# Benjamin Delaware

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## Education

**University of Texas at Austin**, Ph.D. Computer Science — 2013
Advisors: William Cook and Don Batory
Dissertation: *Feature Modularity in Mechanized Reasoning*

**Washington University in St. Louis**, M.Sc. Computer Science — 2007
Advisor: Aaron Stump
Thesis: *Bagahk: Developing Sound and Complete Decision Procedures in Coq*

**Truman State University,** B.S. Computer Science, B.A. Russian — 2005
Summa Cum Laude with Departmental Honors in Math and Computer Science

## Research Experience

**Massachusetts Institute of Technology** — 2015 - Present
Research Scientist, Programming Languages and Verification Group

**Massachusetts Institute of Technology** — 2014 - 2015
Postdoctoral Researcher, Programming Languages and Verification Group

**University of Texas at Austin** — 2007-2014
Graduate Research Assistant

**Washington University in St. Louis** — 2006- 2007
Graduate Research Assistant

## Publications

### Refereed Conference Papers

1. Benjamin Delaware, Clément Pit--Claudel, Jason Gross, Adam Chlipala. **Fiat: Deductive Synthesis of Abstract Data Types in a Proof Assistant**. *Proceedings of the 42nd ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL'15).* January 2015.

2. Benjamin Delaware, Steven Keuchel, Tom Schrijvers, Bruno C. d. S. Oliveira. **Modular Monadic Meta-Theory**. *Proceedings of the 18th ACM SIGPLAN International Conference on Functional Programming (ICFP'13).* September 2013.

3. Benjamin Delaware, Bruno C. d. S. Oliveira, Tom Schrijvers. **Meta-Theory à la Carte**. *Proceedings of the 40th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL'13).* January 2013

4. Benjamin Delaware, William R. Cook, Don Batory. **Product Lines of Theorems**. *Proceedings of the 26th ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages & Applications (OOPSLA'11).* October 2011.

5. Benjamin Delaware, William R. Cook, Don Batory. **Fitting the Pieces Together: A Machine-Checked Model of Safe Composition.** *The 7th joint meeting of the European Software Engineering*

*Conference (ESEC) and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE'09).* August 2009.

### Dissertation and Theses

6. Benjamin Delaware. **Feature Modularity in Mechanized Reasoning.** PhD Dissertation, University of Texas at Austin. December 2013.

7. Benjamin Delaware. **Bagahk: Developing Sound and Complete Decision Procedures in Coq.** Master's Thesis, Washington University in St. Louis. August 2007.

### Drafts and Technical Reports

8. Benjamin Delaware, Sorawit Suriyakarn , Adam Chlipala. **Extensible Data-Representation Selection for Correct-by-Construction Program Derivation.** Under Review. November 2015.

9. Clément Pit--Claudel, Peng Wang, Benjamin Delaware, Jason Gross, Adam Chlipala. **Compilation Using Correct-by-Construction Program Synthesis**. Under Review. November 2015.

10. William R. Cook, Benjamin Delaware, Thomas Finsterbusch, Ali Ibrahim, Ben Wiedermann. **Model Transformation by Partial Evaluation of Model Interpreters.** Technical Report TR-09-09, UT Austin Department of Computer Science.

11. Benjamin Delaware, William R. Cook. **Generic Operations and Partial Evaluation using Models.**

# Academic Service

## Committee Member

| | |
|---|---:|
| 15th International Conference on Modularity, **External Review Committee** | 2015 |
| Object-Oriented Programming Systems Languages and Applications (OOPSLA), **Artifact Evaluation Committee** | 2013 |

## Refereeing and Reviewing

| | |
|---|---:|
| ACM Transactions on Programming Languages and Systems (TOPLAS) | 2014 |
| Symposium On Applied Computing (SAC) | 2014 |
| Principles of Programming Languages | 2013, 2010 |
| Object-Oriented Programming Systems Languages and Application (OOPSLA) | 2013, 2012 |
| European Conference on Object-Oriented Programming (ECOOP) | 2013, 2008 |
| Journal of Functional Programming (JFP) | 2013 |
| Acta Informatica | 2011 |
| International Conference on Functional Programming (ICFP) | 2011 |
| International Conference on Objects, Models, Components and Patterns (TOOLS) | 2011, 2010 |
| ACM Transactions on Software Engineering and Methodology (TOSEM) | 2010 |

# Grants

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| Key Personnel, **BRASS RINGS: Adaptability is the Prize**<br>DARPA | 2015-2020 |
| Key Personnel, **Fiat: Correct-by-Construction and Mostly Automated Derivation of Programs with an Interactive Theorem Prover**<br>NSF, CCF-1512611 | 2015-2019 |

# Honors and Awards

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| **Teaching and Learning Laboratory Teaching Certificate**, MIT | 2014 |
| **James C. Browne Graduate Fellowship**, University of Texas at Austin | 2013 |
| **MCD Doctoral Fellowship**, University of Texas at Austin | 2007-2010 |
| **Dean's Excellence Award, College of Natural Sciences**, University of Texas at Austin | 2007 |
| **Distinguished Master's Fellowship**, Washington University in St. Louis | 2005-2006 |
| **Phi Beta Kappa**, Truman State University | 2004 |
| **Presidential Leadership Scholarship**, Truman State University | 2001-2005 |

# Teaching Experience

## Assistant Instructor

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|---|---|
| *CS 105: PHP and SQL,* University of Texas at Austin | Spring 2013, Fall 2013 |

## Teaching Assistant

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|---|---|
| *CS 373: Software Engineering*, University of Texas at Austin | Summer 2013 |
| *CS 378: Software Design*, University of Texas at Austin | Fall 2012, Spring 2010 |
| *CSE 240: Logic and Discrete Mathematics*, Washington University in St. Louis | Spring 2007, Spring 2006 |
| *CSE 511A: Intro to Artificial Intelligence*,  Washington University in St. Louis | Fall 2006, Fall 2005 |

# Mentoring

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|---|---|
| Sorawit Suriyakarn, *EECS Advanced Undergraduate Research Program* | 2014-Present |
| Katherine Ye, *Summer Internship with PLV Group* | 2015 |
| Clément Pit—Claudel, *Summer Internship with PLV Group* | 2014 |

# Talks

**A Case for Tactics with (Limited) Side Effects**

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|---|---|
| Second International Workshop on Coq for PL (CoqPL), Workshop Talk | January 2016 |

**Fiat: Deductive Synthesis of Abstract Data Types in a Proof Assistant**

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|---|---|
| University of California, Los Angeles, Seminar | February 2015 |
| 42nd ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL), Conference Talk | January 2015 |
| University of California, Berkeley (Chaperone Group), Seminar | October 2014 |
| Stanford University (Software Research Group), Seminar | October 2014 |

**Modular Monadic Meta-Theory**

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|---|---|
| 18th ACM SIGPLAN International Conference on Functional Programming (ICFP), Conference Talk | September 2013 |

**Meta-Theory à la Carte**

40th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL), Conference Talk

January 2013

University of Ghent, Seminar

December 2012

**Product Lines of Theorems**

26th ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages & Applications (OOPSLA), Conference Talk

October 2011

2nd Conference on Interactive Theorem Proving (ITP), Joint Keynote with Don Batory.

August 2011

**Engineering Modular Mechanized Meta-Theory**

Dagstuhl Seminar on Feature-Oriented Software Development, Invited Talk

January 2011

**Fitting the Pieces Together: A Machine-Checked Model of Safe Composition.**

The 7th Joint European Software Engineering Conference and Foundations of Software Engineering (ESEC/FSE), Conference Talk

August 2009

Foundations of Aspect-Oriented Languages (FOAL), Workshop Talk

March 2009

# References

**William R. Cook**

Associate Professor

Department of Computer Science

University of Texas at Austin

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**Don Batory**

Professor

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**Adam Chlipala**

Associate Professor

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Massachusetts Institute of Technology

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**Jeremy Siek**

Associate Professor

Indiana University

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