

## RESEARCH INTERESTS

Programming languages and formal methods; type systems and program verification for low-level, concurrent, and distributed systems

## EDUCATION

**University of Washington**, September 2009 – August 2014, Ph.D. Computer Science

Dissertation Title: Verifying Concurrent Programs by Controlling Alias Interference

Advisors: Michael D. Ernst and Dan Grossman

Additional Committee Member: Matthew Parkinson (MSR Cambridge)

**University of Washington**, September 2009 — June 2011, M.S. Computer Science

Project: Static Lock Capabilities for Deadlock Freedom (Published in TLDI'12)

Advisors: Michael D. Ernst and Dan Grossman

**Brown University** 2004 — 2008, Sc.B. Computer Science

Honors Thesis: Type-Safe Stack Inspection for Garbage Collector Implementation

Honors Advisor: Shriram Krishnamurthi

Additional Readers: Shriram Krishnamurthi, Maurice Herlihy, Thomas Doeppner

## HONORS

Computing Research Association (CRA) Outstanding Undergraduate Award Honorable Mention 2008

Brown University: Honors in Computer Science, Computer Science Senior Prize with Distinction 2008

## JOURNAL PUBLICATIONS

GORDON, C. S., ERNST, M. D., GROSSMAN, D., AND PARKINSON, M. Verifying Invariants of Lock-free Data Structures with Rely-Guarantee and Refinement Types. *ACM Transactions on Programming Languages and Systems (TOPLAS)* 39, 2 (2017). Accepted for Publication / To Appear.

## CONFERENCE PUBLICATIONS

GORDON, C. S. A Generic Approach to Flow-Sensitive Polymorphic Effects. In *Proceedings of the 31st European Conference on Object-Oriented Programming (ECOOP'17)* (Barcelona, Spain, June 2017). To Appear.

CHANDRA, S., GORDON, C. S., JEANNIN, J.-B., SCHLESINGER, C., SRIDHARAN, M., TIP, F., AND CHOI, Y.-I. Type Inference for Static Compilation of JavaScript. In *Proceedings of the 2016 ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2016)* (Amsterdam, The Netherlands, November 2016). Acceptance Rate 25.6% (52/203)

ANDREASEN, E., GORDON, C. S., CHANDRA, S., SRIDHARAN, M., TIP, F., AND SEN, K. Trace Typing An Approach for Evaluating Retrofitted Type Systems. In *Proceedings of the 30th European Conference on Object-Oriented Programming (ECOOP'16)* (Rome, Italy, July 2016). Acceptance Rate 31.6% (25/79)

GORDON, C. S., DIETL, W., ERNST, M. D., AND GROSSMAN, D. JavaUI: Effects for Controlling UI Object Access. In *Proceedings of the 27th European Conference on Object-Oriented Programming (ECOOP'13)* (Montpellier, France, July 2013). Acceptance Rate 25% (29/116)

GORDON, C. S., ERNST, M. D., AND GROSSMAN, D. Rely-Guarantee References for Refinement Types Over Aliased Mutable Data. In *Proceedings of the 34th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'13)* (Seattle, WA, USA, June 2013). Acceptance Rate 17% (46/267)

GORDON, C. S., PARKINSON, M. J., PARSONS, J., BROMFIELD, A., AND DUFFY, J. Uniqueness and Reference Immutability for Safe Parallelism. In *Proceedings of the 2012 ACM International Conference on Object Oriented Programming, Systems, Languages, and Applications (OOPSLA'12)* (Tucson, AZ, USA, October 2012). Acceptance Rate 26% (59/228)

## WORKSHOP PUBLICATIONS

GORDON, C. S., ERNST, M. D., AND GROSSMAN, D. Static Lock Capabilities for Deadlock Freedom. In *Proceedings of the 8th ACM SIGPLAN Workshop on Types in Language Design and Implementation (TLDI'12)* (Philadelphia, PA, USA, January 2012)

GORDON, C. S. Formal Semantics for Testing. In *Off the Beaten Track Workshop (OBT'12)* (Philadelphia, PA, USA, January 2012) *Position paper*.

GORDON, C., MEYEROVICH, L., WEINBERGER, J., AND KRISHNAMURTHI, S. Composition with Consistent Updates for Abstract State Machines. In *Proceedings of the 14th International Workshop on Abstract State Machines (ASM'07)*

(Grimstad, Norway, June 2007)

## DISSERTATIONS & THESES

GORDON, C. S. *Verifying Concurrent Programs by Controlling Alias Interference*. PhD thesis, University of Washington, Seattle, WA, USA, August 2014

GORDON, C. S. *Type-Safe Stack Traversal for Garbage Collector Implementation*. Brown University Senior Honors Thesis, May 2008. Undergraduate Thesis

## TECHNICAL REPORTS

CHANDRA, S., GORDON, C. S., JEANNIN, J.-B., SCHLESINGER, C., SRIDHARAN, M., TIP, F., AND CHOI, Y.-I. *Type Inference for Static Compilation of JavaScript (Extended Version)*. Tech. Rep. cs.PL 1608.07261, Computing Research Repositor (CoRR), August 2016

ANDREASEN, E., GORDON, C. S., CHANDRA, S., SRIDHARAN, M., TIP, F., AND SEN, K. *Trace Typing An Approach for Evaluating Retrofitted Type Systems (Extended Version)*. Tech. Rep. SRA-CSIC-2016-001, Samsung Research America, May 2016

GORDON, C. S., DIETL, W., ERNST, M. D., AND GROSSMAN, D. *JavaUI: Effects for Controlling UI Object Access (Extended Version)*. Tech. Rep. UW-CSE-13-04-01, University of Washington, April 2013

GORDON, C. S., ERNST, M. D., AND GROSSMAN, D. *Rely-Guarantee References for Refinement Types Over Aliased Mutable Data (Extended Version)*. Tech. Rep. UW-CSE-13-03-02, University of Washington, March 2013

GORDON, C. S., PARKINSON, M. J., PARSONS, J., BROMFIELD, A., AND DUFFY, J. *Uniqueness and Reference Immutability for Safe Parallelism (Extended Version)*. Tech. Rep. MSR-TR-2012-79, Microsoft Research, Oct. 2012

GORDON, C. S., ERNST, M. D., AND GROSSMAN, D. *Static Lock Capabilities for Deadlock Freedom*. Tech. Rep. UW-CSE-11-10-01, Computer Science and Engineering, University of Washington, Seattle, WA, USA, 2011

MEYEROVICH, L. A., WEINBERGER, J. H. W., GORDON, C. S., AND KRISHNAMURTHI, S. *ASM Relational Transducer Security Policies*. Tech. Rep. CS-06-12, Computer Science Department, Brown University, Providence, RI, USA, 2006

## PATENTS

DUFFY, J. J., PARSONS, J. P., GORDON, C. S., BROMFIELD, A. D., TAILLEFER, M., BARTOLOMEO, D. A., AND BARNETT, M. *Operating system support for contracts*. Patent, March 2016. US Patent Number 9286039. Filed March 14, 2013. Assigned to Microsoft Corporation

GORDON, C. S., SINGH, P. V., AND TRIMMER, D. A. *Merging containers in a multi-container system*. Patent, November 2010. US Patent Number 7828201. Filed April, 2007. Assigned to Network Appliance, Inc.

GORDON, C. S., SINGH, P. V., AND TRIMMER, D. A. *Data containerization for reducing unused space in a file system*. Patent, June 2010. US Patent Number 7739312. Filed April, 2007. Assigned to Network Appliance, Inc.

## INVITED TALKS

**Concurrency Yak at POPL'14:** *Temporal Specifications for Clients*, 1/21/14

**Languages for the Multicore Era 2013 (LaME'13):** *Open Questions in Mutation Control (Invited talk)*, 7/1/13

**Oracle Java Tech Talk:** *JavaUI: Effects for Controlling UI Object Access*, 3/14/13

**Microsoft Research Redmond, RiSE All-Hands:** *Uniqueness and Reference Immutability for Safe Parallelism*, 10/5/12

## CONFERENCE AND WORKSHOP PRESENTATIONS

**ECOOP'13:** *JavaUI: Effects for Controlling UI Object Access*, 7/3/13

**PLDI'13:** *Rely-Guarantee References for Refinement Types over Aliased Mutable Data*, 6/17/13

**OOPSLA'12:** *Uniqueness and Reference Immutability for Safe Parallelism*, 10/23/12

**OBT'12:** *Formal Semantics for Testing*, 1/28/12

**TLDI'12:** *Static Lock Capabilities for Deadlock Freedom*, 1/28/12

## SERVICE

**PC Member:** ECOOP 2017, IWACO 2017, IWACO 2016, ASE 2016 Tool Demo Track, IWACO 2014, RACS 2011

**ERC Member:** ECOOP 2016, PLDI 2016

**External Reviewer:** FSE 2016, MFCS 2015, CAV 2015, PLDI 2014, POPL 2014, OOPSLA 2013, FSE 2013, NCA 2012, ICSE 2011, OOPSLA 2011

**Academic Panel Member:** ECOOP 2017 Doctoral Symposium

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## EXPERIENCE

- Drexel University**, *Assistant Professor* (September 2015 – Present)
- Samsung Research America**, *Frontier Computer Science Lab, Senior Research Engineer* (August 2014 – August 2015)
- Microsoft**, *Midori / Technical Strategy Incubation SDE Intern* (June 2011 - September 2011)
- Microsoft**, *Midori / Technical Strategy Incubation SDE (Fulltime)* (August 2008 - September 2009)
- Sun Microsystems**, *Solaris Kernel Intern* (Summer 2007)
- Network Appliance**, *Data Retention Group Member of Technical Staff (Intern)* (Summer 2006)