Alex Brooks

Ph.D Student and Graduate Research Assistant at the University of Illinois at Urbana-Champaign
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EDUCATION

University of Illinois, Urbana-Champaign, IL
Ph.D. in Computer Science   **2013 - Present**

Monmouth College, Monmouth, IL
B.A. in Mathematics and Computer Science   **2009 - 2013**
Summa Cum Laude | 3.913 GPA

RESEARCH INTERESTS

My interests fall into the broad area of parallel computing. Specifically, I focus on parallel programming models (task models, one- sided communication, global address spaces), threading techniques, and threading/communication interaction.

RESEARCH EXPERIENCE

University of Illinois, Urbana-Champaign, IL
Graduate Research Assistant   **Fall 2013 - Present**

Researching and developing parallel runtimes for coupling task-parallelism and one-sided communication using modular design features (C++11).

University of Illinois, Urbana-Champaign, IL
Teaching Assistant   **Fall 2016**

Teaching Assistant for CS-420: Parallel Programming targeted for for non-CS majors.

Intel Corporation, Champaign, IL
Parallel Runtimes Software Intern   **Summer 2016**

Analyzed general performance of Intel Xeon Phi: Knights Landing architecture. Also worked on performance-related infrastructure for CORAL MPI group.

Argonne National Laboratory, Lemont, IL
Argonne National Laboratory Student Research Aide   **Summer 2015**

Analyzed scheduling performance of user-level threading (Argobots) and demonstrated performance improvements through tiered optimizations.

Argonne National Laboratory, Lemont, IL
Argonne National Laboratory Summer SRP Program   **Summer 2013**

Explored the efficacy of coupling user-level threading (Qthreads) and communication (UPC and Portals) on irregular applications, specifically Barnes-Hut.

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DePauw University, Greencastle, IN
DePauw University REU   **Summer 2012**

  Developed a multi-agent autonomous vehicle simulation (Java) and prototype (Arduino)
  for region exploration and mapping.

University of Illinois, Urbana-Champaign, IL
Passionate on Parallel REU   **Summer 2011**

  Studied the effects of imbalanced memory and computation work loads on communica-
  tion through benchmarks and profiling (MPI).

PUBLICATIONS

Refereed Journal Articles

1. Alex Brooks and Michael Stees. *Unsupervised Part-of-Speech Tagging: An Introduction.* Midwest Journal
   of Undergraduate Research, pp. 116-138, Issue 4, 2014. [pdf]

Refereed Workshop Publications

1. Alex Brooks, Hoang-Vu Dang, Nikoli Dryden, and Marc Snir. *PPL: an abstract runtime system for hybrid
   parallel programming.* In Proceedings of the First International Workshop on Extreme Scale Programming
   Models and Middleware (ESPM2); held in conjunction with the IEEE/ACM International Conference on
   High Performance Computing, Networking, Storage and Analysis (SC). Nov. 15, 2015, Austin, TX, USA.
   [pdf] [slides]

Poster Publications

1. Luke Olson, Michael Anderson, Dan Bodony, Alex Brooks, Michael Campbell, Matthias Diener, Carl
   Evans, Jon Freund, Bill Gropp, Jessica Kress, Simon Garcia, John Larson, Cory Mikida, Tarun Prabhu,
   Matthew Smith, Lukas Spies, Thiago Teixeira, Sam White. *Developing Fast Code Through High-Level
   Annotations.* At SIAM CSE17 PP108 Minisymposterium: Software Productivity and Sustainability for
   CSE and Data Science. February, 2017, Atlanta, GA, USA.

PRESENTATIONS

Workshop Presentations

1. *QMPI: A Library for Multithreaded MPI Applications.* 12th Annual Workshop on Charm++ and its
   Applications, Urbana, Illinois. Apr. 29, 2014. [pdf]

Other Presentations

1. *Characterizing and Optimizing User-Level Threads for Extremely Fine-Grained Concurrency.* Argonne
   National Laboratory. Aug. 21, 2015.

2. *An Introduction to Qthreads and its Role in HPC.* Argonne National Laboratory. Aug. 2, 2013.

3. *Autonomous Vehicles.* Final DePauw REU Presentations. Aug. 2012.

4. *Effects of Loaded Processors on MPI Communication.* Passionate on Parallel Poster Presentation. Aug.
   2011.

Professional Memberships and Affiliations

1. ACM Student Member (2011 - present)

2. IEEE Student Member (2013 - present)

References

Available upon request.