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Research Interests

Programming languages: functional programming; compiler technology; parallelism and concurrency; type systems

Education

Ph.D. Computer Science, Cornell University, Ithaca, NY *January 2007*
B.S. Mathematics, Harvey Mudd College, Claremont, CA *June 1999*

Employment

Assistant Professor, Rochester Institute of Technology, Rochester, NY *August 2009–present*
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*
Research Intern, InterTrust STAR Lab, Santa Clara, CA *Summer 2001*
Research Intern, NEC Research Institute, Princeton, NJ *Summer 2000*

Publications

Articles in Refereed Journals

- 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, 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, 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. L³: A Linear Language with Locations. *Fundamenta Informaticae*, 77(4):pages 397–449. IOS Press, June 2007. [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*.]
- Matthew Fluet and Greg Morrisett. Monadic Regions. *The Journal of Functional Programming*, 16(4–5):pages 485–545. Cambridge University Press, 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*.]
- Matthew Fluet and Riccardo Pucella. Phantom Types and Subtyping. *The Journal of Functional Programming*, 16(6):pages 751–791. Cambridge University Press, June 2006. [A preliminary version of this paper appeared at *TCS’02: The Second IFIP International Conference on Theoretical Computer Science*.]
- Arthur T. Benjamin and Matthew T. Fluet. What’s Best? *The American Mathematical Monthly*, 107(6):pages 560–562. June–July 2000.

Papers in Refereed Conference and Workshop Proceedings

- 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.
- 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. [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. [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.

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. [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. [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. [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.
- 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.
- 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. [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*, pages 7–21. Springer-Verlag, March 2006. [24% acceptance rate.]
- 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. [30% 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, September 2005.
- 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*, pages 293–307. Springer-Verlag, April 2005. [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. [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.
- 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. [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 Zsók, 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.

Theses, Technical Reports, and Lightly or Unrefereed Publications

- Edward Amsden and Matthew Fluet. Fairness for Transactional Events. Technical Report 1850/14852, Rochester Institute of Technology, March 2012.
- Matthew Fluet. *Monadic and Substructural Type Systems for Region-Based Memory Management*. Ph.D. thesis, Cornell University, January 2007.
- Amal Ahmed, Matthew Fluet, and Greg Morrisett. A Step-Indexed Model of Substructural State. Technical Report TR-16-05, Harvard University, July 2005.
- Amal Ahmed, Matthew Fluet, and Greg Morrisett. L^3 : A Linear Language with Locations. Technical Report TR-24-04, Harvard University, July 2004.
- Matthew Fluet. Monadic Regions: Formal Type Soundness and Correctness. Technical Report TR2004-1936, Cornell University, April 2004.
- 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.
- 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. [Lightly refereed.]

Publications (continued)

- 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. [Lightly refereed.]
- Matthew T. Fluet. *Searching for Optimal Strategies in Knock 'm Down*. Senior thesis, Harvey Mudd College, May 1999.

External Funding

Principal Investigator, “Extending Declarative Parallel Programming with State and Nondeterminism”, National Science Foundation (Award Number 1065099), \$412,261 (multi-institution award (\$798,812) with John Reppy [University of Chicago])
September 2011–August 2014

Principal Investigator, “Implementation Techniques for High-level Parallel Languages”, National Science Foundation (Award Number 0811419/1010568), \$91,867 (multi-institution award (\$613,953) with John Reppy [University of Chicago])
July 2008–June 2012

Professional Service

Organizing Committee, Workshop on Optimistic Cooperation in Concurrent Programming (OCCP) *March 2013*

Program Committee, Workshop on Cross-model Language Design and Implementation (XLDI) *September 2013*

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*

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

Invited Lecturer, Central European Functional Programming Summer School (CEFP) *May 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*

Co-organizer, Oregon Programming Languages Summer School *August 2007–August 2009*

Steering Committee and Publicity Chair, ACM SIGPLAN International Conference on Functional Programming (ICFP)
October 2006–September 2009

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), ACM Transactions on Programming Languages and Systems (TOPLAS), Information Processing Letters (IPL), Journal of Functional Programming (JFP)

External Reviewer (Conferences and Workshops), ASPLAS, CONCUR, COORDINATION, ECOOP, ESOP, FLOPS, FOOL, HASKELL, ICFP, IFL, ISMM, PADL, PLDI, POPL, TLDI

Teaching Experience

Faculty Instructor, Rochester Institute of Technology

4003-561/4005-714: Programming Skills – Functional Programming and Haskell *Q20113*

4003-242: Data Structures for Problem Solving *Q20112*

4005-711: Compiler Construction *Q20112*

4003-241: A Problem-Based Introduction to Computer Science *Q20111*

4005-710: Programming Language Theory *Q20111, Q20101*

4003-450: Programming Language Concepts *Q20103, Q20102, Q20101, Q20091×2*

4003-531/4005-735: Parallel Computing I *Q20102*

4003-243: O-O Programming *Q20093*

4003-233: Computer Science 3 *Q20092×2*

Faculty Instructor, University of Chicago

CMSC 22610: Implementation of Computer Languages-1 *Winter 2009*