

# Joe T. Meehean

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## Work Address

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## Home Address

3008 Hill St #314  
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## Education

### University of Wisconsin – Madison

PhD. in Computer Science, Aug. 2011  
Advisers: Andrea Arpaci-Dusseau, Remzi Arpaci-Dusseau, and Miron Livny

### University of Wisconsin – Madison

M.S. in Computer Science, Dec. 2005

**GPA: 4.0**

### University of Wisconsin – Eau Claire

B.S. in Comprehensive Computer Science, May 2003

**GPA: 3.67**

## Teaching Experience

### Lynchburg College

Assistant Professor of Computer Science

*9/11 – Present*

### University of Wisconsin – Madison

Guest Lecturer CS202: Introduction to Computation

*Fall 2010*

Lecturer CS367: Data Structures

*Summer 2010*

Teaching Assistant CS367: Data Structures

*Summer 2007*

### University of Wisconsin – Eau Claire

SACM Student Tutor

*9/01 – 5/03*

## Employment

### Lynchburg College

Assistant Professor of Computer Science

*9/11 – Present*

- Taught wide variety of courses
- Conducted student-faculty research
- Coached ACM programming team

### University of Wisconsin – Madison

Graduate Student Research Assistant, ADvanced Systems Laboratory (ADSL)

*9/07 – 8/11*

- Designed Harmony multiprocessor scheduling policy analysis tool. Analyzed multiprocessor scheduling policies of Linux schedulers.
- Developed CPU Futures scheduling feedback system. Creates a feedback channel between applications and CPU scheduler to avoid process starvation and allow applications to enforce scheduling goals.
- Analysis of memory thrashing in Linux mail servers.

Graduate Student Research Assistant, Condor Project

*9/04 – Present*

- Prototyped resource-awareness in Condor core components
- Developed unique process identifier frameworks
- Created distributed scheduler rapid deployment tool
- Implemented distributed scheduler migration feature

**Great Lakes Higher Education (Madison, WI)**

Summer 2002

Software Engineer Internship

- Implemented J2EE student loan application network parser. Converts student loans from industry standard network protocol to internal business objects.

6/03 – 9/04

Part-time Software Engineer

- Member of shared software development committee.
- Developed J2EE database caching library, retrofitted software to use new framework
- Documented software architecture

**Student/Faculty Collaborative Research***High Throughput Computing using Scavenged CPU Cycles with Adam Noll*

The purpose of the project is to harness the unused computing resources in the Computer Science department. These unused resources are not dusty machines in back closets, but are instead heavily used lab workstations. Even these workstations are idle at night, over the weekends and even during lunch. The project intends to bind these machines together into an ad-hoc cluster that can be used to support scientific research. Priority will be given to on-campus research projects with unused resources donated to off-campus scientific research.

**Professional Activities**

12/10 – Present

Member ACM Special Interest Group on Computer Science Education (SIGCSE)

1/12 – Present

Avid reader of SIGCSE's Nifty Programming Assignments

2/12

Attended SIGCSE Annual Conference

9/10 – 5/11

Attended Delta Teaching Workshops and Seminars

9/08 – 8/11

Member SACM Graduates Anonymous, UW-Madison chapter

9/02 – 5/03

SACM President UW-Eau Claire chapter

1/02 – 9/02

SACM Vice-President UW-Eau Claire chapter

**Service**

9/11 – Present

LC Programming Team coach

4/12

Moderator for Student Scholar Showcase

2/12

Interviewer LC Scholarship Competition

**Courses Taught**

Spring '12

Intro. to Computer Science and Structured Programming I (CS142)

Spring '12

Data Structures and Abstraction I (CS241)

Spring '12

Senior Project (CS452)

Spring '12

Programming Languages (CS322)

Spring '12

Independent Study in Computer Science (CS397)

Spring '12

Internship in Computer Science (CS399)

Fall '11

Data Structures and Abstraction II (CS242)

Fall '11

Database Management Systems (CS370)

Summer '10

Introduction to Data Structures (CS367)

**Research Summary**

My research focuses on the scalability of CPU schedulers in server and cluster environments. The increase of multicore and SMP machines combined with the expanding set of CPU scheduling features means that CPU scheduling in commodity systems is becoming increasingly complex. Under heavy load these schedulers can suffer from pathological behavior, such as process starvation. The goal of my work is to reintroduce predictability and scalability into best-effort CPU schedulers, even under overload.

*Harmony*

Harmony is a technique for extracting the CPU load balancing policy from commodity operating systems. This technique combines high-level synthetic workloads with low-level instrumentation to fingerprint an operating system's multiprocessor scheduling policy. Harmony also aids in detecting performance bugs in the design and implementation of these policies.

*CPU Futures*

CPU Futures is a system designed to enable application control of scheduling for server workloads, even during system overload. CPU Futures contains two novel components: an in-kernel herald that anticipates application CPU performance degradation and a user-level feedback controller that responds to these predictions on behalf of the application. In combination, these two subsystems enable fine-grained application control of scheduling; with this control applications can define their own policies for avoiding or mitigating performance degradation under overload.

**Publications**

*CPU Load Balancing Analysis Using Harmony*, Techreport. With Andrea Arpaci-Dusseau, Remzi Arpaci-Dusseau, and Miron Livny.

*CPU Futures: Scheduler support for application management of CPU contention*, Techreport. With Andrea Arpaci-Dusseau, Remzi Arpaci-Dusseau, and Miron Livny.

*A Service Migration Case Study: Migrating the Condor Schedd*, Midwest Instructional Computing Symposium 2005 (winner best student paper award). With Miron Livny.

**Invited Talks**

*CPU Load Balancing in Multicore Systems*, ADSL Team Meeting, April 12, 2010

*Resolving Scheduling Conflicts with CPU Futures*, ADSL Team Meeting February 3, 2010

*Making Condor Environmentally Aware*, Condor Week 2007

*Problems in Dynamic Service Deployment*, Condor Week 2006

**References**

Dr. Andrea Arpaci-Dusseau  
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