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 J2, C8, C9, and C12).
- 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

J1 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

J2 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

Papers Under Review at International Journals

J3 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

J4 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

J5 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

FULL PAPERS IN REFEREED INTERNATIONAL CONFERENCE PROCEEDINGS

C1 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 (ICSME 2014),
pp. 241–250
Acceptance rate – 40/210 (19%)

C2 An Empirical Study of Delays in the Integration of Addressed Issues
🏆 *Nominated for best paper* 🏆
Daniel Alencar da Costa, Surafel Lemma Abebe, <u>Shane McIntosh</u>, Uira Kulesza,
and Ahmed E. Hassan
In Proc. of the 30th Int'l Conf. on Software Maintenance and Evolution (ICSME 2014),
pp. 281–290
Acceptance rate – 40/210 (19%)

C3 Tracing Software Build Processes to Uncover License Compliance Inconsistencies
Sander van der Burg, Eelco Dolstra, <u>Shane McIntosh</u>, Julius Davies, Daniel M. German,
and Armijn Hemel
In Proc. of the 29th Int'l Conf. on Automated Software Engineering (ASE 2014), pp. 731–741
Acceptance rate – 55/276 (20%)

C4 Collecting and Leveraging a Benchmark of Build System Clones to Aid in Quality Assessments
<u>Shane McIntosh</u>, 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 (ICSE 2014), vol. 2, pp. 145–154
Software Engineering in Practice (SEIP) track
Acceptance rate – 25/117 (21%)

C5 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* 🏆
<u>Shane McIntosh</u>, Yasutaka Kamei, Bram Adams, and Ahmed E. Hassan
In Proc. of the 11th Working Conf. on Mining Software Repositories (MSR 2014), pp. 192–201
Acceptance rate – 29/85 (34%)

C6 An Empirical Study of Just-In-Time Defect Prediction Using Cross-Project Models
🏆 *Invited for journal extension* 🏆
Takafumi Fukushima, Yasutaka Kamei, <u>Shane McIntosh</u>, Kazuhiro Yamashita,
and Naoyasu Ubayashi
In Proc. of the 11th Working Conf. on Mining Software Repositories (MSR 2014), pp. 172–181
Acceptance rate – 29/85 (34%)

C7 Using Indexed Sequence Diagrams to Uncover the Behaviour of AJAX Applications
<u>Shane McIntosh</u>, Bram Adams, and Ahmed E. Hassan
In Proc. of the 13th Int'l Symposium on Web Systems Evolution (WSE 2011), pp. 1–10
Acceptance rate – 8/24 (33%)

C8 An Empirical Study of Build Maintenance Effort
<u>Shane McIntosh</u>, Bram Adams, Thanh H. D. Nguyen, Yasutaka Kamei, and Ahmed E. Hassan
In Proc. of the 33rd Int'l Conf. on Software Engineering (ICSE 2011), pp. 141–150
Acceptance rate – 62/441 (14%)

C9 The Evolution of ANT Build Systems
🏆 *Invited for journal extension* 🏆
<u>Shane McIntosh</u>, Bram Adams, and Ahmed E. Hassan
In Proc. of the 7th Working Conf. on Mining Software Repositories (MSR 2010), pp. 42–51
Acceptance rate – 16/51 (31%)

Short Papers in Refereed International Conference Proceedings

C10 Magnet or Sticky?: An OSS Project-by-Project Typology
Kazuhiro Yamashita, <u>Shane McIntosh</u>, Yasutaka Kamei, and Naoyasu Ubayashi
In Proc. of the 11th Working Conf. on Mining Software Repositories (MSR 2014), pp. 344–347
Mining challenge track
Acceptance rate – 9/19 (47%)

C11 Orchestrating Change: An Artistic Representation of Software Evolution
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 (CSMR-WCRE 2014), pp. 353–357
Early Research Achievements (ERA) track
Acceptance rate – 12/33 (36%)

C12 Build System Maintenance
Shane McIntosh
In Proc. of the 33rd Int'l Conf. on Software Engineering (ICSE 2011), pp. 1167–1169
ACM Student Research Competition (SRC) track

Papers Under Review at International Conferences

C13 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
International Conference on Software Engineering (ICSE 2015)
Submitted, 12 pages

C14 Revisiting the Impact of Classification Techniques on the Performance of Defect Prediction Models
Baljinder Ghotra, Shane McIntosh, and Ahmed E. Hassan
International Conference on Software Engineering (ICSE 2015)
Submitted, 11 pages

C15 An Empirical Study of goto in C Code
Meiyappan Nagappan, Romain Robbes, Yasutaka Kamei, Éric Tanter, Shane McIntosh,
Audris Mockus, and Ahmed E. Hassan
International Conference on Software Engineering (ICSE 2015)
Submitted, 11 pages

NOTABLE INVITED TALKS

I1 Identifying Hotspots in Software Build Processes
Shane McIntosh, Bram Adams, Meiyappan Nagappan, and Ahmed E. Hassan
Free and Open Source Developers European Meeting (FOSDEM 2014)

I2 Automated Performance Analysis of Build Systems
Shane McIntosh, Bram Adams, Meiyappan Nagappan, and Ahmed E. Hassan
Mining Software Repositories Asia Summit (MSR Asia Summit 2013)

I3 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 (ASDS 2013)

NATIONAL AWARDS

A1 Vanier Canada Graduate Scholarship (Vanier CGS)
Value – $50,000 CAD per year
Duration – September 2012 - August 2015

A2 NSERC Postgraduate Scholarship (NSERC PGS)
Value – $21,000 CAD per year
Declined due to acceptance of Vanier CGS

OTHER RECOGNITION AND AWARDS

A3 Ontario Graduate Scholarship (OGS)
Value – $15,000 CAD per year
Declined due to acceptance of Vanier CGS

A4 Queen's University School of Computing Distinguished Thesis Award
Awarded – April 2012

A5 Top PhD Student Presentation
Value – 250 CHF
Awarded – March 2013

A6 Excellence @ EMC^2 Silver Award
Value – $750.00 USD
Awarded – April 2012

A7 ACM SIGSOFT CAPS Merit Awards
Value – $1,200 USD
Awarded – May 2011 and September 2014

A8 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 2014)

Formal Tool Demonstrations Program Committee
- Int'l Conf. on Program Comprehension (ICPC 2015)
- Int'l Conf. on Software Maintenance and Evolution (ICSME 2014)
- Int'l Conf. on Program Comprehension (ICPC 2014)

Artifact Evaluation Committee
- Int'l Symposium on the Foundations of Software Engineering (FSE 2014)

Mining Challenge Committee
- Working Conf. on Mining Software Repositories (MSR 2015)

Data Showcase Committee
- Working Conf. on Mining Software Repositories (MSR 2015)
- Working Conf. on Mining Software Repositories (MSR 2013)

Reviewer
- Int'l Conf. on Software Maintenance and Evolution (ICSME 2014)
- Working Conf. on Mining Software Repositories (MSR 2014)
- Int'l Conf. on Software Engineering (ICSE 2014)
- Working Conf. on Mining Software Repositories (MSR 2013)
- 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 2014)

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: J4, C6, C10)
  - Daniel Alencar da Costa (Co-authored papers: C2)
  - Chakkrit Tantithamthavorn (Co-authored papers: C13)
  - Patanamon Thongtanunam

- MSc Students

  - Takafumi Fukushima (Co-authored papers: J4, C10)
  - Baljinder Ghotra (Co-authored papers: C14)

- 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^2 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