

## CURRICULUM VITAE

John Musacchio

Technology and Information Management  
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### Education

The University of California, Berkeley	Electrical Engineering and Computer Sciences	Ph.D., 2005
The University of California, Berkeley	Electrical Engineering and Computer Sciences	M.S., 1998
The Ohio State University	Electrical Engineering	B.S., 1996

### Appointments

2005 -	<i>Associate Professor (10- ), Assistant Professor (05-10),</i> Technology and Information Management, Jack Baskin School of Engineering, University of California, Santa Cruz.
2003-2004	<i>Graduate Student Researcher and Instructor,</i> Electrical Engineering and Computer Sciences Department, University of California, Berkeley.
2000-2003	<i>Architecture Mgr. (02-03), Sr. Design Eng. (01-02), Design Eng. (00-01),</i> Terablaze Inc., San Jose, CA.
1996-2000	<i>Graduate Student Researcher,</i> Electrical Engineering and Computer Sciences Department, University of California, Berkeley.

### Fields of Interest

Application of game theory and economics to communication networks; network security; stochastic modeling and control of queuing networks with applications in communications networks.

### Publications in Refereed Journals and Conferences

- L. Dritsoula, P. Loiseau, and J. Musacchio, "A Game-Theoretical Approach for Finding Optimal Strategies in an Intruder Classification Game," *Proc. of the IEEE Conference on Decision and Control (CDC)*, Wailea, HI, December 2012.
- A. P. Azad and J. Musacchio, "Efficiency of a Two-Stage Market for a Fixed-Capacity Divisible Resource," *Proc. of International Conference on NETWORK Games, CONTROL and OPTIMIZATION*, Avignon, France, Nov. 2012.
- L. Dritsoula, P. Loiseau, and J. Musacchio, "Computing the Nash Equilibrium of Intruder Classification Games," *Proc. of the Conference on Decision and Game Theory for Security (GameSec)*, Budapest, Hungary, November 2012.

- J. Musacchio and J. Walrand, "Fluid-Limits to Analyze Long-Term Flow Rates of a Stochastic Network with Ingress Discarding," accepted in *Annals of Applied Probability*, 2012.
- P. Loiseau, G. Schwartz, J. Musacchio, S. Amin, and S. Sastry "Congestion Pricing Using a Raffle-Based Scheme," *Proc. of International Conference on NETWORK Games, CONTROL and OPTimization*, Paris, Oct. 2011.
- A. P. Azad and J. Musacchio, "Unilateral Altruism in Network Routing Games with Atomic Players," *Proc. of International Conference on NETWORK Games, CONTROL and OPTimization*, Paris, Oct. 2011.
- P. Loiseau, G. Schwartz, J. Musacchio, and S. Amin, "Incentive Schemes for Internet Congestion Management: Raffles versus Time-of-Day Pricing," *Proc. of the the 49th Annual Allerton Conference on Communication and Control*, Monticello, IL, Sept. 2011.
- N. Bao, P. Kreidl, and J. Musacchio, "A Network Security Classification Game," *Proc. of the GameNets Conference*, Shanghai, China, April 2011.
- G. Schwartz, J. Musacchio, J. Walrand, and M. Felegyhazi, "Network Regulations and Market Entry," *Proc. of the GameNets Conference*, Shanghai, China, April 2011.
- M. Singer and J. Musacchio, "An International Environmental Agreement for Space Debris Mitigation Among Asymmetric Nations," *Acta Astronautica*, vol. 68, no. 1-2, January- February, 2011, 326-337.
- J. Musacchio and D. Kim, "Network Platform Competition in Two-Sided Market: Implications on Net Neutrality Issue," *Proc. of TPRC 2009: The 37th Research Conference on Communication, Information and Internet Policy*, Arlington, VA, Sept 2009.
- N. Bao and J. Musacchio, "Optimizing the Decision to Expel Attackers from an Information System," *invited paper, Proc. of the the 47th Annual Allerton Conference on Communication and Control*, Monticello, IL, Sept. 2009.
- M. Singer and J. Musacchio, "Model of an International Environmental Agreement among Asymmetric Nations applied to Debris Mitigation," *Proc. of the 22nd Symposium on Space Policy, Regulations and Economics*, Daejeon Korea, October 2009.
- J. Musacchio, G. Schwartz, and J. Walrand, "Network Economics: Neutrality, Competition, and Service Differentiation," *invited book chapter*, to appear in *Next-Generation Internet Architectures and Protocols*, edited by B. Ramamurthy, G. Rouskas, and K. Sivalingam, Cambridge University Press, 25 pages. (2009)
- S. Wu and J. Musacchio, "N-Player Cournot and Price-Quantity Function Mixed Competition," *invited paper, Proc. of the GameNets Conference*, Istanbul, Turkey, May 2009, pp. 88-97.
- J. Musacchio, G. Schwartz, and J. Walrand, "A Two-Sided Market Analysis of Provider Investment Incentives with an Application to the Net Neutrality Issue," *Review of Network Economics*, vol. 8, no. 1, March 2009, pp. 22-39.
- J. Musacchio, S. Wu, "The Price of Anarchy in Differentiated Services Networks," *Proc. of the 46th Annual Allerton Conference on Communication and Control*, Monticello, IL, Sept. 2008, pp. 615-22.
- G. Ryder, K. Ross, and J. Musacchio, "Optimal Service Policies Under Learning Effects," *International Journal of Service Operations Management*, vol. 4, no. 6, 2008, pp. 631-51.
- J. Musacchio, G. Schwartz, and J. Walrand, "Network Neutrality and Provider Investment In-

- centives,” *invited paper, Proc. of the Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2007, pp. 1437-44.
- J. Musacchio and S. Wu, “The Price of Anarchy in a Network Pricing Game,” *Proc. of the 45th Annual Allerton Conference on Communication and Control*, Monticello, IL, Sept. 2007, pp. 882-891.
- R. Gupta, J. Musacchio, and J. Walrand, “Sufficient Rate Constraints for QoS Flows in Ad-Hoc Networks,” *Ad-Hoc Networks*, vol. 5, no. 4, May 2007, pp. 429-43.
- J. Musacchio, J. Walrand, and S. Wu, “A Game Theoretic Model for Network Upgrade Decisions,” *Proc. of the 44th Annual Allerton Conference on Communication and Control*, Monticello, IL, Sept. 2006, pp. 191 - 200.
- J. Musacchio and J. Walrand. “WiFi Access Point Pricing as a Dynamic Game.” *IEEE/ACM Transactions on Networking*, vol. 14, no. 2, April 2006, pp. 289-301.
- J. Musacchio and J. Walrand, “WiFi Access Point Pricing as a Dynamic Game,” *Proc. of Seventh INFORMS Telecommunications Conference*, Boca Raton, Florida, March 2004, 3 pages.
- A. Dimakis, L. He, J. Musacchio, H. S. W. So, T. Tung and J. Walrand, “Adaptive Quality of Service for a Mobile Ad Hoc Network,” *Proc. of the International Conf. on Mobile and Wireless Communication Networks*, Singapore, Oct. 2003, 4 pages.
- J. Musacchio and J. Walrand, “Game Theoretic Modeling of WiFi Pricing,” *invited paper, Proc. of the 41st Annual Allerton Conference on Communication and Control*, Monticello, IL, Oct. 2003, pp. 779-88.
- M. Moore, J. Musacchio, and K. Passino, “Genetic Adaptive Control for an Inverted Wedge: Experiments and Comparative analyses,” *Engineering Applications of Artificial Intelligence*, vol. 14, no. 1, Feb. 2001, pp. 1-14.
- M. Moore, J. Musacchio, and K. Passino, “Genetic adaptive control for an inverted wedge,” *Proc. of the 1999 American Control Conference*, 1999, pp. 400-4.
- N. Jakatdar, X. Niu, J. Musacchio, and C. Spanos, “In-situ metrology for deep ultraviolet lithography process control,” *Proc. of the SPIE - The International Society for Optical Engineering*, vol. 3332, 1998, pp. 262-70.
- J. Musacchio, S. Rangan, C. Spanos, and K. Poolla, “On the Utility of Run to Run Control in Semiconductor Manufacturing,” *Proc. of 1997 IEEE International Symposium on Semiconductor Manufacturing Conference*, San Francisco, October 1997. pp. D9-D12.

### Other Significant Publications

- J. Musacchio, “The Price of Anarchy in Parallel - Serial Competition with Elastic Demand,” in revision.
- G. Agrawal, J. Musacchio, J. Mo, and J. Walrand, “Characterizing Transmission of Data Segments Within a Switch Fabric Using Multiple Counters for Each Destination Node,” U.S. Patent 7,480,246, Issued January 20, 2009.
- J. Musacchio, J. Walrand, R. Myers, S. Parekh, J. Mo, and G. Agrawal, “Backpressure Mechanism for Switching Fabric,” U.S. Patent 7,426,185, Issued September 16, 2008.
- G. Agrawal, J. Musacchio, J. Mo, and J. Walrand, “Deficit-based striping algorithm,” U.S. Patent

7,319,695, Issued January 15, 2008.

J. Musacchio, *Pricing and Flow Control in Communications Networks*. PhD Dissertation, Department of Electrical Engineering and Computer Sciences, UC Berkeley, Jan. 2005.

## Professional Service

Session organizer for GameNets 2011

Served on NSF Panels 2009, 2011, 2012

Technical Program Committee for NetEcon conference 2009, 2011

Technical Program Committee for INFOCOM 2007 conference

Session organizer for Asilomar 2007

Reviewer for *IEEE Transactions on Communications*, *IEEE 2005 Globecom conference*, *Journal on Selected Areas of Communications*, *Computer Networks*, *EURASIP Journal on Wireless Communications and Networking*, *IEEE/ACM Transactions on Networking*, *RAIRO - Operations Research*, *Review of Network Economics*

## Invited Lectures

May 2011, "A Two-Sided Market Analysis of Provider Investment Incentives with an Application to the Net-Neutrality Issue," UCLA EE Seminar, invited talk.

February 2010, "Network Platform Competition in a Two-Sided Market: Implications to the Net Neutrality Issue," Information Theory and Applications Workshop, UC San Diego, invited talk.

March 2009, "The Price of Anarchy in Parallel - Serial Competition with Elastic Demand," OptimA Conference, University of Illinois at Urbana Champaign Industrial and Enterprise Systems Engineering, invited talk.

February 2009, "The Price of Anarchy in Parallel - Serial Competition with Elastic Demand," Information Theory and Applications Workshop, UC San Diego, invited talk.

April 2008, "A Two-Sided Market Analysis of Provider Investment Incentives With an Application to the Net-Neutrality Issue," Caltech Computer Science Seminar, invited talk.

October 2006, Panel on Future Internet Architecture, BroadNets Conference, invited panelist.

October 2006, "Game Theory for Understanding Pricing and Delivery of Internet Services." Industrial Engineering and Operations Research Seminar, UC Berkeley, " invited talk.

October 2005, Workshop on Queuing Games, Washington University School of Business, invited discussant.

July 2005, "Achieving Fair Rates in a Stochastic Network with Ingress Flow Control," INFORMS Applied Probability Conference, refereed abstract.

June 2005, "Achieving Fair Rates with Ingress Policing," ACM Sigmetrics Conference, Banff, Canada, invited talk.

July 2004, "Wi-Fi Access Point Pricing as a Dynamic Game," Workshop on Economics of Communications Networks, Montreal, Canada, invited talk.

## Grants

NSF, “CAREER: Markets for Network Services,” J. Musacchio 2010-2015.

AFOSR, “Out-learning Attackers: A Game Theoretic Approach to Cyber Defense,” J. Musacchio at UCSC primary, G. Frazier at BAE Systems subcontractor, 2009-2012.

NSF, “NetSE: Large: Collaborative Research: Improving Internet Incentives,” Collaborative with J. Walrand and V. Ananthram of UC Berkeley, and S. Parekh of Alcatel-Lucent, 2009-2013

UCSC/NASA University Affiliated Research Center, “Market Mechanisms for Near-Real-Time Landing and Takeoff Slot Allocation,” J. Musacchio (PI), P. Mantey (Co-PI), 2009-2010.

UCSC/NASA University Affiliated Research Center, “Space Traffic Management Research Center,” P. Mantey (PI), G. Elkiam and J. Musacchio (Co-PIs), 2008-2010.

Naval Post Graduate School, “Reliable Networks for Homeland Security,” P. Mantey (PI), J. Musacchio and K. Obraczka (Co-PIs), 2008-2009.

NSF, “Collaborative Research: NSF-Find: Market-Enabling Network Architecture,” Collaborative with J. Walrand and V. Ananthram of UC Berkeley, and S. Parekh of Alcatel-Lucent, 2006-2009.