The Dirty-Block Index

Today – 4:15PM – Session 3A

Vivek Seshadri

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Phillip B. Gibbons • Michael A. Kozuch • Todd C. Mowry

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Mismatch: Representation and Query

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List all edges adjacent to vertex ‘a’
**Mismatch: Representation and Query**

### Cache Tag Store

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**Dirty Bit**

**List all dirty blocks of DRAM row R.**

**Is block X dirty?**
Dirty-Block Index

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DBI
Many Optimizations

1. DRAM-aware writeback
2. Bypassing cache lookups
3. Reducing ECC overhead
4. Efficient cache flushing
5. Load balancing memory accesses
6. Bulk DMA
7. Efficient write scheduling

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Many Optimizations

1. DRAM-aware writeback
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7. Efficient write scheduling

- 31% performance over baseline
- 6% over best previous mechanism
- 8% cache area reduction
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