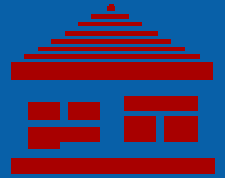


**JILP**



# Workshop on 1<sup>st</sup> 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

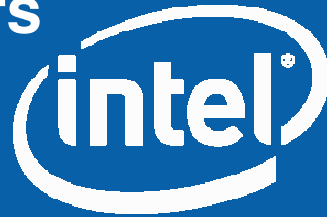
- **Goals**
  - Encourage architects to think more about data prefetching
  - Find out best prefetching algorithms
  - Implementation and papers available online
- **Contestants invited to submit prefetcher implementations on a common simulation framework**
- **Top prefetchers based on performance and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

# DPC-1 Summary

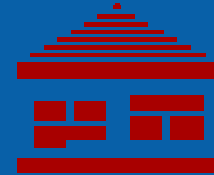
- **13 papers**
  - Papers from three continents! (N. America, Europe, and Asia)
- **20 code submissions**
  - Some papers had two or three different variations on the same techniques
- **Program Committee selected eight submissions based on performance and quality**
- **Performance results announced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