2008 YEAR PRESENTATION The University of Auckland | New Zealand

Computer Science 703

Advance Computer Architecture

2008 Semester I

Lecture Notes for 4Jun08 Summary; Report on ISCA08 Paper

James Goodman

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Final Exam

- Exam is on 21Jun08 (Saturday) 2.15-4.30
- 2 hours
- Open Book
- No calculators

Coverage

Required Reading

- You are responsible for (up to test):
  - Sweazey & Smith, "A class of compatible cache consistency protocols and their support by the IEEE Futurebus"
  - Paul E. McKenney: What is RCU, Really?
  - Herlihy, Luchangco, Moir and Scherer: Software Transactional Memory for Dynamic-Sized Data Structures (DSTM)
  - Dice, Shalev and Shavit: Transactional Locking II
  - Tabba, Wang, Goodman and Moir: NZTM: Nonblocking Zero-indirection Transactional Memory
  - Herlihy & Moss: Transactional Memory: architectural support for lock-free data structures“
- You are responsible for (since test):
  - Moir, Moore & Nussbaum: The Adaptive Transactional Memory Test Platform
- Also:
  - Larus and Rajwar: Transactional Memory (Chapters 1, 2, 3.1, 3.4.1, 3.4.4, 4)

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Recommended Reading

- Larus and Rajwar: Transactional Memory (Chapters 3.4.9)
- Stone, et. al., Multiple Reservations and the Oklahoma Update
- Gottlieb, et. al., The NYU Ultracomputer--Designing an MIMD Shared Memory Parallel Computer
- Hill: Processors should support simple memory-consistency models
- J. Gray: The Transaction Concept
- Wikipedia: Nonblocking Synchronization
- Angela Demke Brown: Avoiding Locks CSC469H1F, Lecture 10, University of Toronto, Fall 2006.
- Scherer & Scott, Advanced Contention Management for Dynamic Software Transactional Memory
- Grossman, The transactional memory / garbage collection analogy
- Ellen, Lev and Moir, SNZI: Scalable NonZero Indicators
- Rajwar & Goodman, Speculative Lock Elision
- Rajwar & Goodman, Transactional Execution: toward reliable, high-performance multithreading
- Rajwar, Herlihy & Lai, Virtualizing transactional memory.
- Moore, Bobba, Moravan, Hill & Wood, LogTM: Log-based Transactional Memory .
- Dice, Herlihy, Lea, Lev, Luchangco, Mesard, Moir, Moore & Nussbaum, Applications of the Adaptive Transactional Memory Test Platform
- Chuang, Narayanasamy, Venkatesh, Sampson, Biesbrouck, Pokam, Colavin, & Clader, Unbounded Page-Based Transactional Memory
- Shriraman, Spear, Hossain, Marathe, Dwarkadas & Scott: An Integrated Hardware-Software Approach to Flexible Transactional Memory

Other Material

- You are responsible for material covered in class, particularly that included in
- Slides from class lectures

Comments

- Exam is likely to be similar to test, with optional questions (possibly some of the same ones)
- Likely question about your project

TokenTM

- J Bobba, N. Goyal, M.D. Hill, M.M. Swift, D.A. Wood, "TokenTM: Efficient execution of large transactions with hardware transactional memory," *ISCA08*, June 2008
- M.M.K. Martin, M.D. Hill, D.A. Wood, "Token Coherence: Decoupling performance and correctness," *ISCA03*, June 2003
- Moore, Bobba, Moravan, Hill & Wood, "LogTM: Log-based transactional memory, HPCA06, Feb. 2006.