

Amir Kamil

CONTACT INFORMATION

Beyster Building 2632
2260 Hayward Street
Ann Arbor, MI 48109-2121

Voice: (734) 764-2138
E-mail: akamil@umich.edu
WWW: web.eecs.umich.edu/~akamil

RESEARCH INTERESTS

Program analysis, high performance computing, compilers and language design for productive parallel computing, hierarchical computation, data distribution, resilience, program synthesis

EDUCATION

University of California, Berkeley, California USA

- B.S., Electrical Engineering and Computer Science, Minor in Physics, 2004
- M.S., Computer Science, 2006
- Ph.D., Computer Science, 2012
- Specialization: Languages and compilers for parallel computing
- Advisor: Katherine Yelick

TEACHING EXPERIENCE

University of Michigan, Ann Arbor, Michigan, USA

Instructor **Fall 2016, Fall 2017, Fall 2018**
EECS 490: Programming Languages (Junior/senior-level undergraduate course).

Instructor **Fall 2018**
EECS 285: A Programming Language or Computer System (Undergraduate course on practical programming in Java).

Instructor **Winter 2016, Fall 2016, Winter 2017, Fall 2017, Winter 2018, Spring 2018**
EECS 280: Programming and Introductory Data Structures (Freshman/sophomore-level undergraduate course).

Instructor **Fall 2015**
EECS 183: Elementary Programming Concepts (Freshman-level undergraduate course).

University of California, Berkeley, California USA

Instructor **Spring 2013**
CS61A: The Structure and Interpretation of Computer Programs (Freshman-level undergraduate course).

Instructor **Summer 2011**
CS70: Discrete Mathematics and Probability Theory (Sophomore-level undergraduate course).

Graduate Student Instructor **Fall 2009, Fall 2010**
CS70: Discrete Mathematics and Probability Theory.

Undergraduate Student Instructor **Spring 2004**
CS162: Operating Systems and System Programming (Junior/senior-level undergraduate course).

Undergraduate Student Instructor **Fall 2003**
CS70: Discrete Mathematics and Probability Theory.

Undergraduate Student Instructor **Summer 2002, Fall 2002, Spring 2003**
CS61B: Data Structures (Freshman-level undergraduate course).

Journal Papers

1. Didem Unat, Anshu Dubey, Torsten Hoefler, John Shalf, Mark Abraham, Mauro Bianco, Bradford L. Chamberlain, Romain Cledat, H. Carter Edwards, Hal Finkel, Karl Fuerlinger, Frank Hannig, Emmanuel Jeannot, **Amir Kamil**, Jeff Keasler, Paul H J Kelly, Vitus Leung, Hatem Ltaief, Naoya Maruyama, Chris J. Newburn, and Miquel Pericás. *Trends in Data Locality Abstractions for HPC Systems*. IEEE Transactions on Parallel and Distributed Systems, Volume 28, Issue 10, October 1 2017.
2. Katherine Yelick, Dan Bonachea, Wei-Yu Chen, Phillip Colella, Kaushik Datta, Jason Duell, Susan L. Graham, Paul Hargrove, Paul Hilfinger, Parry Husbands, Costin Iancu, **Amir Kamil**, Rajesh Nishtala, Jimmy Su, Michael Welcome, and Tong Wen. *Productivity and Performance Using Partitioned Global Address Space Languages*. Parallel Symbolic Computation 2007, London, Ontario, July 2007.
3. Katherine Yelick, Paul Hilfinger, Susan Graham, Dan Bonachea, Jimmy Su, **Amir Kamil**, Kaushik Datta, Phillip Colella, and Tong Wen. *Parallel Languages and Compilers: Perspective from the Titanium Experience*. The International Journal of High Performance Computing Applications, Volume 21, No. 2, Summer 2007.

Peer-Reviewed Conference and Workshop Papers

4. **Amir Kamil**, James Juett, Andrew DeOrio. *Gender-balanced TAs from an Unbalanced Student Body*. To appear in the 50th ACM Technical Symposium on Computer Science Education (SIGCSE 2019), Minneapolis, Minnesota, February 2019.
5. John Bachan, Dan Bonachea, Paul H. Hargrove, Steve Hofmeyer, Mathias Jacquelin, **Amir Kamil**, Brian van Straalen, Scott B. Baden. *The UPC++ PGAS library for Exascale Computing*. Second Annual PGAS Applications Workshop (PAW 2017), Denver, Colorado, November 2017.
6. David Ozog, **Amir Kamil**, Yili Zheng, Paul Hargrove, Jeff R. Hammond, Allen Malony, Wibe de Jong, Kathy Yelick. *A Hartree-Fock Application using UPC++ and the New DArray Library*. 30th IEEE International Parallel and Distributed Processing Symposium (IPDPS 2016), Chicago, Illinois, May 2016.
7. Hongzhang Shan, Samuel Williams, Yili Zheng, **Amir Kamil**, Katherine Yelick. *Implementing High-Performance Geometric Multigrid Solver With Naturally Grained Messages*. 9th International Conference on Partitioned Global Address Space Programming Models (PGAS 2015), Washington, DC, September 2015.
8. Hongzhang Shan, **Amir Kamil**, Samuel Williams, Yili Zheng, Katherine Yelick. *Evaluation of PGAS Communication Paradigms with Geometric Multigrid*. 8th International Conference on Partitioned Global Address Space Programming Models (PGAS 2014), Eugene, Oregon, October 2014.
9. **Amir Kamil**, Yili Zheng, and Katherine Yelick. *A Local-View Array Library for Partitioned Global Address Space C++ Programs*. ACM SIGPLAN International Workshop on Libraries, Languages and Compilers for Array Programming (ARRAY 2014), Edinburgh, Scotland, United Kingdom, June 2014.
10. Yili Zheng, **Amir Kamil**, Michael Driscoll, Hongzhang Shan, Katherine Yelick. *UPC++: A PGAS Extension for C++*. 28th IEEE International Parallel and Distributed Processing Symposium (IPDPS 2014), Phoenix, Arizona, May 2014.
11. **Amir Kamil** and Katherine Yelick. *Hierarchical Computation in the SPMD Programming Model*. 26th International Workshop on Languages and Compilers for Parallel Computing, San Jose, California, September 2013.
12. **Amir Kamil** and Katherine Yelick. *Enforcing Textual Alignment of Collectives Using Dynamic Checks*. 22nd International Workshop on Languages and Compilers for Parallel Computing, Newark, Delaware, October 2009.
13. **Amir Kamil** and Katherine Yelick. *Hierarchical Pointer Analysis for Distributed Programs*. The 14th International Static Analysis Symposium (SAS 2007), Kongens Lyngby, Denmark, August 2007.
14. **Amir Kamil**, Jimmy Su, and Katherine Yelick. *Making Sequential Consistency Practical in Titanium*. Supercomputing 2005 (SC05), Seattle, Washington, November 2005.

15. **Amir Kamil** and Katherine Yelick. *Concurrency Analysis for Parallel Programs with Textually Aligned Barriers*. 18th International Workshop on Languages and Compilers for Parallel Computing, Hawthorne, New York, October 2005.

Technical Reports

16. John Bachan, Scott B. Baden, Dan Bonachea, Paul H. Hargrove, Steve Hofmeyer, Khaled Ibrahim, Mathias Jacquelin, **Amir Kamil**, and Brian van Straalen. *UPC++ Programmers Guide, v1.0-2018.9.0*. LBNL Technical Report No. LBNL-2001180, September 2018.
17. John Bachan, Scott B. Baden, Dan Bonachea, Paul H. Hargrove, Steve Hofmeyer, Khaled Ibrahim, Mathias Jacquelin, **Amir Kamil**, Bryce Lebach, and Brian van Straalen. *UPC++ Specification v1.0, Draft 8*. LBNL Technical Report No. LBNL-2001179, September 2018.
18. Adrian Tate, **Amir Kamil**, Anshu Dubey, Armin Größlinger, Brad Chamberlain, Brice Goglin, Carter Edwards, Chris J. Newburn, David Padua, Didem Unat, Emmanuel Jeannot, Frank Hannig, Gysi Tobias, Hatem Ltaief, James Sexton, Jesus Labarta, John Shalf, Karl Fuerlinger, Kathryn OBrien, Leonidas Linardakis, Maciej Besta, Marie-Christine Sawley, Mark Abraham, Mauro Bianco, Miquel Pericàs, Naoya Maruyama, Paul Kelly, Peter Messmer, Robert B. Ross, Romain Cledat, Satoshi Matsuo, Thomas Schulthess, Torsten Hoefler, Vitus Leung. *Programming Abstractions for Data Locality*. 2014 Workshop on Programming Abstractions for Data Locality. Lugano, Switzerland, April 28-29, 2014.
19. **Amir Kamil**. *A Team Analysis Proposal for Recursive Single Program, Multiple Data Programs*. UCB Technical Report No. EECS-2012-83, August 2012.
20. **Amir Kamil**. *Hierarchical Additions to the SPMD Programming Model*. UCB Technical Report No. EECS-2012-20, February 2012.
21. **Amir Kamil**. *The Hierarchical SPMD Programming Model*. UCB Technical Report No. EECS-2011-28, April 2011.
22. P. N. Hilfinger, Dan Bonachea, Kaushik Datta, David Gay, Susan Graham, **Amir Kamil**, Ben Liblit, Geoff Pike, Jimmy Su, and Katherine Yelick. *Titanium Language Reference Manual, Version 2.2.0*. UCB Technical Report No. EECS-2005-15.1, August 2006.
23. **Amir Kamil**. *Concurrency Analysis for Parallel Programs with Textually Aligned Barriers*. UCB Technical Report No. EECS-2006-41, April 2006.

Theses

24. **Amir Kamil**. *Single Program, Multiple Data Programming for Hierarchical Computations*. Ph.D. Thesis, EECS Department, University of California, Berkeley, August 2012.
25. **Amir Kamil**. *Analysis of Partitioned Global Address Space Programs*. Master's Report, EECS Department, University of California, Berkeley, December 2006.

Tutorials

26. Katherine Yelick and **Amir Kamil**. *UPC and UPC++: Partitioned Global Address Space Languages*. Argonne Training Program on Extreme-Scale Computing (ATPESC 2017), St. Charles, IL, August 2017.
27. Katherine Yelick, Yili Zheng, and **Amir Kamil**. *Developing Parallel C++ Applications with Modern PGAS Features in UPC++*. 9th International Conference on Partitioned Global Address Space Programming Models (PGAS 2015), Washington, DC, September 2015.

Other

28. Michael Driscoll, **Amir Kamil**, Shoaib Kamil, Yili Zheng, and Katherine Yelick. *PyGAS: A Partitioned Global Address Space Extension for Python*. The Sixth Conference on Partitioned Global Address Space Programming Models (PGAS 2012), Santa Barbara, California, October 2012.

29. **Amir Kamil**, Jimmy Su, and Katherine Yelick. *Towards a Sequentially Consistent Memory Model for PGAS Languages*. The Second Conference on Partitioned Global Address Space Programming Models (PGAS 2006), Washington, D.C., October 2006.

INVITED TALKS

Towards a Portable Model for Mapping Locality to Hierarchical Machines. Workshop on Programming Abstractions for Data Locality (PADAL), 2015.

Managing Hierarchy with Teams in the SPMD Programming Model. Workshop on Programming Abstractions for Data Locality (PADAL), 2014.

Three Challenges and Three Solutions for Exascale Computing. NSF Workshop on Research Directions in the Principles of Parallel Computation, 2012.

PROFESSIONAL EXPERIENCE

University of Michigan, Ann Arbor, Michigan, USA

Lecturer III

September 2015 - present

Teaching and development of undergraduate Computer Science courses. Advising undergraduate students.

Lawrence Berkeley National Laboratory, Berkeley, California, USA

Computer Systems Engineer (Limited)

September 2015 - present

Postdoctoral Fellow

July 2013 - August 2015

Design and implementation of a C++ library for high-performance partitioned global address space programs.

University of California, Berkeley, Berkeley, California, USA

Postdoctoral Scholar

August 2012 - June 2013

Implementation and evaluation of programming language features for hierarchical computation.

University of California, Berkeley, Berkeley, California, USA

Lecturer

January 2013 - May 2013

Primary instructor for introductory Computer Science class with approximately 650 students.

Sun Microsystems, Inc., Menlo Park, California USA

Graduate Intern

June 2007 - June 2009

Circuit simulation, architecture design, and language design and implementation for a concurrent architecture.

AWARDS

NCWIT Extension Services Transformation (NEXT) Awards - Second Place. William Arthur, Mary Lou Dorf, Valeria Bertacco, **Amir Kamil**, and Laura Alford, University of Michigan, Division of Computer Science and Engineering, 2017.

Outstanding Graduate Student Instructor Award - Honorable Mention, Department of Electrical Engineering and Computer Sciences, Computer Science Division, UC Berkeley, 2011.

Outstanding Graduate Student Instructor Award, University of California, Berkeley, 2011.