

# Matthew Fluet



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## Research Interests

- Programming languages:  
functional programming; compiler construction; parallelism and concurrency; program analysis; type systems

## Education

- PhD Computer Science. Cornell University, Ithaca, NY. January 2007.  
Dissertation: Monadic and Substructural Type Systems for Region-Based Memory Management  
Advisor: Dr. Greg Morrisett
- BS Mathematics. Harvey Mudd College, Claremont, CA. June 1999.  
Senior Thesis: Searching for Optimal Strategies in Knock 'm Down  
Advisor: Dr. Arthur T. Benjamin

## Academic Employment

- Associate Professor. Rochester Institute of Technology, Rochester, NY. August 2015–present.
- Assistant Professor. Rochester Institute of Technology, Rochester, NY. August 2009–August 2015.
- Research Assistant Professor. Toyota Technological Institute at Chicago, Chicago, IL. September 2006–June 2009.
- Research Assistant and Teaching Assistant. Cornell University, Ithaca, NY. September 1999–August 2006.

## Awards

- Rochester Institute of Technology Faculty Scholarship 2014 Featured Faculty (GCCIS). May 2015.
- RIT Golisano College of Computing and Information Sciences 2014/15AY Outstanding Scholar Award. May 2015.

## Scholarship Profiles

- ACM Digital Library, [http://dl.acm.org/author\\_page.cfm?id=81100181338](http://dl.acm.org/author_page.cfm?id=81100181338)
- DBLP, <http://www.informatik.uni-trier.de/~ley/pers/hd/f/Fluet:Matthew.html>
- Google Scholar, <http://scholar.google.com/citations?user=8SmCkDQAAAAJ>
- ResearchGate, [https://www.researchgate.net/profile/Matthew\\_Fluet](https://www.researchgate.net/profile/Matthew_Fluet)

## Publications

### Articles in Refereed Journals

- Lars Bergstrom, Matthew Fluet, Mike Rainey, John Reppy, and Adam Shaw. Lazy Tree Splitting. *The Journal of Functional Programming*, 22(4–5):pages 382–483. Cambridge University Press, September 2012. doi:10.1017/S0956796812000172. [Published online: 15 August 2012; a preliminary version of this paper appeared at *ICFP'10: The Fifteenth ACM SIGPLAN International Conference on Functional Programming*; solicited as a Selected Paper of *ICFP'10*.]
- Matthew Fluet, Mike Rainey, John Reppy, and Adam Shaw. Implicitly-threaded Parallelism in Manticore. *The Journal of Functional Programming*, 20(5–6):pages 537–576. Cambridge University Press, November 2010. doi:10.1017/S0956796810000201. [Published online: 27 January 2011; a preliminary version of this paper appeared at *ICFP'08: The Thirteenth ACM SIGPLAN International Conference on Functional Programming*; solicited as a Selected Paper of *ICFP'08*.]
- Kevin Donnelly and Matthew Fluet. Transactional Events. *The Journal of Functional Programming*, 18(5–6):pages 649–706. Cambridge University Press, September 2008. doi:10.1017/S0956796808006916. [Published online: 30 October 2008; a preliminary version of this paper appeared at *ICFP'06: The Eleventh ACM SIGPLAN International Conference on Functional Programming*; solicited as a Selected Paper of *ICFP'06*.]
- Amal Ahmed, Matthew Fluet, and Greg Morrisett. L<sup>3</sup>: A Linear Language with Locations. *Fundamenta Informaticae*, 77(4):pages 397–449. IOS Press, June 2007. <http://iospress.metapress.com/content/M581QJ0326367104>. [A preliminary version of this paper appeared at *TLCA'04: The Seventh International Conference on Typed Lambda Calculi and Applications*; solicited as a Selected Paper of *TLCA'04*.]

## Publications (continued)

- Matthew Fluet and Riccardo Pucella. Phantom Types and Subtyping. *The Journal of Functional Programming*, 16(6):pages 751–791. Cambridge University Press, November 2006. doi:10.1017/S0956796806006046. [Published online: 09 June 2006; a preliminary version of this paper appeared at *TCS'02: The Second IFIP International Conference on Theoretical Computer Science*.]
- Matthew Fluet and Greg Morrisett. Monadic Regions. *The Journal of Functional Programming*, 16(4–5):pages 485–545. Cambridge University Press, July 2006. doi:10.1017/S095679680600596X. [Published online: 10 August 2006; a preliminary version of this paper appeared at *ICFP'04: The Ninth ACM SIGPLAN International Conference on Functional Programming*; solicited as a Selected Paper of *ICFP'04*.]
- Arthur T. Benjamin and Matthew T. Fluet. What's Best? *The American Mathematical Monthly*, 107(6):pages 560–562. June–July 2000. doi:10.2307/2589353.

## Papers in Refereed Conference and Workshop Proceedings

- Umut Acar, Matthew Fluet, Adrien Guatto, Ram Raghunathan, and Sam Westrick. Hierarchical Memory Management for Mutable State. In *PPoPP'18: Proceedings of the 23rd ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*. ACM Press, February 2018. [20% acceptance rate.]
- Matthew Le, Ryan Yates, and Matthew Fluet. Revisiting Software Transactional Memory in Haskell. In *Haskell'16: Proceedings of the 9th International Symposium on Haskell*, pages 105–113. ACM Press, September 2016. doi:10.1145/2976002.2976020. [29% acceptance rate.]
- Matthew Le and Matthew Fluet. Partial Aborts for Transactions via First-Class Continuations. In *ICFP'15: Proceedings of the 20th ACM SIGPLAN International Conference on Functional Programming*, pages 230–242. ACM Press, September 2015. doi:10.1145/2784731.2784736. [29% acceptance rate.]
- Umut A. Acar, Guy Blelloch, Matthew Fluet, Stefan K. Muller, and Ram Raghunathan. Coupling Memory and Computation for Locality Management. In *SNAPL'15: First Summit on Advances in Programming Languages*, volume 32 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 1–14. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, May 2015. doi:10.4230/LIPIcs.SNAPL.2015.1.
- Connor Adsit and Matthew Fluet. An Efficient Type- and Control-Flow Analysis for System F. In *IFL'14: Proceedings of the 26th International Symposium on Implementation and Application of Functional Languages*, pages 3:1–3:14. ACM Press, October 2014. doi:10.1145/2746325.2746327.
- Matthew Le and Matthew Fluet. Combining Shared State with Speculative Parallelism in a Functional Language. In *IFL'14: Proceedings of the 26th International Symposium on Implementation and Application of Functional Languages*, pages 2:1–2:10. ACM Press, October 2014. doi:10.1145/2746325.2746328.
- Lars Bergstrom, Matthew Fluet, Matthew Le, John Reppy, and Nora Sandler. Practical and Effective Higher-Order Optimizations. In *ICFP'14: Proceedings of the Nineteenth ACM SIGPLAN International Conference on Functional Programming*, pages 81–93. ACM Press, September 2014. doi:10.1145/2628136.2628153. [33% acceptance rate.]
- Matthew Fluet. A Type- and Control-Flow Analysis for System F. In *IFL'12: Revised Selected Papers of the 24th Symposium on Implementation and Application of Functional Languages*, volume 8241 of *Lecture Notes in Computer Science*, pages 122–139. Springer-Verlag, September 2013. doi:10.1007/978-3-642-41582-1\_8.
- Lars Bergstrom, Matthew Fluet, Mike Rainey, John Reppy, Stephen Rosen, and Adam Shaw. Data-Only Flattening for Nested Data Parallelism. In *PPoPP'13: Proceedings of the 18th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*, pages 81–92. ACM Press, February 2013. doi:10.1145/2442516.2442525. [18% acceptance rate.]
- Edward Amsden and Matthew Fluet. Fairness for Transactional Events. In *IFL'11: Revised Selected Papers of the 23rd Symposium on Implementation and Application of Functional Languages*, volume 7257 of *Lecture Notes in Computer Science*, pages 17–34. Springer-Verlag, August 2012. doi:10.1007/978-3-642-34407-7\_2.
- Sven Auhagen, Lars Bergstrom, Matthew Fluet, and John Reppy. Garbage Collection for Multicore NUMA Machines. In *MSPC'11: Proceedings of the 2011 ACM SIGPLAN Workshop on Memory Systems Performance and Correctness*, pages 51–57. ACM Press, June 2011. doi:10.1145/1988915.1988929. [33% acceptance rate.]
- Lars Bergstrom, Matthew Fluet, Mike Rainey, John Reppy, and Adam Shaw. Lazy Tree Splitting. In *ICFP'10: Proceedings of the Fifteenth ACM SIGPLAN International Conference on Functional Programming*, pages 93–104. ACM Press, September 2010. doi:10.1145/1863543.1863558. [33% acceptance rate; solicited for a special issue of *Journal of Functional Programming: Selected Papers of ICFP'10*.]
- Ruy Ley-Wild, Umut Acar, and Matthew Fluet. A Cost Semantics for Self-Adjusting Computation. In *POPL'09: Proceedings of the 36th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, pages 186–199. ACM Press, January 2009. doi:10.1145/1480881.1480907. [23% acceptance rate.]
- Lukasz Ziarek, Suresh Jagannathan, Matthew Fluet, and Umut Acar. Speculative N-Way Barriers. In *DAMP'09: Proceedings of the Workshop on Declarative Aspects of Multicore Programming*, pages 1–12. ACM Press, January 2009. doi:10.1145/1481839.1481841.

## Publications (continued)

- Matthew Fluet, Mike Rainey, and John Reppy. A Scheduling Framework for General-purpose Parallel Languages. In *ICFP'08: Proceedings of the Thirteenth ACM SIGPLAN International Conference on Functional Programming*, pages 241–252. ACM Press, September 2008. doi:10.1145/1411204.1411239. [33% acceptance rate.]
- Matthew Fluet, Mike Rainey, John Reppy, and Adam Shaw. Implicitly-threaded Parallelism in Manticore. In *ICFP'08: Proceedings of the Thirteenth ACM SIGPLAN International Conference on Functional Programming*, pages 119–130. ACM Press, September 2008. doi:10.1145/1411204.1411224. [33% acceptance rate; solicited for a special issue of *Journal of Functional Programming: Selected Papers of ICFP'08*.]
- Ruy Ley-Wild, Matthew Fluet, and Umut Acar. Compiling Self-Adjusting Programs with Continuations. In *ICFP'08: Proceedings of the Thirteenth ACM SIGPLAN International Conference on Functional Programming*, pages 321–334. ACM Press, September 2008. doi:10.1145/1411204.1411249. [33% acceptance rate.]
- Matthew Fluet, Nic Ford, Mike Rainey, John Reppy, Adam Shaw, and Yingqi Xiao. Status Report: The Manticore Project. In *ML'07: Proceedings of the ACM SIGPLAN Workshop on ML*, pages 15–24. ACM Press, October 2007. doi:10.1145/1292535.1292539.
- Matthew Fluet, Mike Rainey, John Reppy, Adam Shaw, and Yingqi Xiao. Manticore: A Heterogeneous Parallel Language. In *DAMP'07: Proceedings of the Workshop on Declarative Aspects of Multicore Programming*, pages 37–44. ACM Press, January 2007. doi:10.1145/1248648.1248656.
- Kevin Donnelly and Matthew Fluet. Transactional Events. In *ICFP'06: Proceedings of the Eleventh ACM SIGPLAN International Conference on Functional Programming*, pages 124–135. ACM Press, September 2006. doi:10.1145/1159803.1159821. [32% acceptance rate; solicited for a special issue of *Journal of Functional Programming: Selected Papers of ICFP'06*.]
- Matthew Fluet, Greg Morrisett, and Amal Ahmed. Linear Regions Are All You Need. In *ESOP'06: Proceedings of the Fifteenth European Symposium on Programming*, volume 3924 of *Lecture Notes in Computer Science*, pages 7–21. Springer-Verlag, March 2006. doi:10.1007/11693024\_2. [24% acceptance rate.]
- Matthew Fluet and Riccardo Pucella. Practical Datatype Specializations with Phantom Types and Recursion Schemes. In *ML'05: Proceedings of the ACM SIGPLAN Workshop on ML*, pages 203–228. Elsevier, March 2006. doi:10.1016/j.entcs.2005.11.046.
- Amal Ahmed, Matthew Fluet, and Greg Morrisett. A Step-Indexed Model of Substructural State. In *ICFP'05: Proceedings of the Tenth ACM SIGPLAN International Conference on Functional Programming*, pages 78–91. ACM Press, September 2005. doi:10.1145/1086365.1086376. [30% acceptance rate.]
- Greg Morrisett, Amal Ahmed, and Matthew Fluet.  $L^3$ : A Linear Language with Locations. In *TLCA'04: Proceedings of the Seventh International Conference on Typed Lambda Calculi and Applications*, volume 3461 of *Lecture Notes in Computer Science*, pages 293–307. Springer-Verlag, April 2005. doi:10.1007/11417170\_22. [Solicited for a special issue of *Fundamenta Informaticae: Selected Papers of TLCA'05*.]
- Matthew Fluet and Greg Morrisett. Monadic Regions. In *ICFP'04: Proceedings of the Ninth ACM SIGPLAN International Conference on Functional Programming*, pages 103–114. ACM Press, September 2004. doi:10.1145/1016850.1016867. [26% acceptance rate; solicited for a special issue of *Journal of Functional Programming: Selected Papers of ICFP'04*.]
- Matthew Fluet and Riccardo Pucella. Phantom Types and Subtyping. In *TCS'02: Proceedings of the Second IFIP International Conference on Theoretical Computer Science*, pages 442–460. Kluwer Academic Press, August 2002. doi:10.1007/978-0-387-35608-2\_37.
- Matthew Fluet and Stephen Weeks. Contification Using Dominators. In *ICFP'01: Proceedings of the Sixth ACM SIGPLAN International Conference on Functional Programming*, pages 2–13. ACM Press, September 2001. doi:10.1145/507635.507639. [35% acceptance rate.]

## Articles in Collections / Chapters in Books

- Matthew Fluet, Lars Bergstrom, Nic Ford, Mike Rainey, John Reppy, Adam Shaw, and Yingqi Xiao. Programming in Manticore, a Heterogeneous Parallel Functional Language. In Zoltán Horváth, Rinus Plasmeijer, and Viktória Zsóck, editors, *CEFP'09: Revised Selected Lectures of the Third Central European Functional Programming Summer School*, volume 6299 of *Lecture Notes in Computer Science*, pages 94–145. Springer-Verlag, December 2010. doi:10.1007/978-3-642-17685-2\_4.

## Theses, Technical Reports, and Lightly or Unrefereed Publications

- Matthew Fluet. The Manticore Project. In *FHPC'13: Proceedings of the 2nd ACM SIGPLAN Workshop on Functional High-Performance Computing*, pages 1–2. ACM Press, September 2013. doi:10.1145/2502323.2508150. [Unrefereed; invited talk abstract.]
- Matthew Fluet. A Type- and Control-Flow Analysis for System F. Technical Report 1850/15920, Rochester Institute of Technology, February 2013. hdl:1850/15920.
- Edward Amsden and Matthew Fluet. Fairness for Transactional Events. Technical Report 1850/14852, Rochester Institute of Technology, March 2012. hdl:1850/14852.

## Publications (continued)

- Jim Allen, Zena Ariola, Pierre-Louis Curien, Matthew Fluet, Jeff Foster, Dan Grossman, Robert Harper, Hugo Herbelin, Yannis Smaragdakis, David Walker, and Steve Zdancewic. An Overview of the Oregon Programming Languages Summer School. *SIGPLAN Notices*, 44(11):pages 1–3. ACM Press, June 2010. doi:10.1145/1816027.1816029. [Unrefereed.]
- Ruy Ley-Wild, Umut Acar, and Matthew Fluet. A Cost Semantics for Self-Adjusting Computation. Technical Report CMU-CS-08-141, Carnegie Mellon University, July 2008. <http://reports-archive.adm.cs.cmu.edu/anon/2008/CMU-CS-08-141.pdf>.
- Matthew Fluet. *Monadic and Substructural Type Systems for Region-Based Memory Management*. Ph.d. dissertation (computer science), Cornell University, November 2006. hdl:1813/3773.
- Amal Ahmed, Matthew Fluet, and Greg Morrisett. A Step-Indexed Model of Substructural State. Technical Report TR-16-05, Harvard University, July 2005. <ftp://ftp.deas.harvard.edu/techreports/tr-16-05.pdf>.
- Henry Cejtin, Matthew Fluet, Suresh Jagannathan, and Stephen Weeks. Formal Specification of the ML Basis System, January 2005. <http://mlton.org/MLBasis.attachments/mlb-formal.pdf>. [Unrefereed.]
- Amal Ahmed, Matthew Fluet, and Greg Morrisett. L<sup>3</sup>: A Linear Language with Locations. Technical Report TR-24-04, Harvard University, July 2004. <ftp://ftp.deas.harvard.edu/techreports/tr-24-04.pdf>.
- Matthew Fluet. Monadic Regions: Formal Type Soundness and Correctness. Technical Report TR2004-1936, Cornell University, April 2004. hdl:1813/5647.
- Stuart Allen, Bob Constable, and Matthew Fluet. Expressing and Implementing the Computational Content Implicit in Smullyan’s Account of Boolean Valuations. Technical Report TR2004-1933, Cornell University, March 2004. hdl:1813/5644.
- Matthew Fluet. Monadic Regions. In *SPACE’04: Informal Proceedings of the Second ACM SIGPLAN Workshop on Semantics, Program Analysis, and Computing Environments for Memory Management*. January 2004. [http://www.diku.dk/topps/space2004/space\\_final/fluet.pdf](http://www.diku.dk/topps/space2004/space_final/fluet.pdf). [Lightly refereed.]
- Matthew Fluet and Dan Wang. Implementation and Performance Evaluation of a Safe Runtime System in Cyclone. In *SPACE’04: Informal Proceedings of the Second ACM SIGPLAN Workshop on Semantics, Program Analysis, and Computing Environments for Memory Management*. January 2004. [http://www.diku.dk/topps/space2004/space\\_final/fluet-wang.pdf](http://www.diku.dk/topps/space2004/space_final/fluet-wang.pdf). [Lightly refereed.]
- Arthur T. Benjamin, Matthew T. Fluet, and Mark L. Huber. Optimal Token Allocations in Solitaire Knock ’m Down. *The Electronic Journal of Combinatorics*, 8(2):page #R2. August 2001. <http://www.combinatorics.org/ojs/index.php/eljc/article/view/v8i2r2>. [Lightly refereed.]
- Arthur T. Benjamin and Matthew T. Fluet. A Rational Solution to Cootie. *The College Mathematics Journal*, 31(2):pages 124–125. March 2000. doi:10.2307/2687584. [Lightly refereed.]
- Matthew T. Fluet. *Searching for Optimal Strategies in Knock ’m Down*. B.s. senior thesis (mathematics, Harvey Mudd College, May 1999.

## Invited Talks

- Matthew Fluet. Manticore: A Heterogenous Parallel Functional Language. McMaster University. September 2015.
- Matthew Fluet. An Efficient Type- and Control-Flow Analysis for System F. Rochester Institute of Technology (GCCIS PhD Colloquium Series). September 2014.
- Matthew Fluet. The Manticore Project. ACM SIGPLAN Workshop on Functional High-Performance Computing (FHPC’13). September 2013.
- Matthew Fluet. A Type- and Control-Flow Analysis for System F. Cornell University. February 2013.
- Matthew Fluet. Manticore: A Heterogenous Parallel Functional Language. University of Rochester. March 2012.
- Matthew Fluet. Programming in Manticore, a Heterogenous Parallel Language. Central European Functional Programming Summer School (CEFP). May 2009.
- Matthew Fluet. Functional Programming Perspectives on Concurrency and Parallelism. University of Iowa; Rochester Institute of Technology; New York University; University of Texas at Arlington; Max Planck Institute for Software Systems (MPI-SWS); University of Wisconsin - Madison; University of California, San Diego. February–April 2009.
- Matthew Fluet. The Manticore Project: A Heterogenous Parallel Functional Language. Carnegie Mellon University POP Seminar. April 2008.
- Matthew Fluet. Type Systems for Resource-Conscious Programs. Toyota Technological Institute at Chicago. March 2006.
- Matthew Fluet. Type Systems for Region-based Memory Management. Northeastern University Programming Languages Seminar. November 2005.

## External Funding

### Awarded

- Matthew Fluet (Principal Investigator; Rochester Institute of Technology) and Lukasz Ziarek (Principal Investigator; SUNY at Buffalo). Positioning MLton for Next-Generation Programming Languages Research. National Science Foundation: CISE Research Infrastructure (CRI), \$605,969 (RIT: \$224,329, Award Number 1405770; UBuffalo: \$381,640, Award Number 1405614). August 2014–July 2018.
- Umut Acar (Principal Investigator; Carnegie Mellon University) and Guy Blelloch (Co-Principal Investigator; Carnegie Mellon University) and Matthew Fluet (Principal Investigator; Rochester Institute of Technology). Automatic Locality Management for Dynamically Scheduled Parallelism. National Science Foundation: Software and Hardware Foundations (SHF), \$1,199,695 (CMU: \$962,951, Award Number 1408940; RIT: \$236,744, Award Number 1408981). June 2014–May 2018.
- Matthew Fluet (Principal Investigator; Rochester Institute of Technology) and John Reppy (Principal Investigator; University of Chicago). Extending Declarative Parallel Programming with State and Nondeterminism. National Science Foundation: Software and Hardware Foundations (SHF), \$822,982 (RIT: \$412,261 + \$8,000 (REU supplement), Award Number 1065099; UChicago: \$386,551 + \$8,085 (REU supplement) + \$8,085 (REU supplement), Award Number 1065002). September 2011–August 2016.
- Matthew Fluet (Principal Investigator; Toyota Technological Institute at Chicago / Rochester Institute of Technology) and John Reppy (Principal Investigator; University of Chicago). Implementation Techniques for High-level Parallel Languages. National Science Foundation: Foundations of Computing Processes and Artifacts (CPA), \$613,953 (TTI-C: \$81,410 + \$10,457 (supplement) - \$72,874 (transfer to RIT), Award Number 0811419; RIT: \$72,874 (transfer from TTI-C), Award Number 1010568; UChicago: \$414,484 + \$91,432 (supplement) + \$8,085 (REU supplement) + \$8,085 (REU supplement), Award Number 0811389). July 2008–June 2012.

## Internal Funding

### Awarded

- Matthew Fluet (Principal Investigator). Implementations, Applications, and Foundations of a Type- and Control-Flow Analysis for System F. RIT GCCIS Seed Funding, \$8,850. January 2014–September 2014.
- Matthew Fluet (Principal Investigator). Positioning MLton for Whole-Program Compilation of Next-Generation Programming-Language Features. RIT GCCIS Seed Funding, \$8,320. December 2012–September 2013.

## Professional Service

- Information Director, Proceedings of the ACM on Programming Languages (PACMPL). October 2016–August 2018.
- Information Director (Executive Committee member), ACM Special Interest Group on Programming Languages (SIGPLAN). September 2015–August 2018.
- Program Committee, International Workshop on Languages and Compilers for Parallel Computing (LCPC). September 2017.
- Program Committee, Symposium on Trends in Functional Programming (TFP). June 2017.
- Program Committee, International Workshop on Languages and Compilers for Parallel Computing (LCPC). September 2016.
- Program Committee, ACM SIGPLAN International Conference on Functional Programming (ICFP). September 2016.
- Program Committee, European Symposium on Programming (ESOP). April 2016.
- Proposal Review Panelist, National Science Foundation (Software and Hardware Foundations (SHF) program). April 2015.
- Program Committee, International Symposium on the Implementation and Application of Functional Languages (IFL). October 2014.
- Program Committee, ACM SIGPLAN ML Family Workshop. September 2014.
- External Review Committee, ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI). June 2014.
- Program Committee, Symposium on Trends in Functional Programming (TFP). May 2014.
- Proposal Review Panelist, National Science Foundation (Software and Hardware Foundations (SHF) program). January 2013.
- Program Committee, Workshop on Cross-model Language Design and Implementation (XLDI). September 2012.
- Proposal Review Panelist, National Science Foundation (Computing Research Infrastructure (CRI) program). February 2012.
- Program Committee, Asian Symposium on Programming Languages and Systems (APLAS). December 2011.
- Selection Committee, ACM SIGPLAN Outstanding Dissertation Award. April 2011.
- Invited Observer, IFIP Working Group 2.8 on Functional Programming, April 2011.

## Professional Service (continued)

- Program Committee, ACM SIGACT-SIGPLAN Symposium on Principles of Programming Languages (POPL). January 2011.
- Program Chair, ACM SIGPLAN Workshop on ML. September 2010.
- Program Committee, International Symposium on the Implementation and Application of Functional Languages (IFL). September 2010.
- Program Committee, International Symposium on the Implementation and Application of Functional Languages (IFL). September 2009.
- Publicity Chair (Steering Committee member), ACM SIGPLAN International Conference on Functional Programming (ICFP). October 2006–September 2009.
- Co-organizer, Oregon Programming Languages Summer School. August 2007–August 2009.
- Proposal Review Panelist, National Science Foundation (Software and Hardware Foundations (SHF) program). March 2009.
- Program Committee, Workshop on Declarative Aspects of Multicore Programming (DAMP). January 2009.
- Program Committee, ACM SIGPLAN International Conference on Functional Programming (ICFP). October 2007.
- Program Committee, ACM SIGPLAN Workshop on ML. September 2006.
- External Reviewer, Funding Agencies (National Science Foundation (NSF), Natural Sciences and Engineering Research Council of Canada (NSERC)).
- External Reviewer, Journals (Journal of Functional Programming (JFP), ACM Transactions on Programming Languages and Systems (TOPLAS), Information Processing Letters (IPL)).

## Courses

### Faculty Instructor, RIT

- CSCI-344: Programming Language Concepts. 2017/18 Spring Semester (40 enr.), 2016/17 Fall Semester (39 enr.), 2015/16 Fall Semester (40 enr.), 2014/15 Spring Semester (38 enr.).
- CSCI-788: Computer Science MS Project. 2016/17 Spring Semester (12 enr.).
- CSCI-740: Programming Language Theory. 2016/17 Fall Semester (12 enr.), 2015/16 Fall Semester (21 enr.), 2014/15 Fall Semester (17 enr.), 2013/14 Fall Semester (16 enr.).
- CSCI-742: Compiler Construction. 2015/16 Spring Semester (27 enr.), 2014/15 Spring Semester (13 enr.), 2013/14 Spring Semester (13 enr.).
- CSCI-251: Concepts in Parallel and Distributed Systems. 2013/14 Fall Semester (38 enr.).
- 4003-561/4005-714: Programming Skills – Functional Programming & Haskell. 2012/13 Spring Quarter (20/17 enr.), 2011/12 Spring Quarter (29/8 enr.).
- 4005-711: Compiler Construction. 2012/13 Winter Quarter (19 enr.), 2011/12 Winter Quarter (12 enr.).
- 4005-710: Programming Language Theory. 2012/13 Fall Quarter (14 enr.), 2011/12 Fall Quarter (8 enr.), 2010/11 Fall Quarter (11 enr.).
- 4003-450/4003-709: Programming Language Concepts. 2012/13 Fall Quarter (40 enr.), 2010/11 Spring Quarter (39 enr.), 2010/11 Winter Quarter (36/3 enr.), 2010/11 Fall Quarter (32 enr.), 2009/10 Fall Quarter (15/1 enr.), 2009/10 Fall Quarter (35/4 enr.).
- 4003-242: Data Structures for Problem Solving. 2011/12 Winter Quarter (46 enr.).
- 4003-241: A Problem-Based Introduction to Computer Science. 2011/12 Fall Quarter (60 enr.).
- 4003-531/4005-735: Parallel Computing I. 2010/11 Winter Quarter (15/13 enr.).
- 4003-243: O-O Programming. 2009/10 Spring Quarter (31 enr.).
- 4003-233: Computer Science 3. 2009/10 Winter Quarter (14 enr.), 2009/10 Winter Quarter (29 enr.).

### Faculty Instructor, University of Chicago

- CMSC 22610: Implementation of Computer Languages-1. 2008/09 Winter Quarter.

## PhD Dissertations

### Committee Member - Completed

- Samuel Skalicky. Towards High Performance and Efficiency of Distributed Heterogeneous Systems. RIT. May 2015.
- Li Lu. Designing for the Simple Case in a Parallel Scripting Language. University of Rochester. December 2014.
- Arthur Nunes-Harwitt. A Transformation-Based Foundation for Semantics-Directed Code Generation. RIT. December 2014.
- Lars Bergstrom. Declarative Mutable State. University of Chicago. May 2013.
- Jesse Tov. Practical Programming with Substructural Types. Northeastern University. February 2012.
- Adam Shaw. Implementation Techniques for Nested Data-parallel Languages. University of Chicago. August 2011.
- Mike Rainey. Effective Scheduling Techniques for High-level Parallel Languages. University of Chicago. August 2010.

## PhD Dissertations (continued)

### Committee Member - Active

- Ryan Yates. Improving the Performance of Synchronization in Concurrent Haskell. University of Rochester. [thesis proposal May 2014.]

## MS Projects and Theses

### Advisor - Completed

- Yawar Raza. A Mechanized Proof in Coq of the Type Soundness of Core L3 (project course). RIT. May 2018.
- Kyle Savarese. Formal Verification of Voting Receipts in Chaums's Scheme (thesis). RIT. May 2017.
- Srinath Kanna Dhandapani. Implementation of Partial Redundancy Elimination (PRE) for MLton Compiler (project course). RIT. May 2017.
- Theodore Sill. Type Annotation Analysis Using the .NET Compiler Platform (project course). RIT. May 2017.
- Matthew Le. Partial Aborts for Transactions via First-Class Continuations. RIT. July 2016.
- Krishna Ravikumar. Supporting Vector Expressions and Patterns in MLton (project course). RIT. May 2016.
- Ryan Shea. Alternate Control-Flow Analyses for Defunctionalization in MLton (project course). RIT. May 2016.
- Matthew Surawski. Loop Optimizations for MLton (project course). RIT. May 2016.
- Vedant Raiththa. Source-level Debugging for MLton (project course). RIT. December 2015.
- Shannon Pattison. Hydrogen: A Framework for Analyzing Software Revision Histories (thesis). RIT. August 2015.
- Kevin Bradley. Successor ML Features for MLton (project course). RIT. May 2015.
- Alexander Dean. Process Cooperativity as a Feedback Metric in Concurrent Message-Passing Languages (thesis). RIT. August 2014.
- Jose Raymundo Cruz Henriquez. HsOptions: Haskell Command-Line Flag Processing Library (project course). RIT. May 2014.
- Anthony Castiglia. Efficient Closure Conversion in LangF (project course). RIT. December 2013.
- Prashanth Tilleti. Correctly Rounded Floating-point Binary-to-Decimal and Decimal-to-Binary Conversion Routines in Standard ML (project course). RIT. December 2013.
- Russell Harmon. Introspection via Self Debugging (capstone project). RIT. December 2013.
- Edward Amsden. TimeFlies: Push-Pull Signal-Function Functional Reactive Programming (thesis). RIT. August 2013.
- Brian Leibig. An LLVM Backend for MLton (capstone project). RIT. August 2013.
- Ben Holm. Evaluation of RSL History as a Tool for Assistance in the Development and Evaluation of Computer Vision Algorithms (thesis; co-advised). RIT. August 2011.
- Justin Cady. Functional Programming Applied to Web Development Templates (capstone project). RIT. May 2011.
- Karl Voelker. Total Functional Programming (thesis). RIT. July 2010.

## Independent Studies

### Faculty Sponsor, RIT

- Anindo Saha, Bhavin Shah. Functional Programming and Haskell. 2017/18 Spring Semester.
- Matt Gambogi, Thomas Logan, John Renner, Ziwei Ye. Mechanized Meta-Theory for Programming Languages. 2016/17 Spring Semester.
- Ross Bayer. Compiler Construction II. 2016/17 Fall Semester.
- Juraj Culak, Stephen Demos, Robert Glossop, Alexander Kyte, David Narvaez, Krishna Ravikumar, Yawar Raza, Kyle Savarese. Mechanized Meta-Theory for Programming Languages. 2015/16 Spring Semester.
- Kevin Bradley. Compiler Optimization Techniques. 2014/15 Summer Term.
- Michael Peterson. Compiler Construction. 2014/15 Summer Term.
- Alexander Kyte. Garbage Collection. 2014/15 Fall Semester.
- Matthew Le. Parallel Algorithms. 2014/15 Fall Semester.
- Angel Cambero Ramos. Object-oriented Programming, Functional Programming and Design Patterns using Scala, Ruby and Java. 2013/14 Summer Term.
- Connor Adsit, Danilo Dominguez Perez, and Matthew Le. Mechanized Meta-Theory for Programming Languages. 2013/14 Spring Semester.
- Jedd Haberstro. Formal Verification of Compilers. 2013/14 Fall Semester.
- Alexander Dean. Runtime Scheduling in Functional Languages. 2012/13 Summer Quarter.
- Daniel Rosenwasser. Topics in Closure Conversion. 2012/13 Spring Quarter.
- Brian Leibig. Compiler Optimizations with LLVM. 2012/13 Fall Quarter.
- Alexander Dean. Memory Models and Determinism for Concurrent/Parallel Programming Languages. 2011/12 Spring Quarter.
- Kyle Theriault. Software Testing. 2010/11 Summer Quarter.

## Independent Studies (continued)

- Edward Amsden. Functional Reactive Programming. 2010/11 Spring Quarter.
- Justin Cady. Functional Programming & Web Frameworks. 2010/11 Winter Quarter.

## Other Student Advising

### Research Assistant Supervisor, RIT

- Maksim Yegorov. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). September 2017–December 2017 (full-time for co-op credit).
- James Reilly. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). September 2017–December 2017.
- Jason Carr. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). June 2017–August 2017 (full-time), September 2017–December 2017.
- Bryan Camp. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). June 2017–August 2017 (full-time for co-op credit).
- Thomas Logan. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). September 2016–December 2016 (part-time).
- Ross Bayer. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). January 2015–May 2015 (part-time), January 2016–May 2016 (part-time), September 2016–December 2016 (part-time).
- Yawar Raza. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). September 2016–December 2016 (part-time).
- Robert Glossop. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). June 2015–August 2015 (part-time), September 2015–December 2015 (part-time).
- Ryan Shea. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). September 2015–December 2015 (part-time).
- Matthew Surawski. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). May 2015–December 2015 (part-time).
- Lee Avital. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). January 2015–May 2015 (part-time).
- Susan Lunn. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). January 2015–May 2015 (part-time).
- Ronit Galani. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). September 2014–December 2014 (part-time).
- Vedant Raiththa. Positioning MLton for Next-Generation Programming Languages Research (through NSF CRI award). September 2014–December 2014 (part-time).
- Connor Adsit. Implementations, Applications, and Foundations of a Type- and Control-Flow Analysis for System F (through GCCIS Seed Funding award). January 2014–May 2014 (part-time), June 2014–August 2014 (full-time).
- Adam Archambault. Positioning MLton for Whole-Program Compilation of Next-Generation Programming-Language Features (through GCCIS Seed Funding award). June 2013–August 2013 (full-time).
- Alexander Dean. Extending Declarative Parallel Programming with State and Nondeterminism (through NSF REU Supplement award). December 2012–March 2013 (part-time).

### Undergraduate Summer Research and Innovation Fellowship Mentor, RIT

- Edward Amsden. A Fair Implementation of Transactional Events. June 2011–August 2011 (full-time).

### Google Summer of Code Mentor, MLton.org

- Tucker DiNapoli. SIMD Support for MLton. June 2013–September 2013.