

Jeremy S. Bradbury – CURRICULUM VITAE

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

Contact Information	<i>Mail:</i>	Science Building UA4000, 2000 Simcoe Street North Oshawa, Ontario, Canada, L1H 7K4
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Research Interests	Concurrent/multi-core software, software engineering, software quality assurance, software testing, static analysis, software model checking, bug detection, software metrics, empirical software engineering, artificial intelligence, genetic algorithms, heterogeneous computing.
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Education	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
	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
	B.Sc. First Class Honours with Distinction in Computer Science and Mathematics, 2000 Mount Allison University, Sackville, New Brunswick, Canada

Honours & Awards

Academic Achievements & Scholarships

- Ontario Graduate Scholarship Science and Technology (OGSST), 2005-06
- Natural Sciences and Engineering Research Council of Canada (NSERC) PGS B, 2003-05
- Ian A. Macleod Award, given to the graduate student who has made the greatest contribution to the intellectual and social spirit of the School of Computing, Queen's University, 2002-03
- Ontario Graduate Scholarship (OGS), 2002-03
- Natural Sciences and Engineering Research Council of Canada (NSERC) PGS A, 2000-02
- Computer Science Departmental Award, Mount Allison University, 1999-00
- University Leadership Certificate, Mount Allison University, 1999-00
- Percy Simpson Bailey Scholarship, Mount Allison University, 1999-00
- Dean's List, Mount Allison University, 1996-00
- Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Research Award, 1999
- Nathaniel Morgan Scholarship, Mount Allison University, 1998-1999
- University Scholarship for being in top 5% academically, Mount Allison University, 1997-1998
- President Leadership Certificate, Mount Allison University, 1997-1998
- David K. Pickard Prize for excellence, achievement, and perseverance in the field of Computer Science, Mount Allison University, 1997-1998
- University entrance scholarship, Mount Allison University, 1996

Paper Awards and Honours

- RAISE 2012 Best Paper Award for "Predicting Mutation Score Using Source Code and Test Suite Metrics," the Workshop on Realizing Artificial Intelligence Synergies in Software Engineering (RAISE 2012).
- CSER 2011 Fall Meeting Best Poster Award for "Eclipticon: Eclipse Plugin for Concurrency Testing," the Consortium for Software Engineering Research (CSER) Fall 2011 Meeting (one of three best poster awards).

- *SoftVis'10 Best Poster Award* for "TIE: An Interactive Visualization of Thread Interleavings", the 5th ACM Symposium on Software Visualization (SoftVis'10).
- *SCAM 2010 Special Journal Issue Invitation* for "How Good is Static Analysis at Finding Concurrency Bugs?", the 10th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM 2010).
- *SCAM 2005 Special Journal Issue Invitation* for "Implementation and Verification of Implicit-Invocation Systems Using Source Transformation," the 5th International Workshop on Source Code Analysis and Manipulation (SCAM 2005).

Teaching Awards

- Faculty of Science nominee, UOIT Teaching Excellence Award (Tenured & Tenure-Track Faculty), UOIT, 2015-16.
- School of Computing Award for Excellence in Teaching Assistance, Queen's University, 2002-03.

Research Grants

"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

"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.

Professional Experience

University of Ontario Institute of Technology (UOIT), Oshawa, ON, Canada

Graduate Program Director (July 2015-Present)

Responsible for coordinating Computer Science MSc and PhD programs.

Undergraduate Program Director (July 2011-June 2013)

Responsible for coordinating Computing Science BSc program.

Assistant Professor (July 2007-June 2013),

Associate Professor (July 2013-Present)

Researcher and leader of the Software Quality Research Lab (<http://www.sqrlab.ca>), graduate and undergraduate student supervision, teaching, service

Queen's University, Kingston, ON, Canada

Graduate student (2000-07)

Member of the Software Technology Laboratory, researcher (MSc, PhD), teaching assistant.

Mount Allison University, Sackville, NB, Canada

Research Assistant (May to Aug. 1998, 1999, May to Jun. 2000)

Research conducted under the supervision of Dr. Robert Rosebrugh in the area of computation category theory.

Teaching Experience

University of Ontario Institute of Technology (UOIT), Oshawa, ON, Canada, 2007-Present

Undergraduate Courses Instructed

- CSCI 1060U (formerly CSCI 2030U) - Programming Workshop, 2009-13, 2015 (x2), 2016
- 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 – Multicore and Many-Core Programming, 2017

- 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, 2015-16
- 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 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>
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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 (<i>to appear</i>).</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>
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Refereed Conference & Workshop Publications	<p>[C1] <u>Michael A. Miljanovic</u>, Jeremy S. Bradbury. "Robot ON!: A Serious Game for Improving Programming Comprehension," <i>Proc. of the 5th International Workshop on Games and Software Engineering (GAS 2016)</i>, Austin, Texas, USA, May 2016.</p> <p>[C2] <u>David Kelk</u>, <u>Kevin Jalbert</u>, Jeremy S. Bradbury. "Automatically Repairing Concurrency Bugs with ARC," <i>Proc. of the 1st International Conference on Multicore Software Engineering, Performance, and Tools (MUSEPAT 2013)</i>, pages 73-84, Saint Petersburg, Russia, Aug. 2013.</p> <p>[C3] Jeremy S. Bradbury, <u>David Kelk</u>, Mark Green. "Effectively Using Search-Based Software Engineering Techniques within Model Checking and It's Applications," <i>Proc. of the 1st International Workshop on Combining Modelling and Search-Based Software Engineering (CMSBSE 2013)</i>, pages 67-70, San Francisco, CA, USA, May 2013.</p> <p>[C4] <u>John K. Jacoub</u>, Ramiro Liscano, Jeremy S. Bradbury, Jared Fisher. "UML Modelling of Design Patterns for Wireless Sensor Networks," <i>Proc. of the 2nd International Conference on Sensor Networks (SENSORNETS 2013)</i>, Barcelona, Spain, Feb. 2013.</p> <p>[C5] Jeremy S. Bradbury, Itai Segall, Eitan Farchi, <u>Kevin Jalbert</u>, <u>David Kelk</u>. "Using Combinatorial Benchmark Construction to Improve the Assessment of Concurrency Bug Detection Tools," <i>Proc. of</i></p>
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¹ Names of supervised students are underlined and italicized in all publications and presentations.

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- the 10th Workshop on Parallel and Distributed Systems: Testing, Analysis, and Debugging (PADTAD 2012)*, pages 25-35, Minneapolis, Minnesota, Jul. 2012.
- [C6] 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.
- [C7] John K. Jacob, 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.
- [C8] 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.
- [C9] 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.
- [C10] 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.
- [C11] 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.
- [C10] **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.
- [C12] **Jeremy S. Bradbury** and Kevin Jalbert. "Defining a Catalog of Programming Anti-Patterns for Concurrent Java", *InProc. of the 3rd International Workshop on Software Patterns and Quality*
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(SPAQu'09), pages 6-11, Orlando, Florida, USA, Oct. 2009.

- [C13] **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.
- [C14] 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.
- [C15] **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.
- [C16] **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.
- [C17] **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.
- [C18] **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.
- [C19] 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.
- [C20] **Jeremy S. Bradbury**, James R. Cordy, Juergen Dingel, Michel
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- 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.
- [C21] 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.
- [C22] **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.
- [C23] 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.
- [C24] **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.
 - [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] Invited panelist/speaker for the *CASCON 2011 Doctoral Forum*, Nov. 9, 2011.
- [P2] "Producing High Quality Concurrent Software", KEYNOTE, *2011 Spring Meeting of the Consortium for Software Engineering Research (CSER)*, Jun. 21, 2011.
- [P3] 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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- Contributed Presentations**
- [P4] "Automatically Repairing Concurrency Bugs with ARC," *1st International Conference on Multicore Software Engineering, Performance, and Tools (MUSEPAT 2013)*, Saint Petersburg, Russia, Aug. 2013.
 - [P5] "Effectively Using Search-Based Software Engineering Techniques within Model Checking and It's Applications," *1st International Workshop on Combining Modelling and Search-Based Software Engineering (CMSBSE 2013)*, San Francisco, CA, USA, May 2013.
 - [P6] "Using Combinatorial Benchmark Construction to Improve the Assessment of Concurrency Bug Detection Tools," *10th Workshop on Parallel and Distributed Systems: Testing, Analysis, and Debugging (PADTAD 2012)*, Minneapolis, Minnesota, Jul. 2012.
 - [P7] "Predicting Mutation Score Using Source Code and Test Suite Metrics", *Workshop on Realizing Artificial Intelligence Synergies in Software Engineering (RAISE 2012)*, Zurich, Switzerland, Jun. 2012.
 - [P8] "A Survey of Modeling Techniques for Wireless Sensor Networks", *5th International Conference on Sensor Technologies and Applications (SENSORCOMM 2011)*, pages 103-109, Nice/Saint Laurent du Var, France, Aug. 2011.
 - [P9] "Eclipticon: An Eclipse Plugin for Concurrency Testing of Java Programs", *Eclipse DemoCamps Indigo 2011/Toronto*, Jun. 14, 2011.
 - [P10] "Implementing and Evaluating a Runtime Conformance Checker for Mobile Agent Systems", *4th IEEE International Conference on Software Testing, Verification and Validation (ICST 2011)*, Berlin, Germany, Mar. 2011.
 - [P11] "TIE: An Interactive Visualization of Thread Interleavings", *5th ACM Symposium on Software Visualization (SoftVis'10)*, Salt Lake City, Utah, USA, Oct. 2010.
 - [P12] "Using Clone Detection to Identify Bugs in Concurrent Software", *26th IEEE International Conference on Software Maintenance (ICSM 2010)*, Timisoara, Romania, Sept. 2010.
 - [P13] "How Good is Static Analysis at Finding Concurrency Bugs?", *10th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM 2010)*, Timisoara, Romania, Sept. 2010.
 - [P14] "Automatic Repair of Concurrency Bugs", *2nd International Symposium on Search Based Software Engineering (SSBSE 2010) - Fast Abstracts*, Benevento, Italy, Sept. 2010.

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- [P15] Defining a Catalog of Programming Anti-Patterns for Concurrent Java", *3rd International Workshop on Software Patterns and Quality (SPAQu'09)*, Orlando, Florida, USA, Oct. 2009.
- [P16] Comparative Assessment of Testing and Model Checking Using Program Mutation", *3rd Work. on Mutation Analysis (Mutation 2007)*, Windsor, UK, Sept. 2007.
- [P17] Comparative Assessment of Testing and Model Checking Using Program Mutation", *Consortium for Software Engineering Research (CSER) Spring Meeting*, Toronto, Ontario, Canada, Apr. 2007.
- [P18] Mutation Operators for Concurrent Java (J2SE 5.0)", *2nd Work. on Mutation Analysis (Mutation 2006)*, Raleigh, North Carolina, USA, Nov. 2006.
- [P19] ExMAN: A Generic and Customizable Framework for Experimental Mutation Analysis", *2nd Work. on Mutation Analysis (Mutation 2006)*, Raleigh, North Carolina, USA, Nov. 2006.
- [P20] Using Mutation for the Assessment and Optimization of Tests and Properties", *Doctoral Symposium - Int. Symp. on Software Testing and Analysis (ISSTA 2006)*, Portland Maine, USA, Jul. 2006.
- [P21] An Empirical Framework for Comparing Effectiveness of Testing and Property-Based Formal Analysis", *6th Int. ACM SIGPLAN-SIGSOFT Work. on Program Analysis for Software Tools and Engineering (PASTE 2005)*, Lisbon, Portugal, Sept. 2005.
- [P22] A Survey of Self Management in Dynamic Software Architecture Specifications", *1st ACM SIGSOFT Work. on Self-Managed Systems (WOSS 2004)*, Newport Beach, California, USA, Oct./Nov. 2004.
- [P23] A Transformational Framework for Testing and Model Checking Implicit-Invocation Systems", *Int. Workshop on Distributed Event-Based Systems (DEBS 2004)*, Edinburgh, Scotland, UK, May 2004.
- [P24] Evaluating and Improving the Automatic Analysis of Implicit Invocation Systems", *European Software Engineering Conf. and the ACM SIGSOFT Symp. on the Foundations of Software Engineering (ESEC/FSE 2003)*, Helsinki, Finland, Sept. 2003.
- [P25] "Hands on Cooking: Towards an Attentive Kitchen", *International Conference on Human Factors in Computing Systems (CHI 2003)*, Fort Lauderdale, Florida, USA, Apr. 2003.

Student Supervision – In Progress	<p>PhD Students</p> <ul style="list-style-type: none"> • Michael A. Miljanovic, PhD Candidate (Computer Science), 2015-Present <i>Thesis:</i> Adaptive Game-based Learning in Computer Science Education. • Richard Deighton, PhD Candidate (Computer Science), 2013-Present <i>Thesis:</i> Using Refactoring and Design Patterns to Transform Legacy Sequential C++ Source Code into Maintainable OpenCL Source Code. <p>MSc Students</p> <ul style="list-style-type: none"> • Gabrielle Perez Dias, MSc Student (Computer Science), 2016-Present <i>Thesis:</i> Understanding and Recovering from Interruption during Programming Tasks. <i>Co-supervisor:</i> Christopher Collins <p>Undergraduate Students</p> <ul style="list-style-type: none"> • ...
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Student Supervision – Completed	<p>PhD Students</p> <ul style="list-style-type: none"> • David Kelk, PhD Candidate (Computer Science), 2010-15 <i>Thesis:</i> CORE: Concurrent Bug Repair. <i>Co-supervisor:</i> Mark Green • John Khalil Jacoub, PhD Candidate (Electrical & Computer Engineering), 2009-14 <i>Thesis:</i> Software Modelling for Wireless Sensor Networks (WSN). <i>Co-supervisor:</i> Ramiro Liscano <p>MSc Students</p> <ul style="list-style-type: none"> • Joseph Heron, MSc Student (Computer Science), 2014-16 <i>Thesis:</i> Predicting Evolutionary Software Change in GitHub Repositories. • Michael A. Miljanovic, MSc Student (Computer Science), 2013-15 <i>Thesis:</i> RoboBUG: A Game-Based Approach to Learning Debugging Techniques. • Kevin Jalbert, MSc Student (Computer Science), 2010-12 <i>Thesis:</i> Predicting Mutation Score Using Source Code and Test Suite Metrics. • Martin Mwebesa, MSc Student (Computer Science), 2009-11 <i>Thesis:</i> Identification and Annotation of Concurrency Design Patterns in Java Source Code Using Static Analysis. <p>Undergraduate Students</p>
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- **Daniel Hope**, Honours Thesis Student (Computing Science), 2016-17
Thesis: FireFinder: A Serious Game for Learning Pathfinding Algorithms.
Co-supervisor: Randy Fortier
- **Luisa Rojas Garcia**, Honours Thesis Student (Computing Science), 2016-17
Thesis: Learning Concurrency Using Serious Games.
- **Taylor Smith**, Honours Thesis Student (Computing 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 (Computing Science), 2015-16
Thesis: A Unit Testing Eclipse Plugin for Multicore Software.
- **Priya Mohan**, Honours Thesis Student (Computing Science), 2015-16
Thesis: Using Artificial Intelligence to Improve Software Development Techniques.
Co-supervisor: Jarek Szlichta
- **Blair Wisser**, Honours Thesis Student (Computing 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 (Computing 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.
- **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.
- **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, 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, 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

University Service

- **Coordinator**, 2016-17
UOIT Computer Science Seminar Series
- **Chair**, 2016-17
Web Committee, Faculty of Science, UOIT
- **Computer science faculty representative**, 2016, 2017
Graduate Scholarship Selection Committee, UOIT
- **Teaching staff representative** (elected), 2015-Present
Board of Governors, UOIT
- **Teaching staff representative** (elected), 2015-Present
Audit & Finance Committee, Board of Governors, UOIT
- **Faculty representative**, 2015-16
Faculty of Science Early Alert Committee, UOIT
- **Science representative**, 2014-Present
Computer Science Graduate Program Management Committee, UOIT
- **Science representative**, 2014-16
Curriculum and Program Review Committee, UOIT
- **Member**, 2011-13, 2014-Present
Dean's Advisory Committee, Faculty of Science, UOIT
- **Member**, 2011-13, 2014-16
Curriculum Committee, Faculty of Science, UOIT
- **Faculty representative**, 2015
NSERC USRA Selection Committee, Faculty of Science, UOIT
- **Faculty representative**, 2014-Present
Co-operative Education Committee, Faculty of Science, UOIT
- **Faculty representative**, 2014
Third Year Review Committee (x2), Faculty of Business & IT, UOIT
- **Science representative**, 2012-13
Graduate Committee, UOIT
- **Academic Council representative**, 2012-13
Budget Model Steering Committee, UOIT
- **Member**, 2012
IT Committee, Faculty Science, UOIT
- **Member**, 2012

Teaching Innovation Fund Committee, UOIT

- **Member**, 2011-12
Academic Appeals Committee, Faculty of Science, UOIT
- **Faculty representative**, 2011-13
Academic Council Executive, UOIT
- **Faculty at-large representative** (elected), 2009-13
Academic Council, UOIT
- **Chair**, 2009-13
Web Presence Committee, Faculty of Science, UOIT
- **Member**, 2012
Information Security Hiring Committee, Faculty of Business & IT,
UOIT
- **Member**, 2011-12
Software Engineering Hiring Committee, Faculty of Engineering and
Applied Science, UOIT
- **Member**, 2011
Undergraduate Awards Committee, Faculty of Science, UOIT
- **Member**, 2011
CRC II Digital Media Search Committee, Faculty of Social Sciences &
Humanities, UOIT
- **Faculty representative**, 2011
CMS Vendor Selection Committee, Marketing & Communications,
UOIT
- **Member**, 2010-11
Software Engineering Hiring Committee, Faculty of Engineering and
Applied Science, UOIT
- **Science poster judge**, 2009, 2011
Student Research Showcase, UOIT
- **Faculty representative**, 2010
Staff Award of Excellence Committee, UOIT
- **Co-organizer**, 2008, 2009
Science Student Research Day, Faculty of Science, UOIT
- **Member**, 2008
Student Research Day Organizing Committee, UOIT
- **Member**, 2008-09
Computer Science Graduate Committee, UOIT
- **Member**, 2007-08
Computer Science Hiring Committee, Faculty of Science, UOIT
- **Coach**, 2008, 2009

ACM Programming Team, UOIT

Memberships Member of the Association of Computing Machinery (ACM)
Member of the ACM Special Interest Group on Software Engineering (SIGSOFT)
Member of the Institute of Electrical & Electronics Engineers (IEEE)
Member of the IEEE Computer Society