

James Cowling

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Research/Work Interests

My career interests involve designing and building solutions to large-scale engineering problems, particularly with regards to distributed systems infrastructure. I also enjoy working with teams and managing projects, and would be interested in leading engineering projects in the future.

My primary research interests lie in distributed systems, particularly with respect to fault tolerance and large-scale transactional storage. My research work includes consensus protocols, replication, scalable infrastructure and cluster management.

Education

Massachusetts Institute of Technology (MIT) Jun 2007 – present
PhD candidate, Electrical Engineering and Computer Science Advisor: Barbara Liskov
Computer Science and Artificial Intelligence Laboratory

Massachusetts Institute of Technology (MIT) Sep 2005 – May 2007
MS, Electrical Engineering and Computer Science Advisor: Barbara Liskov
GPA 5.0 (out of possible 5.0)

The University of Sydney Feb 2000 – Nov 2004
Bachelor of Advanced Computer Science and Technology (Hons.) Advisor: Bjorn Landfeldt
First Class Honours with University Medal

The University of California, San Diego Sep 2002 – Jun 2003
Academic Exchange Student, Computer Science and Engineering
GPA 4.0 (out of possible 4.0)

Selected Publications

Granola: Low-Overhead Distributed Transaction Coordination
James Cowling and Barbara Liskov.
USENIX Annual Technical Conference 2012. Boston, MA, USA. Jun 2012.

Abstractions for Usable Information Flow Control in Aeolus
final author list tba
USENIX Annual Technical Conference 2012. Boston, MA, USA. Jun 2012

Census: Location-Aware Membership Management for Large-Scale Distributed Systems
James Cowling, Dan R. K. Ports, Barbara Liskov, Raluca Ada Popa and Abhijeet Gaikwad.
USENIX Annual Technical Conference 2009. San Diego, CA, USA. Jun 2009.

Tolerating Latency in Replicated State Machines
Benjamin Wester, James Cowling, Edmund B. Nightingale, Peter M. Chen, Jason Flinn and Barbara Liskov.
NSDI 2009. Boston, MA, USA. Apr 2009.

MapJAX: Data Structure Abstractions for Asynchronous Web Applications

Daniel Myers, Jennifer Carlisle, James Cowling and Barbara Liskov.

USENIX Annual Technical Conference. Santa Clara, CA, USA. Jun 2007.

HQ Replication: A Hybrid Quorum Protocol for Byzantine Fault Tolerance

James Cowling, Daniel Myers, Barbara Liskov, Rodrigo Rodrigues and Liuba Shrira.

OSDI 2006. Seattle, WA, USA. Nov 2006.

Dynamic Location Management in Heterogeneous Cellular Networks

James Cowling

Honours Thesis, The University of Sydney. Sydney, NSW, Australia. Nov 2004.

Selected Work Experience

Microsoft Research, Cambridge

Jun 2008 – Aug 2008

Research Intern

Research project in automatic document recovery, involving use of symbolic execution, artificial intelligence techniques, and low-level systems programming and debugging.

MIT Computer Science and Artificial Intelligence Laboratory

Sep 2005 – present

Research Assistant, Teaching Assistant

Research Assistantship for Prof. Barbara Liskov, in the Programming Methodology Group. Research into distributed systems, fault tolerance and storage services.

Head Teaching Assistant for 6.033 Computer Systems Engineering 2008, 2009. Course administration, planning tutorials and construction of assessment materials.

National ICT Australia (NICTA)

Nov 2004 – Aug 2005

Research Engineer

Research in location management for cellular networks.

Analysis of telecommunications protocol efficiency for use in satellite communications.

The University of Sydney, School of I.T.

Jul 2003 – Jul 2004

Academic Staff, Researcher

Teaching Assistant for three concurrent programming classes.

Simulation and technical development of Quality of Service in wireless networks.

The University of Sydney, Marketing and Recruitment Unit

Oct 2003 – Dec 2003

Student Advisor, Web Developer

Presenting to large groups of high school students, authoring student magazine articles, staffing help lines, liaising between students and university administration, organizing promotional events.

Overseeing the development of a large website project promoting the university to HSC students.

Programming Languages

My recent development work has primarily been in Java (10,000+ line projects). I also have experience in C, C++ and Python.

Awards and Achievements

- Oakhill College Alumni of Distinction Honor Roll 2012
- University of Sydney Convocation Medal 2005
Awarded for Exceptional Contributions to the Life of the University

- Fulbright Scholarship 2004
Postgraduate Award in Technology and Communications
- University Medal in Computer Science 2004
Awarded by University Senate for Highly Distinguished Merit in Honours study
- Best Honours Student in Computer Science 2004
- Soprano Software Engineering Prize 2004
For best thesis in Computer Science Honours
- Allan Bromley Prize at The University of Sydney 2004
- Sydney University Honours Scholarship, with merit 2004
- School of IT Vacation Scholarship 2003
- International Resident of the Year, University of California, San Diego 2003
- International Exchange Scholarship 2002
To University of California, San Diego
- Outstanding Tutor in Computer Science 2002
- G.S. Caird Scholarship in Computer Science 2002
- Foundation for Information Technology Prize 2002
For Excellence in Computer Science
- Deans Scholarship in Science 2001
For highest-ranked student in Science faculty of The University of Sydney
- Outstanding Mentor in Sydney University Computer Science 2001
- Honorary student member of the Australian Computer Society 2001
- Deans list of Excellence in Academic Performance 2000
- Sir William Tyree Scholarship in Computer Science 2000
- Deans High Honour List in Computer Science 2000 - 2004

Community Service

- Member of EECS REFS at MIT, a student support organization to provide mediation and guidance in student issues.
- Founding member of the MIT CSAIL Student Activities Subcommittee.
- Conducted mediation training, and certified as a practicing mediator in Massachusetts.
- Commissioner for the 2008 MIT CSAIL Lab Olympics.
- President of 2007 MIT Computer Science and AI Lab Student Committee.
- Vice-President and co-founder of Sydney University Beats Society, formed to provide entertainment for students and gain exposure to student DJs.
- Student Liaison Representative for 2004 Computer Science honours students.
- Volunteer for international community at UC San Diego. Organized yearbook, student formal, awards presentation ceremony and culture nights.
- Participated in Computer Science Mentoring Program to assist students in transitioning from secondary school to university.
- Participated in Guide-a-Student Program to acquaint secondary school students with university life.
- Assisted in running International Children's Day 2000, 2001.