

## Shane McIntosh

*Curriculum Vitae*

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### SUMMARY OF ACCOMPLISHMENTS

- Awarded the only Vanier Canada Graduate Scholarship (Canada's top PhD scholarship) in the field of software engineering (see NATIONAL AWARDS).
- My early papers on build systems laid the groundwork for a rapidly-growing research community that has piqued industrial interest (see ICSE'11, EMSE'12, and MSR'10).
- Proven track record of research mentorship, having advised 4 visiting PhD students, 2 MSc students, and 2 summer interns (see MENTORING & TEACHING EXPERIENCE).
- Broad network of collaborators, including industrial researchers from institutions in Germany and USA, as well as academics from institutions in Japan, Brazil, and Canada.

### PAPERS IN REFEREED INTERNATIONAL JOURNALS

#### EMSE'14 **A Large-Scale Empirical Study of the Relationship between Build Technology and Build Maintenance**

Shane McIntosh, Meiyappan Nagappan, Bram Adams, Audris Mockus,  
and Ahmed E. Hassan  
Empirical Software Engineering  
Accepted July 2014, 47 pages

#### EMSE'12 **The evolution of Java build systems**

Shane McIntosh, Bram Adams, and Ahmed E. Hassan  
Empirical Software Engineering  
vol. 17, no. 4-5, 2012, pp 578–608

### FULL PAPERS IN REFEREED INTERNATIONAL CONFERENCE PROCEEDINGS

#### ICSE'15a **The Impact of Mislabelling on the Performance and Interpretation of Defect Prediction Models**

Chakkrit Tantithamthavorn, Shane McIntosh, Ahmed E. Hassan, Akinori Ihara,  
and Ken-ichi Matsumoto  
To appear in Proc. of the 37th Int'l Conf. on Software Engineering, 2015, 12 pages  
Acceptance rate – 84/452 (19%)

#### ICSE'15b **Revisiting the Impact of Classification Techniques on the Performance of Defect Prediction Models**

Baljinder Ghotra, Shane McIntosh, and Ahmed E. Hassan  
To appear in Proc. of the 37th Int'l Conf. on Software Engineering, 2015, 11 pages  
Acceptance rate – 84/452 (19%)

#### SANER'15a **Do Code Review Practices Impact Design Quality?: An Empirical Study of the Qt, VTK, and ITK Projects**

Rodrigo Morales, Shane McIntosh, and Foutse Khomh  
To appear in Proc. of the 22nd Int'l Conf. on Software Analysis, Evolution, and Reengineering, 2015, 10 pages  
Acceptance rate – 46/144 (32%)

#### SANER'15b **Cross-Project Build Co-change Prediction**

Xin Xia, David Lo, Shane McIntosh, Emad Shihab, and Ahmed E. Hassan  
To appear in Proc. of the 22nd Int'l Conf. on Software Analysis, Evolution, and Reengineering, 2015, 10 pages  
Acceptance rate – 46/144 (32%)

**ICSME'14a Mining Co-Change Information to Understand when Build Changes are Necessary**

Shane McIntosh, Bram Adams, Meiyappan Nagappan, and Ahmed E. Hassan

In Proc. of the 30th Int'l Conf. on Software Maintenance and Evolution, 2014, pp. 241–250

Acceptance rate – 40/210 (19%)

**ICSME'14b An Empirical Study of Delays in the Integration of Addressed Issues**

🏆 *Nominated for best paper* 🏆

Daniel Alencar da Costa, Surafel Lemma Abebe, Shane McIntosh, Uira Kulesza,

and Ahmed E. Hassan

In Proc. of the 30th Int'l Conf. on Software Maintenance and Evolution, 2014, pp. 281–290

Acceptance rate – 40/210 (19%)

**ASE'14 Tracing Software Build Processes to Uncover License Compliance Inconsistencies**

Sander van der Burg, Eelco Dolstra, Shane McIntosh, Julius Davies, Daniel M. German, and Armijn Hemel

In Proc. of the 29th Int'l Conf. on Automated Software Engineering, 2014, pp. 731–741

Acceptance rate – 55/276 (20%)

**ICSE'14 Collecting and Leveraging a Benchmark of Build System Clones to Aid in Quality SEIP Assessments**

Shane McIntosh, Martin Poehlmann, Elmar Juergens, Audris Mockus, Bram Adams, Ahmed E. Hassan, Brigitte Haupt, and Christian Wagner

In Proc. of the 36th Int'l Conf. on Software Engineering, vol. 2, 2014, pp. 145–154

Software Engineering in Practice (SEIP) track

Acceptance rate – 25/117 (21%)

**MSR'14a The Impact of Code Review Coverage and Code Review Participation on Software Quality: A Case Study of the Qt, VTK, and ITK Projects**

🏆 *Distinguished paper award* 🏆

Shane McIntosh, Yasutaka Kamei, Bram Adams, and Ahmed E. Hassan

In Proc. of the 11th Working Conf. on Mining Software Repositories, 2014, pp. 192–201

Acceptance rate – 29/85 (34%)

**MSR'14b An Empirical Study of Just-In-Time Defect Prediction Using Cross-Project Models**

🏆 *Invited for journal extension* 🏆

Takafumi Fukushima, Yasutaka Kamei, Shane McIntosh, Kazuhiro Yamashita, and Naoyasu Ubayashi

In Proc. of the 11th Working Conf. on Mining Software Repositories, 2014, pp. 172–181

Acceptance rate – 29/85 (34%)

**WSE'11 Using Indexed Sequence Diagrams to Uncover the Behaviour of AJAX Applications**

Shane McIntosh, Bram Adams, and Ahmed E. Hassan

In Proc. of the 13th Int'l Symposium on Web Systems Evolution, 2011, pp. 1–10

Acceptance rate – 8/24 (33%)

**ICSE'11 An Empirical Study of Build Maintenance Effort**

Shane McIntosh, Bram Adams, Thanh H. D. Nguyen, Yasutaka Kamei, and Ahmed E. Hassan

In Proc. of the 33rd Int'l Conf. on Software Engineering, 2011, pp. 141–150

Acceptance rate – 62/441 (14%)

**MSR'10 The Evolution of ANT Build Systems**

🏆 *Invited for journal extension* 🏆

Shane McIntosh, Bram Adams, and Ahmed E. Hassan

In Proc. of the 7th Working Conf. on Mining Software Repositories, 2010, pp. 42–51

Acceptance rate – 16/51 (31%)

**SHORT PAPERS IN REFEREED INTERNATIONAL CONFERENCE PROCEEDINGS**

- MSR'14c Magnet or Sticky?: An OSS Project-by-Project Typology**  
**Mining Challenge** Kazuhiro Yamashita, [Shane McIntosh](#), Yasutaka Kamei, and Naoyasu Ubayashi  
In Proc. of the 11th Working Conf. on Mining Software Repositories, 2014, pp. 344–347  
Mining challenge track  
Acceptance rate – 9/19 (47%)
- CSMR-WCRE'14 Orchestrating Change: An Artistic Representation of Software Evolution**  
**ERA** [Shane McIntosh](#), Katie Legere, and Ahmed E. Hassan  
In Proc. of the 1st joint meeting of the Conf. on Software Maintenance and Reengineering and the Working Conf. on Reverse Engineering, 2014, pp. 353–357  
Early Research Achievements (ERA) track  
Acceptance rate – 12/33 (36%)
- ICSE'11 Build System Maintenance**  
**SRC** [Shane McIntosh](#)  
In Proc. of the 33rd Int'l Conf. on Software Engineering, 2011, pp. 1167–1169  
ACM Student Research Competition (SRC) track

**PAPERS UNDER REVIEW AT INTERNATIONAL JOURNALS**

- EMSE'S1 An Empirical Study of the Impact of Modern Code Review Practices on Software Quality**  
[Shane McIntosh](#), Yasutaka Kamei, Bram Adams, and Ahmed E. Hassan  
Empirical Software Engineering  
Submitted August 2014, 40 pages
- EMSE'S2 Studying Just-In-Time Defect Prediction using Cross-Project Models**  
Yasutaka Kamei, Takafumi Fukushima, [Shane McIntosh](#), Kazuhiro Yamashita, Naoyasu Ubayashi, and Ahmed E. Hassan  
Empirical Software Engineering  
Submitted August 2014, 28 pages
- AUSE'S1 Identifying and Understanding Header File Hotspots in C/C++ Build Processes**  
[Shane McIntosh](#), Bram Adams, Meiyappan Nagappan, and Ahmed E. Hassan  
Automated Software Engineering  
Submitted July 2014, 27 pages

**NOTABLE INVITED TALKS**

- FOSDEM'14 Identifying Hotspots in Software Build Processes**  
[Shane McIntosh](#), Bram Adams, Meiyappan Nagappan, and Ahmed E. Hassan  
Free and Open Source Developers European Meeting, 2014
- MSR Asia'13 Automated Performance Analysis of Build Systems**  
[Shane McIntosh](#), Bram Adams, Meiyappan Nagappan, and Ahmed E. Hassan  
Mining Software Repositories Asia Summit, 2013
- ASDS'13 Studying the Relationship between Build Technology and Build Maintenance**  
🏆 *Top PhD student presentation* 🏆  
[Shane McIntosh](#), Bram Adams, Meiyappan Nagappan, Audris Mockus, and Ahmed E. Hassan  
Int'l Symposium on Augmenting Software Developer Support to Improve Productivity, 2013

**NATIONAL AWARDS**

- VCGS Vanier Canada Graduate Scholarship**  
Value – \$50,000 CAD per year  
Duration – September 2012 - August 2015

**PGS NSERC Postgraduate Scholarship**

Value – \$21,000 CAD per year

Declined due to acceptance of Vanier CGS

**OTHER RECOGNITION AND AWARDS**

- **Ontario Graduate Scholarship (OGS)**  
Value – \$15,000 CAD per year  
Declined due to acceptance of Vanier CGS
- **Queen's University School of Computing Distinguished Thesis Award**  
Awarded – April 2012
- **Top PhD Student Presentation**  
Value – 250 CHF  
Awarded – March 2013
- **Excellence @ EMC<sup>2</sup> Silver Award**  
Value – \$750.00 USD  
Awarded – April 2012
- **ACM SIGSOFT CAPS Merit Awards**  
Value – \$1,200 USD  
Awarded – May 2011 and September 2014
- **ACM Student Research Competition Participant**  
Value – \$500 USD  
Awarded – May 2011

**ACADEMIC SERVICE****Program Committee**

- Int'l Workshop on Empirical Software Engineering in Practice (IWESEP'14)

**Formal Tool Demonstrations Program Committee**

- Int'l Conf. on Program Comprehension (ICPC'15)
- Int'l Conf. on Software Maintenance and Evolution (ICSME'14)
- Int'l Conf. on Program Comprehension (ICPC'14)

**Artifact Evaluation Committee**

- Int'l Symposium on the Foundations of Software Engineering (FSE'14)

**Mining Challenge Committee**

- Working Conf. on Mining Software Repositories (MSR'15)

**Data Showcase Committee**

- Working Conf. on Mining Software Repositories (MSR'15)
- Working Conf. on Mining Software Repositories (MSR'13)

**Reviewer**

- Int'l Conf. on Software Engineering (ICSE'15), Software Engineering In Practice (SEIP)
- Int'l Conf. on Software Maintenance and Evolution (ICSME'14)
- Working Conf. on Mining Software Repositories (MSR'14)
- Int'l Conf. on Software Engineering (ICSE'14)
- Working Conf. on Mining Software Repositories (MSR'13)

- Transactions on Software Engineering (TSE)
- Empirical Software Engineering (EMSE)
- IEEE Software
- Journal of Software and Systems (JSS)

**Student Volunteer**

- Int'l Conf. on Software Engineering (ICSE'14)

**RESEARCH EXPERIENCE****Visiting Researcher**

- **Principles Of Software Languages (POSL) Lab, Kyushu University, Fukuoka, Japan**  
Description – Two month-long fully-funded visits to work with a research team in Japan  
Visit 1 – October 2013 - November 2013  
Visit 2 – October 2014 - November 2014

**Research Assistant**

- **Software Analysis and Intelligence Lab (SAIL), Queen's University, Kingston, Canada**  
September 2012 - Present  
September 2009 - August 2010

**MENTORING & TEACHING EXPERIENCE****Mentored Students**

- Visiting PhD Students
  - Kazuhiro Yamashita (Co-authored papers: MSR'14b, MSR'14c, EMSE'S2)
  - Daniel Alencar da Costa (Co-authored: ICSME'14b)
  - Chakkrit Tantithamthavorn (Co-authored papers: ICSE'15a)
  - Patanamon Thongtanunam
- MSc Students
  - Takafumi Fukushima (Co-authored papers: MSR'14b, EMSE'S2)
  - Baljinder Ghotra (Co-authored papers: ICSE'15b)
- Summer intern
  - Adan Moran-Macdonald
  - Arthur Leung

**Guest Lecturer**

- Building and Interpreting Non-Linear Regression Models, Mining Software Engineering Data, Queen's University, Kingston, Canada  
Fall 2014
- Programming with `Make`, System-Level Programming, Queen's University, Kingston, Canada  
Fall 2012

**Teaching Assistant**

- Introduction to Object-Oriented Design, Queen's University, Kingston, Canada  
Fall 2013
- System-Level Programming, Queen's University, Kingston, Canada  
Fall 2012  
Winter 2010

**INDUSTRIAL EXPERIENCE****Software Engineer**

EMC<sup>2</sup> Corporation, Backup and Recovery Services, Burlington, Canada

September 2010 - August 2012

January 2009 - August 2009

September 2007 - April 2008

**Projects that I led:**

- Improved an aging software build system comprised of more than 200,000 lines of build logic, which reduced the time consumed by a typical build by a factor of ten.
- Drove the creation of unit tests for legacy areas of the codebase, which helped to control the risk of making future changes to those areas.
- Migration to a modern version control system, which allowed developers to maintain local branches and collaborate more effectively.

**EDUCATION****Doctor of Philosophy (PhD)**

Queen's University, Kingston, Canada

September 2012 - Present

Thesis Title – “Studying the Software Development Overhead of Build Systems”

Supervisor – Ahmed E. Hassan

**Master of Science (MSc)**

🏆 *Distinguished thesis award* 🏆

Queen's University, Kingston, Canada

September 2009 - January 2011

Thesis Title – “Studying the Evolution of Build Systems”

Supervisor – Ahmed E. Hassan

**Bachelor of Applied Computing (BAComp)**

University of Guelph, Guelph, Canada

September 2003 - December 2008

Thesis Title – “Robotic Search in a Partially-Known Physical Environment”

Supervisor – Michael Liu