Andres Jaan Tack

Current Address: 3001 Triverton Pike Dr. #101, Fitchburg, WI 53711 Phone: (847) 302-0450
E-mail: tack@cs.wisc.edu

Objective:

To take part in the design and implementation of systems projects with an exploratory focus.

Education

University of Wisconsin at Madison

Seeking: **Doctor of Philosophy** Graduation Expected: **May, 2013**
Major: **Computer Science**

University of Illinois at Urbana/Champaign

Seeking: **Bachelor of Science in Engineering** Graduated: **May, 2008**
Major: **Computer Science** GPA: 3.51 / 4.0 (Honors)

Publications

xCalls: Safe I/O in Memory Transactions (To Appear in EuroSys 2009)

Haris Volos, Andres Jaan Tack, Neelam Goyal, Michael Swift and Adam Welc

The xCalls API allows the efficient use of memory transactions that produce I/O. I joined this project when I joined the Wisconsin CS department, and aided in its subsequent acceptance at EuroSys by constructing experiments to test its performance characteristics.

Personal Contributions

- Converted log and memory subsystems in the BIND DNS server to use STM in place of locks.
- Constructed a script to systematically test patches for performance impact.
- Demonstrated performance benefits: 35% over mutexes, 15% over irrevocable transactions

Other Systems Research

Research Assistant for Michael Swift

Since 1st Semester, 2008-2009

- Focusing on the use of transactional memory in systems applications
- Joined and assisted with accepted paper, "xCalls: ..." with Haris Volos (see "Publications")
- Continuing to explore concurrency bugs, transactional memory, and the use of condition variables.

Heterobalance: Linux Scheduling for Heterogeneous Multi-core Systems

cs736: Advanced Operating Systems, Fall 2008

- Explored the relationship between Linux *interactive* (or I/O-bound) processes and heterogeneous CPU scheduling and interactive load balancing
- Intuition: I/O-bound tasks get less from fast CPUs, and should be scheduled on slower cores.
- Designed and implemented a replacement load balancer for Linux 2.6, following our intuition
- Demonstrated that, in several cases, our best performance was better than Linux CFS.

Encoding with Packet Timings

Undergraduate Research Assistant with Todd P. Coleman, University of Illinois, 2007-2008

- Wrote a Linux kernel module to precisely and covertly control the timings of IP datagrams.
- Continuing to serve in an advisory capacity, issues and constraints from the OS.

Collaborative Text Editor

Private Undergraduate Research, Univ. of Illinois SIGSoft student chapter, 2006-2007

- Designer and chief implementor of a distributed collaborative text editor.
- Designed an expansion of the dOPT algorithm, serving arbitrary-length replacement operations
- Won 3rd place in the Siebel Center Computing Habitat competition.

Software Development and Project Management

Association for Computing Machinery (Illinois Student Chapter)

ACM General Chair, 2007-2008
Reflections | Projections Computing Conference Chair, 2006-2007
ACM Corporate Committee Chair, 2005-2006
SIGSoft President/Chair, Fall 2005 - 2006 (emeritus)

- Chief organizing member of the 2007 R|P conference, a $30,000 student-organized event
- Principal coordinator of the 2006 R|P job fair, hosting 24 companies with a small team.
- Lead designer and developer for CTE, supervising six other developers.
- Founder and lead developer of the Scheedule project: a web-based class scheduling system for Illinois which currently receives over 6,000 unique hits each semester.
- Delivered tutorials on web technologies periodically.

Microsoft Corporation

SDE/Test Intern, Windows Kernel/Platform Architecture*, May 2007 - August 2007*
Program Manager Intern, Windows Lifecycle Group*, May 2006 - August 2006*

- Designed and implemented a remote test framework for the Windows boot environment.
- Wrote a partial VT-220 emulator and a UTF-8 to Unicode Converter using C++.
- Owned 2 specifications for the Windows "Vienna" Basics program, including new internal tools.

Scheedule.com

Founder*, Fall 2006 - Fall 2008*

- Presented the original application concept and managed the project through the first prototype
- Designed the algorithm used to calculate possible schedules
- Implemented mechanisms for course information retrieval, scraping web pages programmatically
- Evaluated causes of pathological performance on the application back-end

University of Illinois at Urbana/Champaign

Undergraduate Teaching Assistant, 2006-2007

- Taught Data Structures and Programming Studio, eventually leading about 80 students.
- Designed instructional material for Data Structures with C++ in a lab environment.