

Amir Kamil

CONTACT INFORMATION

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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 AWARDS

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.

TEACHING INTERESTS

Core computer science introductory curricula, discrete mathematics, languages and compilers, software engineering, parallel computing, computational theory.

TEACHING EXPERIENCE

Graduate Student Instructor, University of California, Berkeley, California USA (Su11)
Lecturer, University of California, Berkeley, California USA (Sp13)

Computer Science 70: *Discrete Mathematics and Probability Theory* (Su11)

Taught as primary instructor. Supervised two teaching assistants and four graders who led discussion sections and graded assignments. Designed three new programming projects to illustrate core concepts and algorithms in discrete mathematics. Ratings: 5.9/7.

Computer Science 61A: *The Structure and Interpretation of Computer Programs* (Sp13)

Taught class of 650 students as primary instructor. Supervised eleven teaching assistants and ten graders who led discussion sections and graded assignments. Extended curriculum with an introduction to parallel computing. Ratings: 5.6/7.

Undergraduate Student Instructor, University of California, Berkeley, California USA (Su02, Fa02, Sp03, Fa03, Sp04)

Graduate Student Instructor, University of California, Berkeley, California USA (Su04, Fa09, Fa10)

Computer Science 61B: *Data Structures* (Su02, Fa02, Sp03)

Taught labs and discussion sections and graded exams. Helped students with programming projects and homework assignments. Helped the instructor to develop assignments and grading software (Su02, Sp03). Supervised the grading staff and maintained course infrastructure as the head teaching assistant (Sp03). Ratings: 4.0/5 (Su02), 4.5/5 (Fa02), 4.5/5 (Sp03).

Computer Science 70: *Discrete Mathematics and Probability Theory* (Fa03, Fa09, Fa10)

Taught discussion sections and graded exams. Helped students with homework assignments. Supervised the grading staff (Fa03, Fa10). Ratings: 4.0/5 (Fa03), 4.2/5 (Fa09), 4.6/5 (Fa10).

Computer Science 162: *Operating Systems and System Programming* (Sp04, Su04)

Taught discussion sections and graded exams. Helped students in with programming projects and homework assignments. Performed design reviews on each student team for each phase of a four-phase project. Helped maintain course infrastructure. (All in Sp04) Helped the instructor overhaul the course infrastructure and fix bugs (Su04). Ratings: 3.8/5 (Sp04).

RESEARCH INTERESTS

Computer Science Education

Investigate new techniques and evaluate existing practices in computer science education. Evaluate the effectiveness of undergraduate teaching assistants and explore other ways in which undergraduates can assist the teaching staff. Create programming assignments for discrete mathematics and theory courses that improve understanding of theoretical concepts. Build visualization tools for core computer science concepts to help students develop good mental models. Develop an undergraduate course on parallel and distributed computing.

Parallel Computing

Continue to investigate programming language models and tools for productive parallel programming. Implement support for large-scale parallelism in dynamic languages such as Python and Ruby. Extend domain-specific specialization to distributed machines.

PUBLICATIONS

Journal Papers

1. 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.
2. 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

3. 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.
4. **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.
5. 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.
6. **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.
7. **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.
8. **Amir Kamil** and Katherine Yelick. *Hierarchical Pointer Analysis for Distributed Programs*. The 14th International Static Analysis Symposium (SAS 2007), Kongens Lyngby, Denmark, August 2007.
9. **Amir Kamil**, Jimmy Su, and Katherine Yelick. *Making Sequential Consistency Practical in Titanium*. Supercomputing 2005 (SC05), Seattle, Washington, November 2005.
10. **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

11. 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 O'Brien, 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 Matsuoka, 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.
12. **Amir Kamil**. *A Team Analysis Proposal for Recursive Single Program, Multiple Data Programs*. UCB Technical Report No. EECS-2012-83, August 2012.
13. **Amir Kamil**. *Hierarchical Additions to the SPMD Programming Model*. UCB Technical Report No. EECS-2012-20, February 2012.
14. **Amir Kamil**. *The Hierarchical SPMD Programming Model*. UCB Technical Report No. EECS-2011-28, April 2011.
15. **Amir Kamil**. *Concurrency Analysis for Parallel Programs with Textually Aligned Barriers*. UCB Technical Report No. EECS-2006-41, April 2006.

Theses

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

Other

18. 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.
19. **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

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

Lawrence Berkeley National Laboratory, Berkeley, California, USA

Postdoctoral Fellow

July 2013 - present

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.

REFERENCES

Senior Lecturer SOE Dan Garcia
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(510) 517-4041

Professor Katherine Yelick
yelick@cs.berkeley.edu
(510) 495-2431

Professor David Tse
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(All references except Prof. Tse)

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