Data Structures under Dr. Theodore Norman
Brigham Young University
Provo, Utah, USA

Helped students understand advanced data structure concepts in group and one on one settings. Evaluated course homework, lab projects, and exams.

Industry Experience

Software Engineer September, 2000 – December, 2005

Embedded Software Tools Group under Bruce Vernon
Motorola
Lindon, Utah, USA

Helped design and develop command line and GUI tools for embedded linux developers using C, C++, python, and shell scripting. Aided in the creation of linux Board Support Packages for embedded hardware on a number of Motorola's hardware platforms. Maintained a collaborative intranet web system for the embedded linux group. Provided remote and on-site training to Motorola employees and third parties in the use of our tools.

Technical Support Engineer August - December, 1997

Technical Support Department under Allen Smart
Caldera Systems Inc.
Provo, Utah, USA

Learned advanced Linux operating system and programming concepts. Provided technical support to corporate customers for their use of Linux. Helped design an efficient techincal support structure for a rapidly growing Linux technology company.

Academic Service

Reviewer

Communications of the ACM, 2010
ACM Transactions on Software Engineering and Methodology, 2009, 2010, 2011, 2012
IEEE Transactions on Software Engineering, 2009, 2010, 2011, 2012
IEEE Software, 2008, 2011, 2012, 2013
IEEE Intelligent Systems, 2009, 2010
Journal of Systems and Software, 2009, 2011, 2012
Journal of Information and Software Technology, 2009, 2011
Journal of Empirical Software Engineering, 2009, 2010, 2011, 2012
Journal of Software: Evolution and Process, 2012
Software Quality Journal, 2011
International Symposium on Software Testing and Analysis, 2012
International Conference on Software Engineering, 2008, 2009, 2013
ACM Conference on Computer Supported Cooperative Work, 2008, 2012, 2013
International Working Conference on Mining Software Repositories, 2007, 2008, 2009
European Conference on Object Oriented Programming, 2009
Haifa Verification conference, 2011
ACM Conference on Recommender Systems, 2009
Science of Computer Programming, 2011

Program Committee Memberships

ACM Sigsoft Symposium on Foundations of Sofware Engineering, 2012
International Conference on Software Maintenance, 2012, 2013
International Conference on Program Comprehension, 2012
International Conference on Predictor Models in Software Engineering, 2013
International Working Conference on Mining Software Repositories, 2010, 2011, 2012, 2013
ACM Student Research Competition (at ICSE), 2012
Int'l Symposium on Empirical Software Engineering and Measurement, Industrial track, 2011
International Conference on Software Maintenance, Early Achievements track, 2011
European Soft. Eng. Conf./Foundations of Soft. Eng., Artifact Evaluation Committee, 2011
Euromicro Conference on Software Engineering and Advanced Applications Special Session on Estimation and Prediction in Software & Systems Engineering, 2012
International Workshop on Regression Testing, 2012, 2013
International Workshop on Machine Learning Technologies in Software Engineering, 2011
International Workshop on Empirical Software Engineering in Practice, 2010, 2011, 2012
International Workshop on Replications in Empirical Software Engineering Research, 2010, 2011
International Workshop on Emerging Trends in FLOSS Research and Development, 2010
International Workshop on the General Theory of Software Engineering, 2013
Challenge Track of Mining Software Repositories, 2008, 2009

Committee Chair Positions

International Conference on Program Comprehension, Industry Track (co-chair), 2013
Challenge Track of Mining Software Repositories, 2009

Organizing Committee Positions

International Workshop on Release Engineering, 2013
International Workshop on Replications in Software Engineering, 2013
International Workshop on Data Analysis Patternse in Software Engineering, 2013

Thesis Committees

Adrian Schröter, Ph.D., University of Victoria, 2012

Memberships

Member, Institute of Electrical and Electronics Engineers (IEEE) 2005–present
Member, ACM Special Interest Group on Software Engineering (SIGSOFT) 2005–present

Extracurricular

Software Engineering and Programming Languages Seminar Organizer 2006–2008

References

Premkumar Devanbu
Professor
University of California, Davis
Dept. of Computer Science
Kemper Hall
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Davis, CA, USA 95616
ptdevanbu@ucdavis.edu

Nachiappan Nagappan
Researcher
Microsoft Research
One Microsoft Way
Redmond, WA, USA 98052
nachin@microsoft.com

Harald Gall
Professor
University of Zürich
Dept. of Computer Science
Binzmühlestrasse 14
CH-8050 Zürich, Switzerland
gall@ifi.uzh.ch

James Herbsleb
Professor, Institute for Software Research
Director, Software Industry Center
School of Computer Science
5321 Wean Hall
Carnegie Mellon University
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Audris Mockus
Researcher

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