

Jeremy S. Bradbury – CURRICULUM VITAE

Associate Professor, Computer Science, Faculty of Science
Ontario Tech University (University of Ontario Institute of Technology)

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Research Interests	Software quality assurance, software testing and analysis, bug detection and repair, concurrent software, genetic algorithms, machine learning, Computer Science education, serious games.
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Professional Experience	Ontario Tech University , Oshawa, ON, Canada <i>Graduate Program Director (July 2015-June 2017)</i> Responsible for coordinating Computer Science MSc and PhD programs. <i>Undergraduate Program Director (July 2011-June 2013)</i> Responsible for coordinating Computing Science BSc program. <i>Assistant Professor (July 2007-June 2013),</i> <i>Associate Professor (July 2013-Present)</i> Researcher and leader of the Software Quality Research Lab (https://www.sqrlab.ca). Queen's University , Kingston, ON, Canada <i>Graduate student (2000-07)</i> Member of the Software Technology Laboratory, researcher (MSc, PhD), teaching assistant. Mount Allison University , Sackville, NB, Canada <i>Research Assistant (May to Aug. 1998, 1999, May to Jun. 2000)</i> Research conducted under the supervision of Dr. Robert Rosebrugh in the area of computation category theory.
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Education	<p>Ph.D. Computer Science, 2007 Queen's University, Kingston, Ontario, Canada <i>Supervisors:</i> Dr. James R. Cordy and Dr. Juergen Dingel <i>Dissertation Title:</i> Using Program Mutation for the Empirical Assessment of Fault Detection Techniques: A Comparison of Concurrency Testing and Model Checking</p> <p>M.Sc. Computing and Information Science, 2002 Queen's University, Kingston, Ontario, Canada <i>Supervisor:</i> Dr. Juergen Dingel <i>Dissertation Title:</i> Model Checking Implicit-Invocation Systems: An Approach to the Automatic Analysis of Architectural Styles</p> <p>B.Sc. First Class Honours with Distinction in Computer Science and Mathematics, 2000 Mount Allison University, Sackville, New Brunswick, Canada</p>
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Honours & Awards	<p>Paper Awards and Honours</p> <ul style="list-style-type: none">• <i>RAISE 2012 Best Paper Award</i> for "Predicting Mutation Score Using Source Code and Test Suite Metrics," the Workshop on Realizing Artificial Intelligence Synergies in Software Engineering (RAISE 2012).• <i>CSER 2011 Fall Meeting Best Poster Award</i> for "Eclipticon: Eclipse Plugin for Concurrency Testing," the Consortium for Software Engineering Research (CSER) Fall 2011 Meeting (one of three best poster awards).• <i>SoftVis'10 Best Poster Award</i> for "TIE: An Interactive Visualization of Thread Interleavings", the 5th ACM Symposium on Software Visualization (SoftVis'10).• <i>SCAM 2010 Special Journal Issue Invitation</i> for "How Good is Static Analysis at Finding Concurrency Bugs?", the 10th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM 2010).• <i>SCAM 2005 Special Journal Issue Invitation</i> for "Implementation and Verification of Implicit-Invocation Systems Using Source Transformation," the 5th International Workshop on Source Code Analysis and Manipulation (SCAM 2005). <p>Teaching Awards</p> <ul style="list-style-type: none">• The Tim McTiernan Student Mentorship Award, Ontario Tech University, 2018-19.• Faculty of Science nominee, UOIT Teaching Excellence Award (Tenured & Tenure-Track Faculty), Ontario Tech University, 2015-16.
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- School of Computing Award for Excellence in Teaching Assistance, Queen’s University, 2002-03.

Research Grants

"eXcellence In Variant Testing (XIVT)," industry partnership (2019) awarded \$255,750 over 3 years.

Investigators: Jeremy Bradbury (PI), Akramul Azim, Khalil El-Khatib.
 [Note: This funding is part of an ITEA 3 Call 4 Pan-European Project that was approved in 2018. The funding amount listed is the institutional amount received through a contract with partner QA Consultants.]

"Utilizing Artificial Intelligence to Improve the Testing and Debugging of Concurrent Software," NSERC Discovery Grant (2018), awarded \$23,000/year for 5 years.

"Testing and Analysis of Concurrent and Heterogeneous Computing Software," NSERC Discovery Grant (2013), awarded \$15,000/year for 5 years.

"Laboratory for Human-Centered Computer Science Research," Canada Foundation for Innovation (CFI) Leaders Opportunity Fund (2012), awarded \$21,152.

Investigators: Jeremy Bradbury (PI), Christopher Collins, and Julie Thorpe.

"Empirical Assessment and Improvement of Fault Detection Techniques for Concurrent Software," NSERC Discovery Grant (2008), awarded \$15,000/year for 5 years.

Teaching Grants

"Serious Games for Computer Science Learning." UOIT Teaching Innovation Fund Grant (2018), awarded \$13,000.

Investigators: Jeremy Bradbury, Michael Miljanovic.

"Enhancing First Year Programming Labs Using Game-Based Learning," UOIT Teaching Innovation Fund Grant (2016), awarded \$8,000.

Investigators: Jeremy Bradbury, Michael Miljanovic.

"An Online Testing and Evaluation Environment for Computer Programming Courses," UOIT Teaching Innovation Fund Grant (2009), awarded \$7,500.

Investigators: Jeremy Bradbury, Faisal Qureshi.

XE: A Secure Laptop-based Examination Environment," UOIT Teaching Innovation Fund Grant (2009), awarded \$7,500.

Investigators: Dhavide Aruliah, Jeremy Bradbury, Ken Pu, Janice Strap.

“A Linux-based Environment for Undergraduate Computer Science Education,” UOIT Teaching Innovation Fund Grant (2008), awarded \$6,500.

Investigators: Jeremy Bradbury, Mark Green, Ken Pu.

Teaching Experience

Ontario Tech University, Oshawa, ON, Canada, 2007-Present

Undergraduate Courses Instructed

- CSCI 1060U (formerly CSCI 2030U) - Programming Workshop, 2009-13, 2015 (x2), 2016, 2018
- CSCI 2010U: Principles of Computer Science, 2014
- CSCI 2050U - Computer Architecture I, 2007
- CSCI 3040U - Soft. Eng. I: Requirements, Design and Analysis, 2008-10
- CSCI 3050U - Computer Architecture II, 2008
- CSCI 3060U - Soft. Eng. II: Software Quality Assurance/ENGR 3980U Software Quality, 2008-13, 2015-17
- CSCI 4060U – Massively Parallel Programming (formerly Multicore and Many-Core Programming), 2017-18
- CSCI 4100U - Mobile Devices, 2011
- CSCI 4620U - Human-Computer Interaction/ENGR 4850U - User Interfaces, 2008-09

Graduate Courses Instructed

- CSCI 5010G – Survey of Computer Science Research Topics & Methods, 2015-19
- CSCI 5020G - Collaborative Design and Research, 2011
- CSCI 5100G - Development of Concurrent Software Systems, 2010(x2), 2012, 2014
- CSCI 5540G - User Interface Technology, 2009
- CSCI 6100G: Advanced Topics in Software Design (Applications of AI in Software Engineering), 2017, 2019
- CSCI 6720G Advanced Topics in Information Science (Search-based Algorithms), 2011

Other Teaching Contributions

- Guest lecture in CSCI 5010G: Survey of Computer Science, 2009, 2010, 2014
- Guest lecture in CSCI 1030U: Introduction to Computer Science, 2009, 2011-12
- Lectured for 2 weeks in MCSC 6010G: Mathematical Modelling, 2009

- Organized Teaching Assistants Workshop – “Marking Assignments”, 2010-12
- Guest lecture in SCIE 1910U: Science in Context, 2008
- Participant on Teaching Panel at New Faculty Orientation, 2008

Queen’s University, Kingston, ON, Canada, 2000-07

Undergraduate Courses Instructed

- CISC 327- Software Quality Assurance, 2005

Teaching Development

- Program in University Teaching and Learning for Teaching Assistants, Instructional Development Centre, Queen’s University, 2003-05
- SGS 901 - Teaching and Learning in Higher Education, Instructional Development Centre Course, Queen’s University, 2003

Other Teaching Contributions

- Co-organizer of School of Computing Teaching Assistant training session, 2002

Refereed Journal Publications¹	<p>[J1] <u>John K. Jacoub</u>, Ramiro Liscano, Jeremy S. Bradbury. "Assessment of Software Modeling Techniques for Wireless Sensor Networks: A Survey", <i>Sensors & Transducers Journal</i>, 14-2, pages 18-46, Mar. 2012.</p> <p>[J2] Hongyu Zhang, Jeremy S. Bradbury, James R. Cordy and Juergen Dingel. "Using Source Transformation to Test and Model Check Implicit-Invocation Systems", <i>Special Issue on Source Code Analysis and Manipulation, Science of Computer Programming</i>, 62(3), pages 209–227, Oct. 2006.</p>
Other Journal Publications	<p>[J3] Lydie du Bousquet, Jeremy S. Bradbury, Gordon Fraser. "Guest Editorial for Special Issue on Mutation Testing", <i>Science of Computer Programming</i>, Aug. 2012.</p> <p>[J4] Benoit Baudry, Jeremy S. Bradbury, Gordon Fraser. "Guest Editorial for Special Section on Mutation Testing", <i>Information & Software Technology</i>, 53(10), pages 1097, Oct. 2011.</p>

¹ Names of supervised students are underlined and italicized in all publications and presentations.

**Refereed
Conference
& Workshop
Publications**

- [C1] Jude Arokiam, **Jeremy S. Bradbury**. "Automatically Predicting Bug Severity Early in the Development Process," *Proc. of the 42nd International Conference on Software Engineering (ICSE 2020), The New Ideas and Emerging Results (NIER) track*, Seoul, South Korea, Oct. 2020. (to appear)
- [C2] Michael A. Miljanovic, **Jeremy S. Bradbury**. "GidgetML: An Adaptive Serious Game for Enhancing First Year Programming Labs," *Proc. of the 42nd International Conference on Software Engineering (ICSE 2020), The Software Engineering Education and Training (SEET) track*, Seoul, South Korea, Oct. 2020. (to appear)
- [C3] Michael A. Miljanovic, **Jeremy S. Bradbury**. "A Review of Serious Games for Programming," *Proc. of the Joint Conference on Serious Games (JCSG 2018)*, pages 204-216, Darmstadt, Germany, Nov. 2018.
- [C4] Michael A. Miljanovic, **Jeremy S. Bradbury**. "Evolving Serious Programming Games with Adaptivity to Enhance Learning," *Proc. of the Joint Conference on Serious Games (JCSG 2018)*, pages 253-259, Darmstadt, Germany, Nov. 2018.
- [C5] Michael A. Miljanovic, **Jeremy S. Bradbury**. "RoboBUG: A Serious Game for Learning Debugging," *Proc. of the 13th Annual ACM International Computing Education Research Conference (ICER 2017)*, pages 93-100, Tacoma, WA, USA, Aug. 2017.
- [C6] Michael A. Miljanovic, **Jeremy S. Bradbury**. "Robot ON!: A Serious Game for Improving Programming Comprehension," *Proc. of the 5th International Workshop on Games and Software Engineering (GAS 2016)*, Austin, Texas, USA, May 2016.
- [C7] David Kelk, Kevin Jalbert, **Jeremy S. Bradbury**. "Automatically Repairing Concurrency Bugs with ARC," *Proc. of the 1st International Conference on Multicore Software Engineering, Performance, and Tools (MUSEPAT 2013)*, pages 73-84, Saint Petersburg, Russia, Aug. 2013.
- [C8] **Jeremy S. Bradbury**, David Kelk, Mark Green. "Effectively Using Search-Based Software Engineering Techniques within Model Checking and It's Applications," *Proc. of the 1st International Workshop on Combining Modelling and Search-Based Software Engineering (CMSBSE 2013)*, pages 67-70, San Francisco, CA, USA, May 2013.

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- [C9] John K. Jacoub, Ramiro Liscano, **Jeremy S. Bradbury**, Jared Fisher. "UML Modelling of Design Patterns for Wireless Sensor Networks," *Proc. of the 2nd International Conference on Sensor Networks (SENSORNETS 2013)*, Barcelona, Spain, Feb. 2013.
- [C10] **Jeremy S. Bradbury**, Itai Segall, Eitan Farchi, Kevin Jalbert, David Kelk. "Using Combinatorial Benchmark Construction to Improve the Assessment of Concurrency Bug Detection Tools," *Proc. of the 10th Workshop on Parallel and Distributed Systems: Testing, Analysis, and Debugging (PADTAD 2012)*, pages 25-35, Minneapolis, Minnesota, Jul. 2012.
- [C11] Kevin Jalbert and **Jeremy S. Bradbury**. "Predicting Mutation Score Using Source Code and Test Suite Metrics", *Proc. of the Workshop on Realizing Artificial Intelligence Synergies in Software Engineering (RAISE 2012)*, Zurich, Switzerland, Jun. 2012, 5 pp.
- [C12] John K. Jacoub, Ramiro Liscano, **Jeremy S. Bradbury**. "A Survey of Modeling Techniques for Wireless Sensor Networks", *Proc. of the 5th International Conference on Sensor Technologies and Applications (SENSORCOMM 2011)*, pages 103-109, Nice/Saint Laurent du Var, France, Aug. 2011.
- [C13] Ahmad A. Saifan, Juergen Dingel, **Jeremy S. Bradbury**, Ernesto Posse. "Implementing and Evaluating a Runtime Conformance Checker for Mobile Agent Systems", *Proc. of the 4th IEEE International Conference on Software Testing, Verification and Validation (ICST 2011)*, pages 269-278, Berlin, Germany, Mar. 2011.
- [C14] Gowritharan Maheswara, **Jeremy S. Bradbury**, Christopher Collins. "TIE: An Interactive Visualization of Thread Interleavings", *Proc. of the 5th ACM Symposium on Software Visualization (SoftVis'10)*, pages 215-216, Salt Lake City, Utah, USA, Oct. 2010.
- [C15] Kevin Jalbert, **Jeremy S. Bradbury**. "Using Clone Detection to Identify Bugs in Concurrent Software", *Proc. of 26th IEEE International Conference on Software Maintenance (ICSM 2010)*, Timisoara, Romania, Sept. 2010, 5 pp.
- [C16] Devin Kester, Martin Mwebesa and **Jeremy S. Bradbury**. "How Good is Static Analysis at Finding Concurrency Bugs?", *Proc. of the 10th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM 2010)*, pages 115-124, Timisoara, Romania, Sept. 2010.

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- [C17] **Jeremy S. Bradbury**, *Kevin Jalbert*. "Automatic Repair of Concurrency Bugs", *Proc. of the 2nd International Symposium on Search Based Software Engineering (SSBSE 2010) - Fast Abstracts*, Benevento, Italy, Sept. 2010, 2pp.
- [C18] **Jeremy S. Bradbury** and *Kevin Jalbert*. "Defining a Catalog of Programming Anti-Patterns for Concurrent Java", In *Proc. of the 3rd International Workshop on Software Patterns and Quality (SPAQu'09)*, pages 6-11, Orlando, Florida, USA, Oct. 2009.
- [C19] **Jeremy S. Bradbury**, James R. Cordy and Juergen Dingel. "Comparative Assessment of Testing and Model Checking Using Program Mutation", In *Proc. of the 3rd Workshop on Mutation Analysis (Mutation 2007)*, pages 210-219, Windsor, UK, Sept. 2007.
- [C20] L. Ruhai Cai, **Jeremy S. Bradbury**, Juergen Dingel. "Verifying Distributed, Event-Based Middleware Applications using Domain-Specific Software Model Checking", In *Proc. of 9th IFIP WG 6.1 International Conference on Formal Methods for Open Object-Based Distributed Systems (FMOODS'07)*, Springer Verlag. Lecture Notes in Computer Science 4468. pages 44-58. Paphos, Cyprus. June 2007.
- [C21] **Jeremy S. Bradbury**, James R. Cordy and Juergen Dingel. "Mutation Operators for Concurrent Java (J2SE 5.0)", In *Proc. of the 2nd Workshop on Mutation Analysis (Mutation 2006)*, pages 83-92, Raleigh, North Carolina, USA, Nov. 2006.
- [C22] **Jeremy S. Bradbury**, James R. Cordy and Juergen Dingel. "ExMAN: A Generic and Customizable Framework for Experimental Mutation Analysis", In *Proc. of the 2nd Workshop on Mutation Analysis (Mutation 2006)*, pages 57-62, Raleigh, North Carolina, USA, Nov. 2006.
- [C23] **Jeremy S. Bradbury**. "Using Mutation for the Assessment and Optimization of Tests and Properties", *Doctoral Symposium being held in conjunction with the International Symposium on Software Testing and Analysis (ISSTA 2006)*, Portland Maine, USA, July 2006, 4 pp.
- [C24] **Jeremy S. Bradbury**, James R. Cordy and Juergen Dingel. "An Empirical Framework for Comparing Effectiveness of Testing and Property-Based Formal Analysis", In *Proc. of the 6th International ACM SIGPLAN-SIGSOFT Workshop on Program Analysis for Software Tools and Engineering (PASTE 2005)*, pages 2-5, Lisbon, Portugal, Sept. 2005.

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- [C25] Hongyu Zhang, **Jeremy S. Bradbury**, James R. Cordy and Juergen Dingel. "Implementation and Verification of Implicit-Invocation Systems Using Source Transformation." In Proc. of the *5th International Workshop on Source Code Analysis and Manipulation (SCAM 2005)*, pages 87-96, Budapest, Hungary, Sept./Oct. 2005.
- [C26] **Jeremy S. Bradbury**, James R. Cordy, Juergen Dingel, Michel Wermelinger. "A Survey of Self Management in Dynamic Software Architecture Specifications", In Proc. of the *1st ACM SIGSOFT Workshop on Self-Managed Systems (WOSS'04)*, pages 28-33, Newport Beach, California, USA, Oct./Nov. 2004.
- [C27] Hongyu Zhang, **Jeremy S. Bradbury**, James R. Cordy and Juergen Dingel. "A Transformational Framework for Testing and Model Checking Implicit-Invocation Systems", In Proc. of the *International Workshop on Distributed Event-Based Systems (DEBS'04)*, pages 110-115, Edinburgh, Scotland, UK, May 2004.
- [C28] **Jeremy S. Bradbury** and Juergen Dingel. "Evaluating and Improving the Automatic Analysis of Implicit Invocation Systems", In Proc. of the *European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE 2003)*, pages 78-87, Helsinki, Finland, Sept. 2003. Also published in ACM SIGSOFT Software Engineering Notes (28) 5, Sept. 2003.
- [C29] Jeffrey S. Shell, **Jeremy S. Bradbury**, Craig B. Knowles, Connor Dickie and Roel Vertegaal. "eyeCOOK: A Gaze and Speech Enabled Attentive Cookbook", In Video Program of the *International Conference on Ubiquitous Computing (UbiComp 2003)*, Seattle, Washington, United States, Oct. 2003.
- [C30] **Jeremy S. Bradbury**, Jeffrey S. Shell and Craig B. Knowles. "Hands on Cooking: Towards an Attentive Kitchen", Extended Abstract in Proc. of the *International Conference on Human Factors in Computing Systems (CHI 2003)*, pages 996-997, Fort Lauderdale, Florida, USA, Apr. 2003.

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- Dissertations**
- [D1] **Jeremy S. Bradbury.** "Using Program Mutation for the Empirical Assessment of Fault Detection Techniques: A Comparison of Concurrency Testing and Model Checking", Ph.D. Thesis. Queen's University. June 2007, 151 pp. (*Supervisors:* James R. Cordy, Juergen Dingel)
 - [D2] **Jeremy S. Bradbury.** "Model Checking Implicit-Invocation Systems: An Approach to the Automatic Analysis of Architectural Styles", M.Sc. Thesis. Queen's University. May 2002, 193 pp. (*Supervisor:* Juergen Dingel)
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- Unpublished Reports**
- [U1] **Jeremy S. Bradbury,** Ian Rutherford, Matthew Graves, Jesse Tweedle and Robert Rosebrugh. "User Guide for Graphical Database for Category Theory 3.0 ", Mount Allison University, Feb. 2006., 30 pp.
 - [U2] **Jeremy S. Bradbury.** "Organizing Definitions and Formalisms of Dynamic Software Architectures". Technical Report 2004-477, Queen's University, Mar. 2004, pages 49.
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- Posters & Exhibits**
- [E1] Joseph Heron, **Jeremy S. Bradbury.** "GitView: Understanding Open Source Development", In Technology Showcase at the *24th Annual International Conference on Computer Science and Software Engineering (CASCON 2014)*, Markham, Ontario, Canada, Nov. 2014.
 - [E2] Michael Miljanovic, **Jeremy S. Bradbury.** "RoboBUG: Learning Debugging with Games", In Technology Showcase at the *24th Annual International Conference on Computer Science and Software Engineering (CASCON 2014)*, Markham, Ontario, Canada, Nov. 2014.
 - [E3] John Khalil Jacoub, Ramiro Liscano, **Jeremy S. Bradbury,** Jared Fisher. "UML Modelling and Analysis of Power Consumption for Wireless Sensor Networks", In Technology Showcase at the *22th Annual International Conference on Computer Science and Software Engineering (CASCON 2012)*, Markham, Ontario, Canada, Nov. 2012. Also presented at the poster session of the *2012 Fall Meeting of the Consortium for Software Engineering Research (CSER)*.
 - [E4] Kevin Jalbert and **Jeremy S. Bradbury.** "Predicting How Difficult Bugs are to Detect Using Source Code Metrics", In the poster session of the *2011 Spring Meeting of the Consortium for Software Engineering Research (CSER)*, Jun. 14, 2011.

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- [E5] Martin Mwebesa and **Jeremy S. Bradbury**. "Using Static Analysis to Detect Concurrency Design Patterns", In the poster session of the *2011 Spring Meeting of the Consortium for Software Engineering Research (CSER)*, Jun. 14, 2011.
- [E6] Kevin Jalbert, Cody LeBlanc, Christopher Forbes, **Jeremy S. Bradbury** and Ramiro Liscano. "Eclipticon: Eclipse Plugin for Concurrency Testing", in the poster session of the *2011 Fall Meeting of the Consortium for Software Engineering Research (CSER)*, Nov. 6, 2011.
- [E7] Kevin Jalbert, David Kelk and **Jeremy S. Bradbury**. "ARC: Automatic Repair of Java Concurrency Bugs", in the poster session of the *2011 Fall Meeting of the Consortium for Software Engineering Research (CSER)*, Nov. 6, 2011.
- [E8] Kevin Jalbert and **Jeremy S. Bradbury**. "A Tool for Automatically Repairing Concurrency Bugs", In Technology Showcase at the *20th Annual International Conference on Computer Science and Software Engineering (CASCON 2010)*, Toronto, Ontario, Canada, Nov. 2010. Also presented at the poster session of the *2010 Fall Meeting of the Consortium for Software Engineering Research (CSER)*.
- [E9] Gowritharan Maheswara, **Jeremy S. Bradbury**, Christopher Collins. "TIE: Thread Interleaving Visualizer", In Technology Showcase at the *20th Annual International Conference on Computer Science and Software Engineering (CASCON 2010)*, Toronto, Ontario, Canada, Nov. 2010.
- [E10] Kevin Jalbert and **Jeremy S. Bradbury**. "Using Bug Patterns in the Regression Testing of Concurrent Software", In Technology Showcase at the *19th Annual International Conference on Computer Science and Software Engineering (CASCON 2009)*, Toronto, Ontario, Canada, Nov. 2009. Also presented at the poster session of the *2009 Fall Meeting of the Consortium for Software Engineering Research (CSER)*.
- [E11] **Jeremy S. Bradbury**, James R. Cordy and Juergen Dingel. "Bugs and Concurrency: A Quantitative Assessment of Bug Detection Tools", In Technology Showcase at the *16th Annual International Conference on Computer Science and Software Engineering (CASCON 2006)*, Markham, Ontario, Canada, Oct. 2006. Also presented at the poster session of the *2006 Fall Meeting of the Consortium for Software Engineering Research (CSER)*.

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- Invited Talks**
- [P1] “Can Commit History Predict Future Code Changes in GitHub Projects”, invited NOVA LINCS Seminar, Universidade Nova de Lisboa, Portugal. June 12, 2018.
 - [P2] “Automating Software Development Using Artificial Intelligence (AI)”, invited Computer Science Seminar, Mount Allison University, Canada. Mar. 21, 2018.
 - [P3] “Automating Software Development Using Artificial Intelligence (AI)”, invited Computer Science Seminar, Dalhousie University, Canada. Mar. 20, 2018.
 - [P4] Invited panelist/speaker for the *CASCON 2011 Doctoral Forum*, Nov. 9, 2011.
 - [P5] “Producing High Quality Concurrent Software”, KEYNOTE, *2011 Spring Meeting of the Consortium for Software Engineering Research (CSER)*, Jun. 21, 2011.
 - [P6] Invited speaker for *CSER Workshop on the Future Trends of Detection, Evolution, Management and Applications of Code Clones*. Jun. 21, 2011.

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- Student Supervision – In Progress**
- PhD Students**
- **Michael A. Miljanovic**, PhD Candidate (Computer Science), 2015-Present
Thesis: Adaptive Game-based Learning in Computer Science Education.
- MSc Students**
- **Jude Arokiam**, MSc Student (Computer Science), 2019-Present
Thesis: Topics in Machine Learning and Software Engineering
Co-supervisor: Ken Pu
 - **Luisa Rojas Garcia**, MSc Student (Computer Science), 2017-Present
Thesis: CFLASH: Fault Localization in Concurrent Programs.
 - **Taylor Smith**, MSc Student (Computer Science), 2018-Present
Thesis: Impact of Code Style on the Readability of Python Programs.

**Student
Supervision
– Completed**

PhD Students

- **David Kelk**, PhD Candidate (Computer Science), 2010-15
Thesis: CORE: Concurrent Bug Repair.
Co-supervisor: Mark Green
- **John Khalil Jacoub**, PhD Candidate (Electrical & Computer Engineering), 2009-14
Thesis: Software Modelling for Wireless Sensor Networks (WSN).
Co-supervisor: Ramiro Liscano

MSc Students

- **Gabrielle Perez Dias**, MSc Student (Computer Science), 2016-18
Thesis: Understanding and Recovering from Interruption during Programming Tasks.
Co-supervisor: Christopher Collins
- **Joseph Heron**, MSc Student (Computer Science), 2014-16
Thesis: Predicting Evolutionary Software Change in GitHub Repositories.
- **Michael A. Miljanovic**, MSc Student (Computer Science), 2013-15
Thesis: RoboBUG: A Game-Based Approach to Learning Debugging Techniques.
- **Kevin Jalbert**, MSc Student (Computer Science), 2010-12
Thesis: Predicting Mutation Score Using Source Code and Test Suite Metrics.
- **Martin Mwebesa**, MSc Student (Computer Science), 2009-11
Thesis: Identification and Annotation of Concurrency Design Patterns in Java Source Code Using Static Analysis.

Undergraduate Students

- **Nadia Goralski**, Honours Thesis Student (Computer Science), 2019-20
Thesis: vShell: An Academic Chatbot for Slack
Co-supervisor: Randy Fortier
- **Gavin Gosling**, Honours Thesis Student (Computer Science), 2019-20
Thesis: Automatic Prediction of Bug Severity in Open Source Projects
- **Onyedikachi Kalu**, Honours Thesis Student (Computer Science), 2019-20
Thesis: CoachSyntax: A Parsons Problem Game for Learning Programming
- **Ibrahim Mushtaq**, Honours Thesis Student (Computer Science), 2019-20

Thesis: VulkanEdu: An Educational Framework for Learning Vulkan
Co-supervisor: Mark Green

- **Jude Arokiam**, Honours Thesis Student (Computer Science), 2018-19
Thesis: Using Natural Language Processing and Historical Data to Automatically Predict Bug Severity.
- **Devon McGrath**, Honours Thesis Student (Computer Science), 2018-19
Thesis: Automatically Repairing Concurrency Bugs in Java with ARC2.
- **Damon Barton**, Honours Thesis Student (Computer Science), 2017-18
Thesis: CodeSniffer: A Serious Game for Learning Code Refactoring.
- **Andrei Stoica**, Honours Thesis Student (Computer Science), 2017-18
Thesis: Identifying Source Code Similarity Using NLP Techniques.
Co-supervisor: Ken Pu
- **Daniel Hope**, Honours Thesis Student (Computer Science), 2016-17
Thesis: FireFinder: A Serious Game for Learning Pathfinding Algorithms.
Co-supervisor: Randy Fortier
- **Luisa Rojas Garcia**, Honours Thesis Student (Computer Science), 2016-17
Thesis: Learning Concurrency Using Serious Games.
- **Taylor Smith**, Honours Thesis Student (Computer Science), 2016-17
Thesis: Assessing the Comprehension of Method Chaining in Javascript.
- **Mohamad Vedut**, Undergraduate Research Student (Software Engineering), 2016
Project: Surveying Automatic Bug Repair Techniques
- **Scott McLean**, TIF Student (Software Engineering), Summer 2016
Project: Enhancing First Year Programming Labs Using Game-Based Learning.
- **Alexander Marshall**, Honours Thesis Student (Computer Science), 2015-16
Thesis: A Unit Testing Eclipse Plugin for Multicore Software.
- **Priya Mohan**, Honours Thesis Student (Computer Science), 2015-16
Thesis: Using Artificial Intelligence to Improve Software Development Techniques.
Co-supervisor: Jarek Szlichta

- **Blair Wisner**, Honours Thesis Student (Computer Science), 2015-16
Thesis: Visualization of Mutation Testing.
Co-supervisor: Christopher Collins
- **Jeremy Kwok**, NSERC USRA Student (Computing Science) Summer 2015
Project: SyncDebugger: Automatic Debugging of Multicore Software.
- **Joseph Heron**, NSERC USRA Student (Computer Science), Summer 2013; Science Undergraduate Research Award (SUSRA) Student (Computer Science), Summer 2014
Project: GitView: Visualization of GitHub Visualization of Open Source Code and Comment Churn.
- **Daniel Smullen**, Undergraduate Research Student (Software Engineering), 2013-14
Project: Topics in Protecting Personal Data in Online Environments.
- **Jonathan Gillett**, Undergraduate Research Student (Software Engineering), 2013-14
Project: Topics in Protecting Personal Data in Online Environments.
- **Mitchell George**, Undergraduate Research Student (Software Engineering), Summer 2013
Project: Assessing the Benefits of Mutation with Concurrent Software.
- **David Petras**, Undergraduate Research Student (Software Engineering), 2016
Project: Visualization of Mutation Testing Data.
- **Mariana Akemi Shimabukuro**, Undergraduate Research Student (Computer Science), 2016
Project: Studying the Use of Text in Visualizations.
Co-supervisor: Christopher Collins
- **Adam Contois**. Honours Thesis Student (Computer Science), 2012-13
Thesis: Analyzing and Visualizing Community Data From Stack Overflow.
- **Jason Hum**. Honours Thesis Student (Computer Science), 2012-13
Thesis: Exploring the Relationship Between Code and Comment Churn.
- **Ryan Watson**. Honours Thesis Student (Computer Science), 2012-13
Thesis: Heterogeneous Haptic Computing.
Co-supervisor: Mark Green
- **Shivam Kalra**, UOIT STAR Research Student (Computer Science), Summer 2012
Project: Fault Localization in Concurrent Java Programs.

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- **Rafael Ayala**, Honours Thesis Student (Computer Science), 2011-12
Thesis: A Mobile Application for Searching Specific Topics on Twitter and Assessing Result Credibility.
 - **Jared Hinde**, Honours Thesis Student (Computer Science), 2011-12
Thesis: Towards an Educational Social Network for Computer Programming Courses.
 - **Daniel St. Jacques**, Honours Thesis Student (Computer Science), 2011-12
Thesis: Open Source Release History Collection and Classification.
 - **Benjamin Waters**, Honours Thesis Student (Computer Science), 2011-12
Thesis: Visualization of Mutation Test Data to Aid in Test Prioritization.
Co-supervisor: Christopher Collins
 - **Cody LeBlanc**, Part-time Research Student (Software Engineering), Summer 2011
Project: Eclipticon – An Eclipse Plugin for Testing Concurrent Java.
 - **Alexander Kidd**, Honours Directed Studies Student (Computer Science), Fall 2011
Project: Smart Notice Boards.
Co-supervisor: Faisal Qureshi
 - **Gowritharan Maheswara**, Research Student (Computer Science), Summer 2010
Project: TIE – Thread Interleaving Visualizer.
Co-supervisor: Chris Collins
 - **Alexander Kidd**, Part-time Teaching Innovation Fund (TIF) Summer Student (Computer Science), Summer 2010
Project: An Online Testing and Evaluation Environment for Computer Programming Courses.
 - **Kevin Jalbert**, NSERC USRA Student (Software Engineering), Summer 2010
Project: Automatic Bug Repair
 - **Kevin Jalbert**, Capstone Students (Software Engineering), 2009-10
Capstone Project: An Eclipse plug-in To Test Different Path Interleavings in Concurrent Java Programs.
Co-supervisor: Ramiro Liscano
 - **Chris Forbes**, Capstone Students (Software Engineering), 2009-10
Capstone Project: An Eclipse plug-in To Test Different Path Interleavings in Concurrent Java Programs.
Co-supervisor: Ramiro Liscano
 - **Cody LeBlanc**, Capstone Students (Software Engineering), 2009-10
Capstone Project: An Eclipse plug-in To Test Different Path

Interleavings in Concurrent Java Programs.

Co-supervisor: Ramiro Liscano

- **Lisa Kosh**, Honours Thesis Student (Computer Science), 2009-10
Thesis: Experiments into the Software Testing Coupling Effect.
- **Kristina Glinos**, Honours Thesis Student (Computer Science) 2009-10
Thesis: Development of a Concurrency Benchmark for Java.
- **Gowritharan Maheswara**, Honours Thesis Student (Computer Science), 2009-10
Thesis: Visualization of Thread Interleaving Produced by Java PathFinder.
Co-supervisor: Christopher Collins
- **Bradley Chicoine**, Honours Thesis Student (2009-10)
Thesis: Visualization of Class Scheduling at UOIT.
Co-supervisors: Faisal Qureshi, Christopher Collins
- **Kevin Jalbert**, NSERC USRA Student (Software Engineering) Summer 2009
Project: Using Clone Detection to Statically Analyze Concurrent Java Programs.
- **Wiktor Starzyk**, TIF Student (Computer Science) Summer 2009
Project: An Online Testing and Evaluation Environment for Computer Programming Courses.
Co-supervisor: Faisal Qureshi
- **Jon Elliott**, TIF Student (Computer Science), Summer 2009
Project: XE: A Secure Laptop Based Examination Environment.
Co-supervisors: Dhavide Aruliah, Janice Strap, Ken Pu
- **Lisa Kosh**, Education Placement Student (Computer Science), Summer 2009
Project: An Analysis of Tiki Wiki for Computer Science Education.
- **Devin Kester**, Honours Thesis Student (Computer Science), Fall 2008
Thesis: A Comparison of Bug Detecting Tools for Concurrent Java Programs.
- **Eric White**, Honours Thesis Student (Computer Science), Fall 2008
Thesis: Profiling Subversion Repositories.
- **Jeff Falkenham**, NSERC USRA Student (Computer Science) Summer 2008; Science Undergraduate Research Award (SUSRA) Student (Computer Science) Summer 2009
Project: Graph-Based Visualization of Mutation Test Data.

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- **Kristina Glinos**, TIF Students (Computer Science), Summer 2008
Project: A Linux-based Environment for Undergraduate Computer Science Education.
Co-supervisors: Mark Green, Ken Pu
 - **Bradley Chicoine**, TIF Students (Computer Science), Summer 2008
Project: A Linux-based Environment for Undergraduate Computer Science Education.
Co-supervisors: Mark Green, Ken Pu

Research Service

Journal, Conference and Workshop Organization

- **Program Committee member, 2020**
The 30th Annual International Conference on Computer Science and Software Engineering (CASCON 2020)
- **Program Committee member, 2020**
The 1st International Workshop on Games for Software Engineering Education and Training (SE-Games 2020)
- **Organizing Committee member, 2020**
The Workshop on Testing of Configurable and Multi-variant Systems (ToCaMS 2020)
- **Reviewer, 2020**
The Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium (SIGCSE 2020)
- **Program Committee member, 2019**
The 29th Annual International Conference on Computer Science and Software Engineering (CASCON 2019)
- **Reviewer, 2019**
The Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium (SIGCSE 2019)
- **Program Committee member, 2018**
The 28th Annual International Conference on Computer Science and Software Engineering (CASCON 2018)
- **Program Committee member, 2018**
The 5th ACM SIGPLAN International Workshop on Artificial Intelligence and Empirical Methods for Software Engineering and Parallel Computing Systems (AI-SEPS 2018)
- **Program Committee member, NIER track, 2017**
The 33rd International Conference on Software Maintenance and Evolution (ICMSE 2017)
- **Program Committee member, 2017**

The 27th Annual International Conference on Computer Science and Software Engineering (CASCON 2017)

- **Track Chair, Fast Abstracts, 2016**
The 27th International Symposium on Software Reliability Engineering (ISSRE 2016)
- **Early Research Achievements Track Program Committee member, 2016**
The 32nd International Conference on Software Maintenance and Evolution (ICMSE)
- **Program Committee member, 2016**
The 3rd Workshop on Software Engineering for Parallel Systems (SEPS 2016)
- **Program Committee member, 2016**
The 1st Brazilian Symposium on Systematic and Automated Software Testing (SAST 2016)
- **Track Program Committee member, 2016**
The Multicore Software Engineering, Performance, Applications, and Tools (MUSEPAT) technical track at The 31st ACM/SIGAPP Symposium On Applied Computing (SAC)
- **Co-organizer, 2015**
The 2015 Fall Meeting of the Consortium for Software Engineering Research (CSER)
- **Program Committee member, 2015**
The 2nd Workshop on Software Engineering for Parallel Systems (SEPS 2015)
- **Early Research Achievements Track Program Committee member, 2015**
The 31st International Conference on Software Maintenance and Evolution (ICMSE)
- **Program Committee member, 2015**
The 10th International Workshop on Mutation Analysis (Mutation)
- **Track Chair, 2015**
The Multicore Software Engineering, Performance, Applications, and Tools (MUSEPAT) technical track at The 30th ACM/SIGAPP Symposium On Applied Computing (SAC)
- **Co-chair, 2014**
The 9th CASCON Workshop on Challenges for Parallel Computing
- **ACM Student Research Competition Program Committee member, 2014**

The 22nd ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE)

- **Program Committee member, 2014**
The 9th International Workshop on Mutation Analysis (Mutation)
- **Technical Program Committee (TPC) member, 2014**
The IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)
- **Co-chair, 2013**
The 8th CASCON Workshop on Challenges for Parallel Computing
- **Program Committee member, 2013**
The 23rd Annual International Conference on Computer Science and Software Engineering (CASCON)
- **Program Committee member, 2013**
The 2nd International NSF sponsored Workshop on Realizing Artificial Intelligence Synergies in Software Engineering (RAISE)
- **Program Committee member, 2013**
The 8th International Workshop on Mutation Analysis (Mutation)
- **Program Committee member, 2013**
The Testing: Academic and Industrial Conference - Practice and Research Techniques (TAIC PART)
- **Steering Committee member, program committee member, 2013**
The International Conference on Multicore Software Engineering, Performance, and Tools (MUSEPAT)
- **Program Committee member, 2012**
NSF Workshop: Planning Future Directions in Artificial Intelligence and Software Engineering (AISE)
- **Program Committee member, 2012**
The 22nd Annual International Conference on Computer Science and Software Engineering (CASCON)
- **General Chair, 2012**
The 10th Workshop on Parallel and Distributed Systems: Testing, Analysis, and Debugging (PADTAD)
- **Program Committee member, 2012**
The 7th International Workshop on Mutation Analysis (Mutation)
- **Guest Editor, 2012**
Science of Computer Programming Special Issue on Mutation Analysis

- **Co-organizer, 2011**
The Fall Meeting of the Consortium for Software Engineering Research (CSER)
- **Guest Editor, 2011**
Information and Software Technology Special Issue on Mutation Testing
- **Program Committee member, 2011**
The 3rd International Symposium on Search Based Software Engineering (SSBSE)
- **Program Committee member, 2011**
The 6th International Workshop on Mutation Analysis (Mutation)
- **Co-organizer, 2010**
The 5th International Workshop on Mutation Analysis (Mutation)
- **Co-organizer, 2009**
The 4th International Workshop on Mutation Analysis (Mutation)

Journal, Conference and Workshop Referee

- IEEE Transactions on Software Engineering (TSE) Journal, 2012
- Information and Software Technology (IST) Journal, 2010
- Journal of Systems and Software, 2010
- Journal of Software: Practice and Experience, 2010
- Software Testing, Verification and Reliability (STVR) Journal, 2009
- Science of Computer Programming Journal, 2009
- IEEE Transactions on Software Engineering (TSE), 2009
- Computer Languages, Systems & Structures Journal, 2009
- Software Engineering for Self-Adaptive Systems (*book*), 2008
- Empirical Software Engineering: An International Journal, 2007, 2008
- The International Conference on Software Maintenance (ICSM), 2005, 2007, 2009
- The Conference on Fundamental Approaches to Software Engineering (FASE), a member conference of the European Joint Conferences on Theory and Practice of Software (ETAPS), 2007
- The Annual International Conference on Computer Science and Software Engineering (CASCON), 2006

- The Journal of Systems and Software, 2006

Thesis Examinations

- **External Examiner**, Nov. 2017
PhD thesis (Eden Burton), Department of Computer Science,
McMaster University
- **External Examiner**, Aug. 2017
PhD thesis (Fahim Imam), Department of Electrical and Computer
Engineering, Queen's University
- **External Examiner**, Mar. 2017
PhD Candidacy Exam (Timothy Teatro), Faculty of Engineering and
Applied Science, UOIT
- **University Examiner**, Apr. 2017
PhD thesis (Amjad Farah), Faculty of Energy Systems and Nuclear
Science, UOIT
- **External Examiner**, Oct. 2014
MSc thesis (Christopher Bonk), Faculty of Business & IT, UOIT
- **External Examiner**, Jul. 2011
PhD Candidacy Exam (Nidal Qwasmi), Faculty of Engineering and
Applied Science, UOIT
- **External Examiner**, Aug, 2010
MAsc thesis (Kimia Kazemi), Faculty of Engineering and Applied
Science, UOIT