

# KEVIN ROSS

Assistant Professor  
Technology and Information Management (TIM)  
University of California, Santa Cruz  
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## RESEARCH INTERESTS

Resource allocation in service networks, queueing theory, policy modeling, stochastic processes, dynamic scheduling, optimization, service enterprise management, call centers, workforce optimization, communication networks

## EDUCATION

- 2004 ***Ph.D. Management Science & Engineering, Stanford University, CA***  
Thesis: "Dynamic Scheduling in Queueing Systems with Applications to Communication Networks" (Advisor: Professor Nicholas Bambos)  
▪ Thesis earned an *honorable mention* in the INFORMS Telecommunications Society Dissertation Competition
- 2001 ***M.S. Engineering-Economic Systems & Operations Research, Stanford University, CA***  
Courses included optimization, stochastic processes, strategy, supply chains, investment science, technology in public policy and computer science algorithms
- 1998 ***B.Sc. Hons, 1st Class, Mathematics, University of Canterbury, New Zealand***  
Honors Thesis: "Multi-path Simulated Annealing Algorithms"

## PROFESSIONAL EXPERIENCE

- Fall 2007 ***Visiting Assistant Professor, London Business School, London, UK***  
Department of Management Science and Operations
- 2004 - present ***Assistant Professor, University of California, Santa Cruz CA***  
Graduate Program Director, Technology and Information Management (TIM)
- 2008-2009 ***Consultant, PA Consulting Group, London, UK***  
*Customer service modeling expert for various clients, Decision Science Practice*
- 2004 – 2008 ***Research Contractor, NASA Ames Research Center, Mountain View CA***  
▪ Led two research projects (1) adaptive control in and (2) air traffic management – scheduling flights for uncertain weather conditions
- 1999 – 2004 ***Research and Teaching Assistant Stanford University, Stanford CA***  
Department of Management Science & Engineering  
Ph.D. research on scheduling for Information Technology
- Summer 2002 ***Research Scientist, Bell Laboratories, Lucent Technologies, Murray Hill NJ***  
Department of Mathematics of Networks and Systems  
▪ Research on optical network scheduling – developed algorithms for national telecommunication network management

- Summer 2000 **Decision Scientist, Eli Lilly and Company, Indianapolis IN**
- Analyzed labor patterns, developed a scheduling tool and made hiring recommendations for a pharmaceutical production plant

## HONORS, AWARDS, DISTINCTIONS

- 2006 **Honorable Mention**, INFORMS Telecommunications Society Dissertation Competition
- 2006 Invited member of the **INFORMS Young Investigator Roundtable**
- One of 26 young researchers selected to engage in discussions on the future research and practice of operations research
- 2001 – 2004 **Harvey Fellow**, Stanford University (Mustard Seed Foundation)
- Awarded to future leaders in fields of strategic importance
- 1999 – 2001 **Gerhard Casper Fellow**, Stanford University (Stanford Graduate Fellowship)
- The highest honor awarded to an entering Ph.D. student in Management Science & Engineering at Stanford University
- 1997 **Brent Wilson Memorial Prize** for applied mathematics, University of Canterbury
- 1994 – 1995 **New Zealand International Mathematical Olympiad** team member
- One of six competitors last two years of high school

## WORKING PAPERS AND RECENT SUBMISSIONS

K. Ross and K. Papadaki, **Optimizing Cost and Performance in Service Networks** (working paper)

K. Ross and K. Fridgeisdottir, **Pricing and Risk Mitigation in Online Advertising**, (*working Paper*)

J. Rios and K. Ross, **Approaches to Efficiently Solving Large-Scale Traffic Flow Management Scheduling Problems**, *Under review for AIAA Journal of Guidance, Control, and Dynamics* (under review)

V. Mehrotra, K. Ross, G. Ryder and Y. Zhou, **Routing to Manage Resolution and Waiting Time in Call Centers with Heterogeneous Servers**, *Under Review for the Journal of Manufacturing and Service Operations Management (MSOM)* (under review)

K. Ross, N. Bambos and G. Michailidis., **Cone Schedules for Processing Systems in Random Environments**, *Under Review for Advances in Applied Probability* (under review)

## BOOK CHAPTERS

K. Ross and N. Bambos. **Geometry of Packet Switching: Maximal Throughput Cone Scheduling Algorithms**. In *Springer-Verlag: High-Performance Packet Switch Architectures* pages 81 - 98. Editors Itamar Elhanany and Mounir Hamdi. Invited chapter, 2006.

K. Ross and N. Bambos. **Adaptive Batch Scheduling for Packet Switching with Delays**. In *Springer-Verlag: High-Performance Packet Switch Architectures*, pages 65 - 78. Editors Itamar Elhanany and Mounir Hamdi. Invited chapter, 2006.

## ARCHIVAL JOURNAL AND FULLY REVIEWED CONFERENCE PAPERS

K. Ross and N. Bambos, **Projective Cone Scheduling (PCS) Algorithms for Packet Switches of Maximal Throughput**, *IEEE/ACM Transactions on Networking*. Volume: 17 Issue: 3, pp. 976-989 (2009)

G. Ryder, K. Ross and J. Musacchio, **Optimal Service Policies Under Learning Effects**, *International Journal of Services and Operations Management*. Vol 4. No. 6, pp. 631-51 (2008)

J. Rios and K. Ross, **Massively parallel Dantzig-Wolfe decomposition applied to traffic flow scheduling**, *Proceedings of the AIAA Guidance, Navigation, and Control Conference* (2009)

J. Rios and K. Ross, **Solving high-fidelity, large-scale traffic flow management problems in reduced time**, *Proceedings of The 8th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference*, (2008)

J. Rios and K. Ross, **Parallelization of the traffic flow management problem**, *Proceedings of the AIAA Guidance, Navigation, and Control Conference*, (2008)

C. Heitz, G. Ryder and K. Ross, **Knowledge Management in Call Centers: How routing rules influence expertise and service quality**, *Manufacturing and Service Operations Management (MSOM) conference*, (2008)

G. Ryder and K. Ross, **Optimal Service Rules in the Presence of Learning and Forgetting**, *Proceedings, Frontiers of Services Conference*, (2007)

J. Rios and K. Ross, **Delay Optimization for Airspace Capacity Management with Runtime and Equity Considerations**, *Proceedings, AIAA Guidance, Navigation, and Control Conference and Exhibit (GNC)* (2007)

K. Ross and N. Bambos, **Job Scheduling for Maximal Throughput in Autonomic Computing Systems**, *International Workshop on Self-Organizing Systems* pages 105-119, (2006)

K. Ross and N. Bambos, **Capacity Maximizing Packet Scheduling Algorithms for Interconnection Networks with Finite Buffers**, *IEEE GLOBECOM* (2006)

G. Ryder and K. Ross, **A Probability Collectives Approach to Weighted Clustering Algorithms for Ad Hoc Networks**, *IASTED Conference on Communication and Computer Networks*, pp. 94-99, (2005)

K. Ross and N. Bambos, **Dynamic Quality of Service Control in Packet Switch Scheduling**, *IEEE International Conference on Communications*, Vol. 1, pp.396-401, (2005)

K. Ross and N. Bambos, **Packet Scheduling Across Networks of Switches**, *International Conference on Networking*, pp.849-856, (2005)

K. Ross and N. Bambos, **Local Search Scheduling Algorithms for Maximal Throughput in Packet Switches**, *Twenty-third Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM)*, pp. 1158-1169, (2005)

K. Ross and N. Bambos, **Optimizing Quality of Service in Prioritized Packet Switch Scheduling**, *IEEE International Conference on Communications*, Vol. 4, pp. 1986-1990, (2004)

K. Ross, N. Bambos, K. Kumaran, I. Saniee and I. Wadjaja, **Scheduling Bursts in Time-Domain Wavelength Interleaved Networks**, *IEEE Journal on Selected Areas in Communications*. Vol. 21, No. 9, pp.1441-1451 (2003)

K. Ross, N. Bambos, K. Kumaran, I. Saniee, and I. Wadjaja, **Dynamic Scheduling of Optical Data Bursts in Time-Domain Wavelength Interleaved Networks**, *11th Symposium on High Performance Interconnects*, pp. 108-113, (2003)

K. Ross and N. Bambos, **Projective Cone Schedules in Queueing Structures; Geometry of Packet Scheduling in Communication Network Switches**, *Allerton Conference on Communication, Control, and Computing*, pp. 626-635, (2002)

## SELECTED RECENT SEMINARS AND CONFERENCE PRESENTATIONS

May 2009	London School of Economics
Oct 2008	Imperial College London
Nov 2007	London Business School
Nov 2007	University of Southampton
March 2007	University of Queensland
Oct 2006	INFORMS Annual Meeting
July 2006	European Conference on Operations Research
June 2006	POMS Service Operations Conference
June 2006	Norwegian Technical University
May 2006	Stanford University Netlab
Apr 2006	Berkeley IEOR Department Seminar
Mar 2006	INFORMS Telecommunications Society Conference
Dec 2005	University of Canterbury
Dec 2005	University of Auckland
Nov 2005	INFORMS Annual Meeting
Nov 2005	Bell Laboratories, Lucent Technologies
Oct 2005	New York University
Oct 2005	IBM Watson Research Center
Oct 2005	Nokia Research
Oct 2005	NASA Ames Research Center
Sep 2005	HP Labs
Sep 2005	IBM Almaden Research Center
July 2005	International Federation of Operational Research Societies Triennial Meeting
June 2005	INFORMS Applied Probability Society Conference

## TEACHING

2007	<b>London Business School, London</b> (Instructor) P157 Stochastic Modeling
2004 - 2007	<b>University of California, Santa Cruz</b> (Instructor) ISM 50: Business Information Systems ISM 206: Optimization Theory and Applications ISM 158: Business Information Strategy ISM 280A: Graduate Research Seminar ISM 270 Service Engineering and Management Crown College Undergraduate Research Fellowship Advisor Ph.D. research advisor to G. Ryder, J. Rios
2002 – 2003	<b>Stanford University</b> (Teaching Assistant)

MS&E 310: Linear Programming

1998 **University of Canterbury** (Teaching Assistant)  
MATH105: Mathematics 1C  
STAT 111: Statistics 1

## ACADEMIC SERVICE

2006 - present **Technical Program Committee** member for the *Workshop on Service-Oriented Engineering and Optimization 2007*, *IEEE International Conference on Computer Communications and Networks 2007*, *IEEE INFOCOM 2007*, *IEEE BROADNETS 2006*, *IEEE Web Information Systems Engineering 2009* conferences.

- Led reviews of original research publications with top research scholars

2005 - 2007 **Director**, TIM Graduate Program

2004 – 2009 **Reviewer**, IEEE ICC, IEEE Transactions on Communications, Management Science, IEEE Transactions on Networking, IEEE Transactions on Parallel and Distributed Systems, Cluster Computing Magazine, the Journal of Networks, Software Tools and Applications, Queueing Systems, Elsevier Computer Networks Journal, IEEE Transactions on Automatic Control

2004 – 2005 **Co-chair**, TIM Junior Faculty Search Committee

2004 – 2005 **Co-chair**, TIM Senior Faculty Search Committee

2001 - present **Member**, INFORMS, MSOM Society, Applied Probability Society, Telecommunications Society, IEEE, NZORS

## PATENTS

K. Kumaran, K.Ross, I. Saniee, I. Wadjaja **Method Of Scheduling Bursts Of Data For Transmission In A Communication Network**, Serial No. 10/426389; Filed April 30, 2003.

## FUNDING

2009 NSF, applications pending

2007 'Robust Scheduling for the National Airspace' (continued fund), UARC, \$27,000

2006 'Traffic Management Investigation', NASA, \$28,316

2006 'Robust Scheduling for the National Airspace', UARC, \$24,303

2006 'Resource Allocation and Pricing for Services', KISMT, \$5,000

2005 'Adaptive Control in Communication Systems', NASA University Aligned Research Program, \$31,958