

Amal Ahmed

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EDUCATION

Princeton University

- Ph.D. Computer Science, 2004
- Dissertation title: Semantics of Types for Mutable State
- Advisor: Andrew Appel
- George Van Ness Lothrop Fellow, 2002 – 2003

Stanford University

- M.S. Computer Science, emphasis in Databases, 1995

Brown University

- A.B. Computer Science and Economics, 1993

EMPLOYMENT

Northeastern University, College of Computer and Information Science, Boston, MA

- *Associate Professor*, July 2017 – present
- *Assistant Professor*, Sept 2011 – June 2017

Indiana University, School of Informatics and Computing, Bloomington, IN

- *Assistant Professor*, 2009 – 2011

Microsoft Research, Cambridge, UK

- *Visiting Researcher*, July – August 2010

Toyota Technological Institute at Chicago, Chicago, IL

- *Research Assistant Professor*, 2006 – 2009

Harvard University, Division of Engineering and Applied Sciences, Cambridge, MA

- *Postdoctoral Fellow in Computer Science*, worked with Greg Morrisett, 2004 – 2006

Cornell University, Department of Computer Science, Ithaca, NY

- *Postdoctoral Research Associate*, 2003 – 2004

Princeton University, Department of Computer Science, Princeton, NJ

- *Assistant in Instruction and Research Assistant*, 1998 – 2003

AT&T Labs, Middletown, NJ

- *Member of Technical Staff*, 1995 – 1998

RESEARCH INTERESTS

Programming languages, particularly the use of semantics and type systems for reasoning about imperative code, concurrency, security, compiler transformations, and provenance.
Current focus: correct and secure compilation, gradual typing, and safe language interoperability.

HONORS / AWARDS

- NSF CAREER Award, 2015
- Google Faculty Research Award, 2014
- George Van Ness Lothrop Fellowship in Engineering (University Honorific Fellowship), Princeton University, 2002 – 2003

GRANTS

- NSF SHF: *Small: Foundations of Just-in-Time Compilation*, CCF-1618732. PI: Jan Vitek, Co-PI: Amal Ahmed. \$450k. Sep 2016-Aug 2019.
- NSF CAREER: *Verified Compilers for a Multi-Language World*, CCF-1453796. PI: Amal Ahmed. \$508k. May 2015-Apr 2020.
- NSF SHF: *Small: Secure Compilation of Advanced Languages*, CCF-1422133. PI: Amal Ahmed. \$500k. Aug 2014-Jul 2017.
- Google Faculty Research Award, *Verified Compilers for a Multi-Language World*. \$60k. Feb 2014.
- NSF SHF: *Small: Effectful Software Contracts*, CCF-1203008. PI: Amal Ahmed, Co-PI: Amr Sabry (Indiana University). \$440k. Aug 2011-Jul 2014.

ADVISING

Post-doctoral Advisees

- Gabriel Scherer, supervised Jan 2016 – Jul 2017

Ph.D. Students

- William Bowman, supervised since Sep 2012 – Correct and Type-preserving Compilation of Coq
- Max New, supervised since Sep 2014 – Semantic Foundations of Gradual Typing
- Daniel Patterson, supervised since Mar 2016 – Linking Types for Multi-Language Software
- Aaron Weiss, supervised since Sep 2017
- Hyeyoung Shin, supervised since Sep 2017

M.S. Students

- Phillip Mates, graduated Dec 2014
Topic: Verified Compositional Closure Conversion with Mutable State Under Control
- James T. Perconti, graduated Apr 2014
Topic: Verifying an Open Compiler using Multi-Language Semantics

Ph.D. Dissertation Committees

- Justin Slepak, 2017 (anticipated)
- Ezgi Cicek, Max Planck Institute for Software Systems, 2017 (anticipated)
- Mitesh Jain, 2017 (anticipated)
- Jonathan Schuster, 2017 (anticipated)
- Nada Amin, EPFL, Aug 2016
- Paul Stansifer, Apr 2016
- Stephen Chang, May 2014
- Aaron Turon, Feb 2013 (won 2014 ACM SIGPLAN John C. Reynolds Doctoral Dissertation Award)
- Christos Dimoulas, Dec 2012

- Roshan James, Indiana University, 2012
- Michael Adams, Indiana University, 2011

M.S. Thesis Committees

- Fabian Muehlboeck, Apr 2013

Undergraduate Research Advising

- Dustin Jamner, Jan 2016 – present
- Nicholas Rioux, Sep 2013 – present
- Matthew Kolosick, Sep 2013 – present
- Durward Benham, Sep 2013 – Sep 2014

Awards Won by my Students

- William J. Bowman, 1st Place Winner, Graduate Category, Student Research Competition at POPL 2017
Submission: *Towards Type-Preserving Compilation of Coq*
- Max S. New, 3rd Place Winner, Graduate Category, Student Research Competition at POPL 2017
Submission: *Gradual Type Precision as Retraction*
- Nicholas Rioux, 3rd Place Winner, Undergraduate Category, Student Research Competition, POPL 2017
Submission: *Naturality Despite Nontermination: A Logical Relation for Linear Types and Polymorphism*
- Dustin Jamner, Provost's Undergraduate Research Award, Northeastern University, 2016 (\$2100)
- Durward Benham, Scholars Independent Research Fellowship, Northeastern University, 2014 (\$4000)
- Nicholas Rioux, Scholars Independent Research Fellowship, Northeastern University, 2014 (\$4000)

TEACHING

Northeastern University

- CS 2500: Fundamentals of CS: Intro to Programming and Computing. Fall 2011, Fall 2012, Fall 2013, Spring 2014, Fall 2014, Fall 2016
- CS 7480: Special Topics in Programming Languages: Types, Contracts, Gradual Typing, and Compiler Correctness. Fall 2015
- CS 7400: Intensive Principles of Programming Languages. Spring 2015, Spring 2016, Spring 2017
- CS 4410/6410: Compilers. Spring 2013
- CS 7480: Special Topics in Programming Languages: Type Systems. Spring 2012

Indiana University

- CSCI B629: Integrating Static and Dynamic Typing. Fall 2010
- CSCI B629: Language-Based Approaches to Security. Spring 2010
- CSCI B522: Programming Language Foundations. Fall 2009

University of Chicago

- CMCS 336: Type Systems for Programming Languages (co-taught with Umut Acar). Winter 2008

UNIVERSITY SERVICE

Northeastern University

- Undergraduate Committee, College of Computer & Information Science, 2016 – 2017
- Faculty Hiring Committee, College of Computer & Information Science, 2013 – 2016
- Ph.D. Committee, College of Computer & Information Science, 2011 – 2013
- Ph.D. Open House Co-organizer, CCIS, Spring 2012, Spring 2013, Spring 2017

Indiana University

- Graduate Program Committee, Computer Science Program, Fall 2010
- Faculty Affairs Committee, Division B, School of Informatics and Computing, 2010

Princeton University

- Computer Science Graduate Committee, 1998 – 2003.
- Computer Science Representative to the Graduate Engineering Council, School of Engineering and Applied Sciences (SEAS), 2001 – 2002.

PROFESSIONAL ACTIVITIES & SERVICE

- Editorial Board, Journal of Functional Programming (JFP), Jan 2017 – present
- Editorial Board, Mathematical Structures in Computer Science (MSCS), Jan 2016 – present
- Member, IFIP WG 2.8, Working Group on Functional Programming, Aug 2014 – present
- Co-organizer: SIGPLAN Programming Languages Mentoring Workshop (PLMW)
 - PLMW @ ICFP 2016 (with Robby Findler and Atsushi Igarashi), Sep 2016
 - PLMW @ POPL 2014 (with Benjamin Pierce and Alan Schmitt), Jan 2014
- Co-organizer: Oregon Programming Languages Summer School (OPLSS)
 - OPLSS 2017 (with Dan Licata)
 - OPLSS 2014 (with Greg Morrisett)
 - OPLSS 2013 (with Benjamin Pierce, Frank Pfenning, and Bob Constable)
- Invited Speaker: ECOOP'17 Summer School: *Compiler Verification for a Multi-Language World*, Jun 2017
- Invited Speaker/Panelist: MIT Path of Professorship Workshop 2016
- Invited Career Awardee talk, NSF CISE CAREER Workshop 2016
- Invited Lecturer: Oregon Programming Languages Summer School, 2011, 2012, 2013, 2015, 2016, 2017
- Invited as Visiting Researcher: Institut Henri Poincare (IHP) thematic trimester on Semantics of Proofs and Certified Mathematics, Paris, France, May – Jul 2014
- Invited Lecturer: Ph.D. School preceding the IHP trimester on Semantics of Proofs and Certified Mathematics, held at Centre International de Recontres Mathematiques (CIRM), Marseilles, France, Apr 2014
- Invited Speaker: Programming Languages Mentoring Workshop (PLMW)
 - PLMW 2013: *Logical Relations: A Powerful Hammer for your Research Toolbox*, Jan 2013
 - PLMW 2012 (with Steve Zdancewic): *Work-Life Balance for Computer Scientists*, Jan 2012
- Workshop organizer:
 - Dagstuhl Seminar 18201: Secure Compilation, May 2018
 - Dagstuhl Seminar 10351: Modeling, Controlling and Reasoning About State, Sep 2010

Dagstuhl Seminar 08061: Types, Logics and Semantics for State, Feb 2008

- Invited Participant:
 - IFIP Working Group (WG) 2.8, Functional Programming, observer, 2007, 2012, 2013, 2014
 - Dagstuhl Seminar 16131: Language-Based Verification Tools for Functional Programs, Mar 2016
 - Dagstuhl Seminar 12011: Foundations for Scripting Languages, Jan 2012
- NSF Proposal Review Panelist, 2011, 2012, 2015, 2017.
- Journal reviewing: Journal of the ACM (JACM), ACM Transactions on Programming Languages and Systems (TOPLAS), Journal of Functional Programming (JFP), Logical Methods in Computer Science (LMCS), Theoretical Computer Science (TCS), Information and Computation (I&C), Higher-Order and Symbolic Computation (HOSC).
- Conference and workshop reviewing: POPL, PLDI, LICS, ICFP, ESOP, ECOOP, ISMM, PPDP, TLDI, APLAS, MFPS, FOOL, IFL, FLOPS, LPAR.

Program Chair (conference)

- 27th European Symposium on Programming (ESOP) 2018

Program Chair (workshop)

- Secure Compilation Meeting (SCM), co-located with POPL, 2017
- 1st ACM SIGPLAN Workshop on Higher-Order Programming with Effects (HOPE) 2012
- 3rd Workshop on Syntax and Semantics of Low-Level Languages (LOLA) 2012
- ACM Workshop on Types in Language Design and Implementation (TLDI) 2009

Program Committee Member (conference)

- ACM/IEEE Symposium on Logic in Computer Science (LICS) 2016
- ACM International Conference on Functional Programming (ICFP) 2015
- ACM Symposium on Principles of Programming Languages (POPL) 2015
- ACM/IEEE Symposium on Logic in Computer Science (LICS) 2013
- Asian Symposium on Programming Languages and Systems (APLAS) 2012
- ACM SIGPLAN Haskell Symposium, 2012
- Conference on Mathematical Foundations of Programming Semantics (MFPS) 2011
- Foundations of Software Science and Computation Structures (FOSSACS) 2011
- European Symposium on Programming (ESOP) 2010
- ACM International Conference on Functional Programming (ICFP) 2009
- ACM Symposium on Principles of Programming Languages (POPL) 2008

Program Committee Member (workshop)

- Principles of Secure Compilation (PriSC) 2018
- Symposium on Trends in Functional Programming (TFP) 2016
- Workshop on Script to Program Evolution (STOP) 2015
- Workshop on Dependently Typed Programming (DTP) 2014
- Workshop on Syntax and Semantics of Low-Level Languages (LOLA) 2014
- IEEE Workshop on Theory and Practice of Provenance (TaPP) 2013
- ACM SIGPLAN Workshop on Programming Languages meets Program Verification (PLPV) 2012

- ACM SIGPLAN Workshop on ML, 2011
- Workshop on Script to Program Evolution (STOP) 2011
- Theory Workshop of Verified Software: Theories, Tools and Experiments (VSTTE) 2010
- Workshop on Syntax and Semantics of Low-Level Languages (LOLA) 2010
- ACM Workshop on Programming Languages and Analysis for Security (PLAS) 2006
- Workshop on Semantics, Program Analysis, and Computing Environments for Memory Management (SPACE) 2006

External Review Committee Member (conference/symposium)

- ACM International Conference on Functional Programming (ICFP) 2016
- ACM Conference on Programming Language Design and Implementation (PLDI) 2013
- ACM Conference on Programming Language Design and Implementation (PLDI) 2011

Steering Committee Member

- ETAPS (European Joint Conferences on Theory and Practice of Software), 2017 – present
- ESOP (European Symposium on Programming), 2016 – present
- ICFP (ACM International Conf. on Functional Programming), Member at large, 2008 – 2012
- TLDI (ACM Workshop on Types in Language Design and Implementation), 2009 – 2012

INVITED TALKS

- *Compositional Compiler Verification for a Multi-Language World*
Invited speaker, Programming Languages Mentoring Workshop (PLMW @ICFP), Oxford, UK, September 2017.
- *Compiler Verification for a Multi-Language World*
Invited speaker, European Conference on Object-Oriented Programming (ECOOP) Summer School, Barcelona, Spain, June 2017.
- *Fully Abstract Compilation via Universal Embedding*
IFIP Working Group 2.8 (Functional Programming), Lake Placid, New York, July 2016.
- *Correct and Secure Compilation for a Multi-Language World*
Secure Compilation Meeting, Paris, France, August 2016.
- *Compositional Compiler Verification for a Multi-Language World*
Keynote talk, International Conference on Formal Structures for Computation and Deduction (FSCD), Porto, Portugal, June 2016.
- NSF CISE CAREER Workshop, Invited Speaker (Career Awardee talk), Arlington, Virginia, April 2016.
- *CPS Translation of Dependent Types*
IFIP Working Group 2.8 (Functional Programming), Kefalonia, Greece, May 2015.
- *Compositional Compiler Verification for a Multi-Language World*
POPL'15 PC Workshop, Princeton, NJ, September 2014.
- *Fully Abstract Closure Conversion in the Presence of State and Effects*
IFIP Working Group 2.8 (Functional Programming), Estes Park, Colorado, August 2014.
- *Compositional Compiler Verification for a Multi-Language World*
Workshop on Certification of High-level and Low-level Programs, Institut Henri Poincare (IHP) thematic trimester on Semantics of Proofs and Certified Mathematics, July 2014.
- *Verifying Compilers using Multi-language Semantics*
IFIP Working Group 2.8 (Functional Programming), Aussois, France, October 2013.

- *Verifying an Open Compiler from System F to Assembly*
IFIP Working Group 2.8 (Functional Programming), Annapolis, Maryland, November 2012.
- *Logical Relations: A Powerful Hammer for your Research Toolbox*
Invited Speaker, Programming Languages Mentoring Workshop (PLMW), January 2013.
- *Work-Life Balance for Computer Scientists*
Programming Languages Mentoring Workshop (PLMW), January 2012.
- *Stepping into the Future: Logical Relations Beyond Toy Languages*
Plenary Address, Twenty-Sixth Conference on the Mathematical Foundations of Programming Semantics (MFPS), Ottawa, Canada, May 2010.
- *Logical Relations: A Step Towards More Secure and Reliable Software*
 - Computer Science Colloquium, Indiana University, Bloomington, Indiana, May 2009
 - Colloquium, IMDEA Software, Madrid, Spain, April 2009
 - Computer Science Colloquium, Cornell University, Ithaca, New York, April 2009
 - MIT EECS Special Seminar, Massachusetts Institute of Technology, Cambridge, Massachusetts, March 2009
 - Institute Colloquium, Max Planck Institute for Software Systems (MPI-SWS), Saarbrücken, Germany, March 2009
- *Gradual Typing with Polymorphism and Blame*
Harvard University, Cambridge, Massachusetts, October 2008.
- *All for Nothing: Gradual Typing with Polymorphism and Blame*
NU Programming Languages Seminar, Northeastern University, Boston, Massachusetts, October 2008.
- *Gradual Typing with Polymorphism and Blame*
Princeton University, Princeton, New Jersey, October 2008.
- *Step-Indexed Logical Relations*
Dagstuhl Seminar 08061: Types, Semantics and Logics for State, Wadern, Germany, February 2008.
- *Equivalence-Preserving Compilation*
IFIP Working Group 2.8 (Functional Programming), Reykjavik, Iceland, July 2007.
- *Hoare Type Theory*
Workshop on Proof-Carrying Code (PCC 2006), held in conjunction with IEEE Symposium on Logic in Computer Science (LICS), Seattle, Washington, August 2006.
- *Taming Mutable State*
 - Toyota Technological Institute, Chicago, Illinois, April 2006.
 - New York University, Department of Computer Science, New York, NY, April 2006
- *Program Equivalence using Step-Indexed Logical Relations*
Microsoft Research, Cambridge, UK, December 2005.
- *Substructural State: The Interplay of Uniqueness, Sharing, and References*
Sun Labs, Burlington, Massachusetts, November 2005.
- *L³: A Linear Language with Locations*
Church Project Seminar, Boston University, Boston, Massachusetts, February 2005.
- *Reasoning about Hierarchical Storage*
Fourth Annual Programming Languages Day, IBM T. J. Watson Research Center, Hawthorne, NY, April 2003.
- *Reasoning about Hierarchical Storage*
Penn Logic and Computation Seminar, Univ. of Pennsylvania, Philadelphia, PA, February 2003.

- *Foundational Proof-Carrying Code*
Yale University, New Haven, Connecticut, April 2001.
- *Mutable Fields in a Semantic Model of Types*
Workshop on Proof-Carrying Code (PCC 2000), held in conjunction with IEEE Symposium on Logic in Computer Science (LICS) and Static Analysis Symposium, Santa Barbara, California, June 2000.

INVITED LECTURE SERIES

- *Correct and Secure Compilation for Multi-Language Software* (4 lectures)
16th Annual Oregon Programming Languages Summer School (OPLSS), July 2017.
- *Logical Relations and Compiler Verification* (4 lectures)
15th Annual Oregon Programming Languages Summer School (OPLSS), June 2016.
- *Logical Relations* (5 lectures)
14th Annual Oregon Programming Languages Summer School (OPLSS), June 2015.
- *Syntax and Semantics of Low-Level Languages* (4 lectures)
Ph.D. School at CIRM, summer school preceding the Institut Henri Poincare (IHP) trimester on Semantics of Proofs and Certified Mathematics, April 2014.
- *Logical Relations* (6 lectures)
12th Annual Oregon Programming Languages Summer School (OPLSS), July-August 2013.
- *Logical Relations* (5 lectures)
11th Annual Oregon Programming Languages Summer School (OPLSS), July 2012.
- *Logical Relations* (5 lectures)
10th Annual Oregon Programming Languages Summer School (OPLSS), June 2011.

REFEREED PUBLICATIONS

- [1] Amal Ahmed, Dustin Jamner, Jeremy Siek, and Philip Wadler.
Theorems for Free for Free: Parametricity With and Without Types.
In *22nd ACM SIGPLAN International Conference on Functional Programming (ICFP '17)*,
Oxford, UK, September 2017.
- [2] Daniel Patterson, Jamie Perconti, Christos Dimoulas, and Amal Ahmed.
FunTAL: Reasonably Mixing a Functional Language with Assembly.
In *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '17)*,
Barcelona, Spain, June 2017.
- [3] Daniel Patterson and Amal Ahmed.
Linking Types for Multi-Language Software: Have Your Cake and Eat it Too.
In *SNAPL: Summit on Advances in Programming Languages (SNAPL'17)*,
Asilomar, California, May 2017.
- [4] Max S. New, William J. Bowman, and Amal Ahmed.
Fully Abstract Compilation via Universal Embedding.
In *21st ACM SIGPLAN International Conference on Functional Programming (ICFP '16)*,
Nara, Japan, September 2016.
- [5] William J. Bowman and Amal Ahmed.
Noninterference for Free.
In *20th ACM SIGPLAN International Conference on Functional Programming (ICFP '15)*,
pages 101-113, Vancouver, British Columbia, Canada, September 2015.
[PC paper, held to a higher standard for acceptance.]

- [6] Amal Ahmed.
Verified Compilers for a Multi-Language World.
In *SNAPL: The Inaugural Summit on Advances in Programming Languages (SNAPL'15)*,
Asilomar, California, May 2015.
- [7] James Cheney, Amal Ahmed, and Umut Acar.
Database Queries that Explain their Work.
In *16th International Symposium on Principles and Practice of Declarative Programming (PPDP '14)*,
Canterbury, UK, September 2014.
- [8] James T. Perconti and Amal Ahmed.
Verifying an Open Compiler Using Multi-Language Semantics.
In *23rd European Symposium on Programming (ESOP '14)*, Grenoble, France, April 2014.
- [9] Umut Acar, Amal Ahmed, James Cheney, and Roly Perera.
A Core Calculus for Provenance.
Journal of Computer Security, 21(6): 919-969, 2013.
- [10] Aaron Turon, Jacob Thamsborg, Amal Ahmed, Lars Birkedal, and Derek Dreyer.
Logical Relations for Fine-Grained Concurrency.
In *40th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL '13)*,
Rome, Italy, January 2013.
- [11] Umut Acar, Amal Ahmed, James Cheney, and Roly Perera.
A Core Calculus for Provenance.
In *Conference on Principles of Security and Trust (POST '12)*,
pages 410-429, Tallinn, Estonia, March 2012.
- [12] James Cheney, Amal Ahmed, and Umut Acar.
Provenance as Dependency Analysis.
Mathematical Structures in Computer Science (MSCS), 21, pages 1301-1337, Special Issue on Programming
Language Interference and Dependence, December 2011.
- [13] Amal Ahmed and Matthias Blume.
An Equivalence-Preserving CPS Translation via Multi-Language Semantics.
In *16th ACM SIGPLAN International Conference on Functional Programming (ICFP '11)*,
pages 431-444, Tokyo, Japan, September 2011.
- [14] Derek Dreyer, Amal Ahmed, and Lars Birkedal.
Logical Step-Indexed Logical Relations.
Logical Methods in Computer Science (LMCS), 7 (2:16), June 2011.
Special Issue for LICS'09, invited submission.
- [15] Amal Ahmed, Robert Bruce Findler, Jeremy Siek, and Philip Wadler.
Blame for All.
In *38th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL '11)*,
Austin, Texas, January 2011.
- [16] Amal Ahmed, Andrew W. Appel, Christopher Richards, Kedar Swadi, Gang Tan, and Daniel Wang.
Semantic Foundations for Typed Assembly Languages.
ACM Transactions on Programming Languages and Systems (TOPLAS), 32(3):7.1-7.67, March 2010.

- [17] Derek Dreyer, Amal Ahmed, and Lars Birkedal.
Logical Step-Indexed Logical Relations.
In *24th Annual IEEE Symposium on Logic in Computer Science (LICS '09)*,
Los Angeles, California, August 2009.
- [18] Amal Ahmed, Robert Bruce Findler, Jacob Matthews, and Philip Wadler.
Blame for All.
In *1st International Workshop on Script to Program Evolution (STOP '09)*, Genova, Italy, July 2009.
- [19] Amal Ahmed, Derek Dreyer, and Andreas Rossberg.
State-Dependent Representation Independence.
In *36th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL '09)*,
pages 340-353, Savannah, Georgia, January 2009.
- [20] Amal Ahmed and Matthias Blume.
Typed Closure Conversion Preserves Observational Equivalence.
In *13th ACM SIGPLAN International Conference on Functional Programming (ICFP '08)*,
pages 157-168, Victoria, British Columbia, Canada, September 2008.
- [21] Jacob Matthews and Amal Ahmed.
Parametric Polymorphism through Run-time Sealing: or, Theorems for Low, Low Prices!
In Sophia Drossopoulou, editor, *17th European Symposium on Programming (ESOP '08)*,
pages 16-31, Budapest, Hungary, March 2008.
- [22] Umut Acar, Amal Ahmed, and Matthias Blume.
Imperative Self-Adjusting Computation.
In *35th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL '08)*,
pages 309-322, San Francisco, California, January 2008.
[PC paper, held to a higher standard for acceptance.]
- [23] James Cheney, Amal Ahmed, and Umut Acar.
Provenance as Dependency Analysis.
In *11th International Symposium on Database Programming Languages (DBPL '07)*,
pages 138-152, Vienna, Austria, September 2007.
- [24] Amal Ahmed, Matthew Fluet, and Greg Morrisett.
L³: A Linear Language with Locations.
Fundamenta Informaticae, 77(4): 397-449, June 2007.
- [25] Aleksandar Nanevski, Amal Ahmed, Greg Morrisett, and Lars Birkedal.
Abstract Predicates and Mutable ADTs in Hoare Type Theory.
In Rocco De Nicola, editor, *16th European Symposium on Programming (ESOP '07)*,
pages 189-204, Braga, Portugal, March 2007.
- [26] Amal Ahmed.
Step-Indexed Syntactic Logical Relations for Recursive and Quantified Types.
In Peter Sestoft, editor, *15th European Symposium on Programming (ESOP '06)*,
pages 69-83, Vienna, Austria, March 2006.
- [27] Matthew Fluet, Greg Morrisett, and Amal Ahmed.
Linear Regions are All You Need.
In Peter Sestoft, editor, *15th European Symposium on Programming (ESOP '06)*,
pages 7-21, Vienna, Austria, March 2006.

- [28] Amal Ahmed, Matthew Fluet, and Greg Morrisett.
A Step-Indexed Model of Substructural State.
In *10th ACM SIGPLAN International Conference on Functional Programming (ICFP '05)*,
pages 78-91, Tallinn, Estonia, September 2005.
- [29] Greg Morrisett, Amal Ahmed, and Matthew Fluet.
L³: A Linear Language with Locations.
In Pawel Urzyczyn, editor, *Typed Lambda Calculi and Applications: 7th Intl. Conference (TLCA '05)*,
Nara, Japan, April 21-23, 2005, *Proceedings*, volume 3461 of *Lecture Notes in Computer Science*,
pages 293-307, Springer 2005.
- [30] Amal Ahmed, Limin Jia, and David Walker.
Reasoning about Hierarchical Storage.
In *18th Annual IEEE Symposium on Logic in Computer Science (LICS '03)*,
pages 33-44, Ottawa, Canada, June 2003.
- [31] Amal Ahmed and David Walker.
The Logical Approach to Stack Typing.
In *ACM SIGPLAN Workshop on Types in Language Design and Implementation (TLDI '03)*,
pages 74-85, New Orleans, Louisiana, January 2003.
- [32] Amal Ahmed, Andrew W. Appel, and Roberto Virga.
A Stratified Semantics of General References Embeddable in Higher-Order Logic.
In *17th Annual IEEE Symposium on Logic in Computer Science (LICS '02)*,
pages 75-86, Copenhagen, Denmark, July 2002.
- [33] Amal Ahmed, Diane Litman, Anil Mishra, Peter F. Patel-Schneider, Johannes P. Ros.
Modeling Collections of Changing Interdependent Objects.
Chapter 14 of *Implementing Application Frameworks: Object-Oriented Frameworks at Work*, Mohamed E.
Fayad, Douglas C. Schmidt, Ralph Johnson (Editors), John Wiley & Sons, September 1999.

UNDER REVIEW

- [1] Gabriel Scherer, Max S. New, Nick Rioux, and Amal Ahmed.
FabULous Interoperability for ML and a Linear Language, April 2017.

DISSERTATION

- [1] Amal Jamil Ahmed. *Semantics of Types for Mutable State*. PhD thesis, Princeton University, July 2004.
Available as Technical Report TR-713-04, Dept. of Computer Science, Princeton University, 2004.

TECHNICAL REPORTS

- [1] Amal Ahmed, Dustin Jamner, Jeremy Siek, and Philip Wadler.
Theorems for Free for Free: Parametricity, With and Without Types (Technical Appendix). (69 pages)
Available at: <http://www.ccs.neu.edu/home/amal/papers/thmfree-tr.pdf>, February 2017.
- [2] Daniel Patterson, Jamie Perconti, Christos Dimoulas, and Amal Ahmed.
FunTAL: Reasonably Mixing a Functional Language with Assembly (Technical Appendix). (148 pages)
Available at: <http://www.ccs.neu.edu/home/amal/papers/funtal-tr.pdf>, November 2016.
- [3] Max S. New, William J. Bowman, and Amal Ahmed.
Fully Abstract Compilation via Universal Embedding (Technical Appendix). (56 pages)
Available at: <http://www.ccs.neu.edu/home/amal/papers/facue-tr.pdf>, July 2016.

- [4] William J. Bowman and Amal Ahmed.
Noninterference for Free. (61 pages) Available at: <https://perma.cc/RJ9N-B5ZQ>, June 2015.
- [5] James T. Perconti and Amal Ahmed.
Verifying an Open Compiler Using Multi-Language Semantics. (132 pages)
Available at: <http://www.ccs.neu.edu/home/amal/voc>, January 2014.
- [6] Aaron Turon, Jacob Thamsborg, Amal Ahmed, Lars Birkedal, and Derek Dreyer.
Logical Relations for Fine-Grained Concurrency (Technical Appendix). (33 pages)
Available at: <http://www.ccs.neu.edu/home/amal/papers/relcon-appendix.pdf>,
July 2012.
- [7] Amal Ahmed and Matthias Blume.
An Equivalence-Preserving CPS Translation via Multi-Language Semantics (Technical Appendix).
(58 pages) Available at: <http://www.ccs.neu.edu/home/amal/papers/epc>, July 2011.
- [8] James Cheney, Umut Acar, and Amal Ahmed.
Provenance Traces.
Available at: <http://arxiv.org/abs/0812.0564>, July 2008.
- [9] Amal Ahmed, Derek Dreyer, and Andreas Rossberg.
State-Dependent Representation Independence (Technical Appendix). (71 pages)
Available at: <http://www.ccs.neu.edu/home/amal/papers/sdri>, August 2008.
- [10] Amal Ahmed and Matthias Blume.
Typed Closure Conversion Preserves Observational Equivalence. (50 pages)
Technical Report TR-2008-07, Dept. of Computer Science, University of Chicago, July 2008.
- [11] Umut Acar, Amal Ahmed, and Matthias Blume.
Imperative Self-Adjusting Computation. (77 pages)
Technical Report TR-2007-18, Dept. of Computer Science, University of Chicago, November 2007.
- [12] Aleksandar Nanevski, Amal Ahmed, Greg Morrisett, and Lars Birkedal.
Abstract Predicates and Mutable ADTs in Hoare Type Theory. (44 pages)
Harvard Computer Science Technical Report TR-16-06, Harvard University, September 2006.
- [13] Amal Ahmed.
Step-Indexed Syntactic Logical Relations for Recursive and Quantified Types. (169 pages)
Harvard Computer Science Technical Report TR-01-06, Harvard University, March 2006.
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