CS586 – Distributed Computing
Fall semaster - Ac. Year 2011-12
Instructor: Panagiota Fatourou

Theory Projects

Deadline for the survey: February 13, 2012

Projects

Project 1 (Universal Constructions)

1. J. Anderson and M. Moir, "Universal Constructions for Large Objects", *IEEE Transactions on Parallel and Distributed Systems*, 10(12):1317-1332, December 1999 (contact the instructor)
2. P. Fatourou and N. Kallimanis, "The Red-Blue Adaptive Universal Construction", *Proceedings of the International Symposium on Distributed Computing (DISC)*, 2009 (contact the instructor).

Project 2 (Concurrent Data Structures I)

1. M. Michael. "High Performance Dynamic Lock-Free Hash Tables and List-Based Sets", In *Proceedings of the 14th annual ACM Symposium on Parallel algorithms and architectures (SPAA)*, pages 73-82, August 2002 (http://www.research.ibm.com/people/m/michael/spaa-2002.pdf)
2. M. Fomitchev and E. Ruppert. "Lock-Free Linked Lists and Skip Lists", In *Proceedings of the 23rd annual ACM symposium on Principles of distributed computing (PODC)*, pages 50-59, July 2004 (http://www.cse.yorku.ca/~ruppert/papers/lfll.pdf)

Project 3 (P2P Systems I)

1. Aspnes and Shah, "Skip Graphs", SODA 2003.
2. Aspnes, Kirch and Krishnamurthy, "Load Balancing and Locality in Range-Queriable Data Structures", PODC 2004.

Project 4 (Grid Computing)

1. "Task Scheduling Strategies for Workflow-based Applications in Grids", Jim Blythe, Sonal Jain, Ewa Deelman, Yolanda Gil, Karan Vahi, Anirban Mandal, Ken Kennedy.
2. "Adaptive Workflow Processing and Execution in Pegasus", Kevin Lee, Norman W. Paton, Rizos Sakellariou, Ewa Deelman, Alvaro A. A. Fernandes, Gaurang Mehta

Project 5 (Atomic Snapshots)

1. Attiya and Rachman, "Atomic Snapshots in O(nlogn) operations", SIAM J. on Computing, 27(2): 319-340, 1998 (http://epubs.siam.org/SICOMP/volume-27/art_27946.html, until page 328, not up until the end)
2. Israeli, Shaham and Shirazi, "Linear-Time Snapshot Implementations in Unbalanced Systems", Mathematical Systems Theory, 1995. (hard copy in my office, up until page 479).

Project 6 (Counting Networks)

1. James Aspnes, Maurice Herlihy, and Nir Shavit. Counting networks. *Journal of the Association for Computing Machinery* 41(5):1020–1048, September 1994.
2. Herlihy, Shavit and Waarts, "Linearizable Counting Networks", Distributed Computing, 1995. (http://citeseer.ist.psu.edu/herlihy91linearizable.html)

Project 7 (Adaptive Mutual Exclusion)

1. Attiya & Bortnikov, "Adaptive and Efficient Mutual Exclusion", ACM Symposium on Principles of Distributed Computing, 2000. (http://www.springerlink.com/content/78c27mhk3cp04e9n/fulltext.pdf)
2. J. Anderson and Y. J. Kim, "Adaptive mutual exclusion with local spinning", DISC 2000.

Project 8 (Failure Detectors)

1. Tushar Deepak Chandra, Sam Toueg, "Unreliable Failure Detectors for Reliable Distributed Systems", Journal of the ACM, 1996. (http://portal.acm.org/citation.cfm?id=226647)
2. Tushar Deepak Chandra, Vassos Hadzilacos, Sam Toueg, "The Weakest Failure Detector for Solving Consensus", 1994. (http://theory.lcs.mit.edu/classes/6.852/05/papers/jacm96.pdf)

Project 9 (Distributed Data Structures I)

1. M. Herlihy, S. Tirthapura and R. Wattenhofer, "Competitive Concurrent Distributed Queueing", pp. 127-133, ACM PODC, 2001.
2. M. Demmer and M. Herlihy, "The arrow distributed Directory Protocol", pp.119-133, DISC 1998.

Project 10 (Distributed Data Structures II)

1. N. Shavit and A. Zemach, "Scalable Concurrent Priority Queue Algorithms", pp. 113-122, ACM PODC 1999.
2. Shavit & Zemach, "Diffracting Trees", ACM Transactions on Computer Systems, 14(4): 385-428, 1996. (http://citeseer.ist.psu.edu/68066.html)

Project 11 (Fast & Adaptive Renaming Algorithms)

1. Attiya & Fouren, "Algorithms Adapting to Point Contention", Journal of the ACM, 50(4):444-468, 2003. (http://portal.acm.org/citation.cfm?id=792541&dl=ACM&coll=portal)
2. Afek, Attiya, Fouren, Stupp and Touitou, "Long-lived renaming made adaptive", Proceedings of the 18th Annual ACM Symposium on Principles of Distributed Computing, 1999. (http://citeseer.ist.psu.edu/5432.html)

Project 12 (Fast & Adaptive Collect with Applications)

1. Afek, Stupp and Touitou, "Log-lived Adaptive Collect with Applications", FOCS 1999. (hard copy στο γραφείο μου)
2. Attiya, Fouren and Gafni, "An Adaptive Collect Algorithm with Applications", Distributed Computing, 2002. (http://www.springerlink.com/media/bn42d3yhvm7jqvqugt33/contributions/h/h/m/1/hhm1cbpndex2570x.pdf)

Project 13 (Synchronous Atomic Snapshots)

1. Brodsky and Fich, "Efficient Synchronous Snapshots", PODC 2004. (www.cs.utoronto.ca/~abrodsky/papers/p62-brodsky.pdf)
2. G. Neiger and R. Singh, "Space-Efficient atomic snapshots in synchronous systems", TR GIT-CC-93-46, Georgia Institute of Technology, 1993 (http://etd.library.gatech.edu/dspace/bitstream/1853/6777/1/GIT-CC-93-46.pdf)

Project 14 (Measuring Contention)

1. Dwork, Herlihy and Waarts, "Contention in Shared Memory Algorithms", Journal of the ACM, 44(6):779-805, November 1997. (citeseer.ist.psu.edu/dwork93**contention**.html)
2. Anderson and Yang, "Time Contention Trade-offs for multiprocessor synchronization", Information and Computation, http://citeseer.ist.psu.edu/anderson96timecontention.html

Project 15 (P2P Systems II)

1. Crainiceanu, Linga, Gehrke and Shanmugasundara, "Querying P2P Networks using P-trees", WebDB 2004.
2. Zhang, Kalnis, Chin Ooi, Tan, "Generalized Multi-Dimensional Data Mapping and Query Processing", ACM Trans. on Database Systems, 2005.