

CHAO WANG

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EDUCATION

08/2016 - now	University of Southern California.	
09/2012 - 12/2015	Lehigh University. M.S.	GPA: 3.93/4.0
09/2009 - 06/2012	ICT, Chinese Academy of Sciences, M.E.	
09/2005 - 07/2009	Beijing University of Posts and Telecommunications, B.E.	

PROFESSIONAL EXPERIENCE

University of Southern California **Research Assistant**

Cache-aware Graph Processing Scheduler (Ongoing)

Lehigh University **Research Assistant**

TxnReschedule

We proposed TxnReschedule, a mechanism that allows software/hardware memory transactions to conditionally cooperate. We extended GCC's transactional memory runtime and implemented five variants of language-level transaction re-schedule constructs based on this mechanism. One good feature of our mechanism is that it is composable without breaking atomicity, easing library development. It significantly simplifies the programmability of condition synchronization under transactional contexts. By using value-based validation instead of read/write set metadata-based validation, the reschedule of HTM and Hybrid TM is supported for the first time. Experiments against a micro-benchmark and real-life PARSEC benchmarks shows that our mechanism achieves better or similar performance compared to the pthread baseline.

TxnCondVar

There hadn't been an acceptable mechanism for using condition variables in memory transactions. We proposed TxnCondVar, a lightweight transactional condition variable. We implemented the condition variable as a concurrent data structure in user space, avoiding system call overheads as existed in pthreads. By using TxnCondVar, it is possible now to replace all locks in PARSEC with transactions. TxnCondVar can also be used in legacy lock-based critical sections for backward compatibility. Evaluations show that unmodified PARSEC benchmark suite achieves superior performance for lock-based code compared with the pthread baseline.

Chinese Academy of Sciences **Research Assistant**

StableSet

Remote I/O are slow compared to local I/O. We proposed StableSet, an algorithm that can predict the stable and reoccurring block access patterns and pre-fetch data from NFS servers. StableSet assumes temporal and space locality. We implemented this algorithm in Fscache/cacheFiles kernel module. Evaluations show that it can effectively reduce execution time for I/O bound applications.

FutureWei Technologies **Research Intern** **Summer 2016**

Realistic embedded Machine Learning Framework

Due to computational and memory constraints, large scale on-device ML inference was hard to realize on embedded devices such as smart phones. We proposed a ML framework optimized for heterogeneous embedded

platforms. We built python execution environment and ported Theano, Keras and their dependencies on Android system.

Yun Xiao (Startup)

Intern

Summer 2014

Software as a Service (SaaS) platform

Helped an architect to build a SaaS platform. Solved high availability and load balance issues for MySQL servers. Realized the monitor and alert to the health status of hosts and services in SaaS. Wrote python scripts to backup/restore database and to analyze Nginx's web page access logs.

Teaching Assistant

Programming Languages

Lehigh University

CSE262

Fall 2014

Introduction to Digital Logic

University of Southern California

EE101/CSCI110

Fall 2016

SELECTED HONORS

- 09/2006 First Grade Scholarship of BUPT (top 5%)
- 09/2007 Second Grade Scholarship of BUPT (top 10%)
- 10/2007 Second Prize in the RoboCup China Open 2007
- 03/2008 Qualified in RoboCup 2008
- 09/2008 Second Grade Scholarship of BUPT (top 10%)
- 05/2010 Ranked 1/114 in Scientific Oral English Competition 2010 in GUCAS (top 0.88%)

PUBLICATIONS

- **Chao Wang**, Michael Spear. Practical Condition Synchronization for Transactional Memory (EuroSys 2016)
- Matthew Kilgore, Stephen Louie, **Chao Wang**, Tingzhe Zhou, Wenjia Ruan, Yujie Liu, and Michael Spear. Transactional Tools for the Third Decade (TRANSACT 2015)
- **Chao Wang**, Yujie Liu, Michael Spear. A New API for Transactional Condition Synchronization. 9th ACM SIGPLAN Workshop on Transactional Computing 6th Workshop on the Theory of Transactional Memory (WTTM 2014)
- **Chao Wang**, Yujie Liu, Michael Spear. Transaction-Friendly Condition Variables. Proceedings of the 26th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA 2014)
- Wenjia Ruan, Yujie Liu, **Chao Wang**, Michael Spear. On the Platform Specificity of STM Instrumentation Mechanisms. 2013 International Symposium on Code Generation and Optimization (CGO 2013)
- Y. Zhu, J. Zhang, **C. Wang**, Z. Liu. Fragmentation Degree Research Based on File's Layout. Applied Mechanics and Materials. Vols. 80-81 (2011), pp 1217-1225.
- C.Liu, J.Zhang, Z.Liu, **C.Wang**, J.Zhang. Research on Implement Snapshot of pNFS Distributed File System. Applied Mathematics & Information Sciences. 5 (2) (2011), 179S-185S.