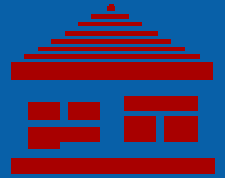


JILP



Workshop on 1st JILP Data Prefetching Championship

<http://www.jilp.org/dpc/>

Alaa Alameldeen

Intel Corporation
Organizing Committee Chair

Eric Rotenberg

North Carolina State University
Program Committee Chair

About DPC-1

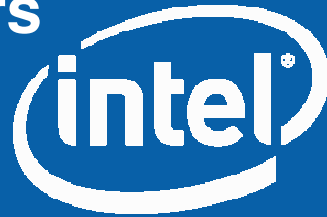
- **Goals**
 - Encourage architects to think more about data prefetching
 - Find out best prefetching algorithms
 - Implementation and papers available online
- **Contestants invited to submit prefetcher implementations on a common simulation framework**
- **Top prefetchers based on performance and quality selected for publication**

DPC-1 Summary

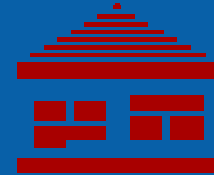
- **13 papers**
 - Papers from three continents! (N. America, Europe, and Asia)
- **20 code submissions**
 - Some papers had two or three different variations on the same techniques
- **Program Committee selected eight submissions based on performance and quality**
- **Performance results announced at the end of this workshop**

Acknowledgments

- Contestants
- Our Sponsors



JILP



- DPC-1 Organizing Committee (Intel)

Alaa Alameldeen (Chair)

Zeshan Chishti

Aamer Jaleel

Daniel Luchi

Chris Wilkerson

- DPC-1 Program Committee

Eric Rotenberg, NC State Univ. (Chair)

Alaa Alameldeen, Intel

Yuan Chou, Sun Microsystems

David Kaeli, Northeastern Univ.

Alvin Lebeck, Duke Univ.

Kyle Nesbit, Google

Suleyman Sair, Intel

Competition Rules

- **Implement L1 and L2 prefetching using at most 32kbit of state**
 - No limit on logic or hardware complexity otherwise
 - Also provided a “Prefetch” status bit associated with each cache line
- **Each contestant limited to 3 submissions**
 - Three different techniques
 - Three variations on the same technique
 - Two variations on one technique plus a different technique

Classes of Submitted Prefetchers

- **L1 Prefetchers**
 - Sequential, next N-blocks
 - PC stride-based
 - Data address stride-based
 - Stream Prefetching
- **L2 Prefetchers**
 - Sequential
 - PC Stride-based
 - Data address stride-based
 - Region (Czone) –based, with stride or other deltas within a region
 - Combine local and global histories (similar to BP)