

# Amal Ahmed

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## EDUCATION

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### Princeton University

- Ph.D. Computer Science, 2004
- Dissertation title: Semantics of Types for Mutable State
- 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

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### Northeastern University, Khoury College of Computer Sciences, Boston, MA

- Professor, July 2022 – present & Associate Dean of Graduate Programs, July 2021 – present
- *Sy and Laurie Sternberg Interdisciplinary Associate Professor*, July 2019 – June 2022
- *Associate Professor*, July 2017 – June 2022
- *Assistant Professor*, Sept 2011 – June 2017

### Inria Paris, Prosecco research team, Paris, France

- *Visiting Professor*, 2017 – 2018

### 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

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**Correct and secure compilation across the software-hardware stack and safe language interoperability**, including design of sound foreign-function interfaces (FFIs) and richly typed compiler intermediate languages to support safe mixing. More generally: use of semantics and type systems for reasoning about imperative code, multi-language systems, security, concurrency, compiler transformations, provenance.

## HONORS / AWARDS

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

## FUNDING

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- DARPA V-SPELLS: *POLYMORPH: Promotion to Optimal Languages Yielding Modular Operator-Driven Replacements and Programmatic Hooks*. Prime: GALOIS; Northeastern PI: Amal Ahmed. \$514k. Apr 2021-Mar 2025.
- CRA Computing Innovation Fellows (CIFellows) Postdoc award for Zoe Paraskevopoulou. \$254k. Jan 2021-Dec 2022.
- NSF SHF: *Semantic Foundations for Gradual Typing*, CCF-1910522. PI: Amal Ahmed, Co-PI: Daniel Licata (Wesleyan). \$500k. Oct 2019-Sep 2022.
- IARPA HECTOR: *ACHILLES: Assured CryptographHic Integration of muLtiiple Languages for Encrypted Systems*. PI: abhi shelat, Co-PIs: Amal Ahmed, Daniel Wicks, Vinod Vaikuntanathan, Adam Chlipala, Ran Canetti, Azer Bestavros, Andrei Lapets, Alley Stoughton, Muthu Venkitasubramaniam. \$12m. Jun 2019-May 2024.
- NSF SHF: *Principled Compiling and Linking for Multi-Language Software*, CCF-1816837. PI: Amal Ahmed. \$450k. Oct 2018-Sep 2021. (REU Supplements 2019-2020: \$16k)
- 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. (REU Supplements, 2017-2019: \$32k)
- NSF SHF: *Small: Secure Compilation of Advanced Languages*, CCF-1422133. PI: Amal Ahmed. \$500k. Aug 2014-Jul 2017. (REU Supplement, 2017: \$8k)
- 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

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### Former Post-doctoral Advisees

- Gabriel Scherer. Jan 2016 – Jul 2017.  
*First position:* Permanent Researcher, Inria.

### Graduated Ph.D. Students

- Max S. New, PhD 2020. Thesis: *A Semantic Foundation for Gradual Typing*  
*First position:* Assistant Professor, University of Michigan, Ann Arbor, starting Fall 2021
- William Bowman, PhD 2018. Thesis: *Compiling with Dependent Types*.  
*First position:* Assistant Professor, University of British Columbia (UBC).

### Current Post-doctoral Advisees

- Zoe Paraskevopoulou, since Oct 2020. *CRA Computing Innovation Fellow, 2020*  
*Topic SILC-Wasm: A Platform for Secure Language Interoperability leveraging CHERI Hardware Architecture*

**Current Ph.D. Students**

- Daniel Patterson, since Mar 2016 – Semantic Soundness for Language Interoperability
- Olek Gierczak, since Aug 2019
- Nate Yazdani, since Sep 2019 (on leave)
- Andrew Wagner, since Jun 2020
- Lucy Amidon, since Sep 2020
- John Li, since Sep 2021
- Michelle Thalakkottur, since Sep 2021 (co-advised with Frank Tip)

**Graduated M.S. Students**

- Aaron Weiss, graduated May 2022  
Topic: Oxide: A Formal Semantics of Core Rust
- Hyeyoung Shin, graduated May 2019
- 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**

- Akram El-Korashy, Max Planck Institute for Software Systems, 2022 (anticipated)
- Oli Fluckiger, 2022
- Ben Greenman, 2020
- Zoe Paraskevopoulou, Princeton University, 2020
- Justin Slepak, 2020
- Raimil Cruz, University of Chile, 2019
- Jonathan Schuster, 2019
- Mitesh Jain, Mar 2018
- Ezgi Cicek, Max Planck Institute for Software Systems, Jan 2018
- 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**

- Noble Mushtak, Oct 2020 – present
- Michael Fitzgibbons, Jan 2020 – present
- Dustin Jamner, Jan 2016 – May 2020. Now Ph.D. student at MIT
- Peter Amidon (UCSD), Jul – Sep 2019. Now Ph.D. student at Northeastern
- Jay Kruer (Reed College), Jan – Jun 2019

- Nick Rioux, Sep 2013 – Aug 2018. Now Ph.D. student at U.Penn.
- Matthew Kolosick, Sep 2013 – Aug 2018. Now Ph.D. student at UCSD
- Durward Benham, Sep 2013 – Sep 2014

#### Awards Won by my PhD Students

- Aaron Weiss, 1<sup>st</sup> Place Winner, Graduate Category, Student Research Competition at POPL 2019  
Submission: *Oxide: The Essence of Rust*
- Daniel Patterson, *NSF Graduate Research Fellowship – Honorable Mention*, Apr 2018
- William J. Bowman, 1<sup>st</sup> Place Winner, Graduate Category, Student Research Competition at POPL 2017  
Submission: *Towards Type-Preserving Compilation of Coq*
- Max S. New, 3<sup>rd</sup> Place Winner, Graduate Category, Student Research Competition at POPL 2017  
Submission: *Gradual Type Precision as Retraction*

#### Awards Won by my Undergraduate Students

- Dustin Jamner, *NSF Graduate Research Fellowship*, Apr 2020
- Dustin Jamner, Summer Scholars Independent Research Fellowship, Northeastern Univ, 2019 (\$4700)
- Nick Rioux, *NSF Graduate Research Fellowship*, Apr 2018
- Nick Rioux, *CRA Undergraduate Research Award – Honorable Mention*, Feb 2018
- Nick Rioux, 3<sup>rd</sup> 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)
- Nick Rioux, Scholars Independent Research Fellowship, Northeastern University, 2014 (\$4000)

## TEACHING

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### Northeastern University

- CS 2500: Fundamentals of CS: Intro to Programming and Computing (Accelerated).  
Fall 2018, Fall 2019, Fall 2020, Fall 2021.
- CS 2500: Fundamentals of CS: Intro to Programming and Computing.  
Fall 2011, Fall 2012, Fall 2013, Spring 2014, Fall 2014, Fall 2016, Fall 2020
- CS 7480: Special Topics in Programming Languages: Gradual Typing and Principled Language Interoperability. Spring 2019
- 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, Spring 2020.
- 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

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### Northeastern University

- Faculty Mentoring Committee (Chair), Khoury College of Computer Sciences, 2019 – 2022
- Faculty Hiring Committee, Khoury College of Computer Sciences, 2018 – 2019
- 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

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- Editorial Board, Journal of Functional Programming (JFP), Jan 2017 – present
- Editorial Board, Mathematical Structures in Computer Science (MSCS), Jan 2016 – Dec 2020
- Member, IFIP WG 2.8, Working Group on Functional Programming, Aug 2014 – present
- Steering Committee Chair: SIGPLAN Programming Languages Mentoring Workshop (PLMW) Jan 2019 – Jan 2020. Past Chair, Jan 2020 – Jan 2021.
- Deputy Steering Committee Chair: SIGPLAN PL Mentoring Workshop(PLMW), Jan 2018 – Jan 2019
- 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 Summer School: *Compiler Verification for a Multi-Language World*, 2017 & 2018
- 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, 2019
- 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 @ ICFP 2021: *Managing Your Research, Your Advisor, Your PhD*, Aug 2021
  - PLMW @ SPLASH 2020: *Ask Me Anything*, Oct 2020
  - PLMW @ ICFP 2020: *Managing Your Research, Your Advisor, Your PhD*, Aug 2020
  - PLMW @ PLDI 2020: *Compositional Compiler Correctness*, Jun 2020
  - PLMW @ ICFP 2019: *Managing Your Research, Your Advisor, Your PhD*, Aug 2019
  - PLMW @ ICFP 2017: *Compositional Compiler Correctness*, Sep 2017
  - 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 21292: Scalable Handling of Effects, July 2021
  - 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 18172: Algebraic Effect Handlers Go Mainstream, Apr 2018
  - 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, 2019.
- ETAPS Doctoral Dissertation Award Committee, 2020.
- Journal reviewing: Journal of the ACM (JACM), ACM Transactions on Programming Languages and Systems (TOPLAS), Journal of Functional Programming (JFP), ACM Computing Surveys, 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, OOPSLA, LICS, ICFP, ESOP, ECOOP, ISMM, PPDP, TLDI, APLAS, FOSSACS, MFPS, FOOL, IFL, FLOPS, LPAR.

#### **Program Chair (conference)**

- ACM SIGPLAN Symposium on Principles of Programming Languages (POPL) 2023, PC Chair
- ACM SIGPLAN Conf. on Object-Oriented Programming, Systems, Languages & Applications (OOPSLA) 2022, Review Committee Co-Chair
- 27<sup>th</sup> European Symposium on Programming (ESOP) 2018, PC Chair

#### **Program Chair (workshop)**

- Secure Compilation Meeting (SCM), co-located with POPL, 2017
- 1<sup>st</sup> ACM SIGPLAN Workshop on Higher-Order Programming with Effects (HOPE) 2012
- 3<sup>rd</sup> 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)**

- Intl. Conference on Formal Structures for Computation and Deduction (FSCD) 2022
- ACM Symposium on Principles of Programming Languages (POPL) 2022
- ACM Conference on Object-Oriented Programming, Systems, Languages, & Applications, 2020
- ACM Conference on Programming Language Design and Implementation (PLDI), External PC, 2020
- ACM Conference on Programming Language Design and Implementation (PLDI) 2019
- Intl. Conference on Types for Proofs and Programs (TYPES) 2018
- 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) 2021
- ACM SIGSAC Workshop on Programming Languages and Analysis for Security (PLAS) 2020
- Workshop on Gradual Typing (WGT) 2020
- Workshop on Syntax and Semantics of Low-Level Languages (LOLA) 2019
- Interconnecting Code Workshop (ICW) 2019
- Workshop on Speculative Side-Channel Analysis (WoSSCA) 2018
- 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) 2018
- 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

- ESOP (European Symposium on Programming), 2016 – present
- ETAPS (European Joint Conferences on Theory and Practice of Software), 2017 – 2019
- ICFP (ACM International Conf. on Functional Programming), Member at large, 2008 – 2012
- TLDI (ACM Workshop on Types in Language Design and Implementation), 2009 – 2012

#### KEYNOTES & INVITED TALKS

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- *Semantic Soundness for Language Interoperability*  
Invited Speaker, Workshop on Expressiveness in Concurrency and Structural Operational Semantics EXPRESS/SOS, August 2021.
- *Verifying Soundness of Foreign-Function Interfaces*  
Invited Speaker, Verified Software: Theory to Applications. Newton Institute Workshop, May 2021.
- *Secure Compilation: Challenges for the Next Decade*  
Keynote, Symposium on Computer Security Foundations (CSF), Boston, Massachusetts, June 2020.
- *Semantic Foundations for Gradual Typing*  
Keynote, Intl. Symposium on Principles and Practice of Declarative Programming (PPDP), Porto, Portugal, October 2019.
- *Compiler Verification: The Next Generation*  
Invited Speaker, PURPL Fest, Purdue Center for Programming Principles and Software Systems, West Lafayette, Indiana, September 2019.
- *Compositional Compiler Verification for a Multi-Language World*  
Keynote, Thirty-Fifth Conference on the Mathematical Foundations of Programming Semantics (MFPS), London, UK, June 2019.
- *Compositional Compiler Correctness for a Multi-Language World*  
Keynote, Asian Symposium on Programming Languages (APLAS), Wellington, New Zealand, December 2018.
- *All the Languages Together*  
Keynote, Strange Loop, St. Louis, Missouri, September 2018.
- *Formal Approaches to Secure Compilation*  
Journées Nationales 2018, Pré-GDR Sécurité Informatique, Paris, France, May 2018.
- *Compositional Compiler Verification for a Multi-Language World*
  - Logic & Semantics Seminar, Univ. of Cambridge Computer Laboratory, Cambridge, UK, June 2018
  - PPLV Seminar, University College London, London, UK, June 2018
  - Seminar, Department of Computing, Imperial College London, London, UK, June 2018
  - Computer Science Departmental Seminar, Oxford University, Oxford, UK, June 2018
  - Institute Colloquium, Max Planck Institute for Software Systems (MPI-SWS), Saarbrücken, Germany, January 2018
  - LFCS Seminar, University of Edinburgh, Edinburgh, Scotland, October 2017
  - Gallium and Prosecco Seminar, Inria Paris, Paris, France, September 2017
- *Compositional Compiler Correctness*  
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, 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.
- *L<sup>3</sup>: 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

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- *Secure Compilation* (4 lectures)  
18<sup>th</sup> Annual Oregon Programming Languages Summer School (OPLSS), June 2019.
- *Correct and Secure Compilation for Multi-Language Software* (4 lectures)  
16<sup>th</sup> Annual Oregon Programming Languages Summer School (OPLSS), July 2017.
- *Logical Relations and Compiler Verification* (4 lectures)  
15<sup>th</sup> Annual Oregon Programming Languages Summer School (OPLSS), June 2016.
- *Logical Relations* (5 lectures)  
14<sup>th</sup> 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)  
12<sup>th</sup> Annual Oregon Programming Languages Summer School (OPLSS), July-August 2013.
- *Logical Relations* (5 lectures)  
11<sup>th</sup> Annual Oregon Programming Languages Summer School (OPLSS), July 2012.
- *Logical Relations* (5 lectures)  
10<sup>th</sup> Annual Oregon Programming Languages Summer School (OPLSS), June 2011.

**REFEREED PUBLICATIONS**

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- [1] Paulette Koronkevich, Ramon Rakow, Amal Ahmed, and William Bowman.  
ANF Preserves Dependent Types up to Extensional Equality.  
In *Journal of Functional Programming*, 2022.
- [2] Daniel Patterson, Noble Mushtak, Andrew Wagner, and Amal Ahmed. .  
Semantic Soundness for Language Interoperability.  
In *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '22)*,  
San Diego, California, June 2022.
- [3] Max S. New, Daniel R. Licata, and Amal Ahmed.  
Gradual Type Theory.  
In *Journal of Functional Programming*, 2021.
- [4] Max S. New, Dustin Jamner, and Amal Ahmed.  
Graduality and Parametricity, Together Again for the First Time.  
In *ACM SIGPLAN Symposium on Principles of Programming Languages (POPL '20)*,  
New Orleans, Louisiana, January 2020.
- [5] Phillip Mates, Jamie Perconti, and Amal Ahmed.  
Under Control: Compositionally Correct Closure Conversion with Mutable State.  
In *21st International Symposium on Principles and Practice of Declarative Programming (PPDP '19)*,  
Porto, Portugal, October 2019.
- [6] Daniel Patterson and Amal Ahmed.  
The Next 700 Compiler Correctness Theorems (Functional Pearl).  
In *24th ACM SIGPLAN International Conference on Functional Programming (ICFP '19)*,  
Berlin, Germany, August 2019.
- [7] Marco Patrignani, Amal Ahmed, and Dave Clarke.  
Formal Approaches to Secure Compilation: A Survey of Fully Abstract Compilation and Related  
Work.  
*ACM Computing Surveys*, 51(6):125:1-125:36, February 2019.
- [8] Max S. New, Daniel R. Licata, and Amal Ahmed.  
Gradual Type Theory.  
In *ACM SIGPLAN Symposium on Principles of Programming Languages (POPL '19)*,  
Lisbon, Portugal, January 2019.
- [9] Max S. New and Amal Ahmed.  
Graduality from Embedding-Projection Pairs.  
In *23rd ACM SIGPLAN International Conference on Functional Programming (ICFP '18)*,  
St. Louis, Missouri, September 2018.
- [10] William J. Bowman and Amal Ahmed.  
Typed Closure Conversion for the Calculus of Constructions.  
In *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '18)*,  
Philadelphia, Pennsylvania, June 2018.
- [11] Gabriel Scherer, Max S. New, Nick Rioux, and Amal Ahmed.  
FabULous Interoperability for ML and a Linear Language.  
In *21st Intl. Conference on Foundations of Software Science and Computation Structures (FoSSaCS '18)*,  
Thessaloniki, Greece, April 2018.
- [12] William J. Bowman, Youyou Cong, Nick Rioux, and Amal Ahmed.  
Type-Preserving CPS Translation of  $\Sigma$  and  $\Pi$  Types is Not Not Possible.

- In *ACM SIGPLAN Symposium on Principles of Programming Languages (POPL '18)*, Los Angeles, California, January 2018.
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