

Soumya Sen

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University of Minnesota
Minneapolis, MN 55455

Contact Information

Email: ssen@umn.edu

Education

University of Pennsylvania, PA
Ph.D. in Electrical & Systems Engineering 2011
Thesis: "On the Economic Viability of Network Systems & Architectures"
Advisors: Dr. Roch Guérin, EECS, and Dr. Kartik Hosanagar, Wharton

University of Pennsylvania, PA
M.S. in Electrical & Systems Engineering 2008

Birla Institute of Technology & Science (BITS), Pilani, India
B.E. (Hons.) in Electronics & Instrumentation Engineering 2005

Work Experience

University of Minnesota, MN
Assistant Professor, Information & Decision Sciences 2013-
Director of Research, MISRC 2018-
Faculty, UMN Social Media & Business Analytics Collaboration 2013-
Faculty, UMN Digital Technology Center 2017-

Princeton University, NJ
Postdoctoral Research Associate, Engineering & Applied Sciences 2011-2013
Mentor: Dr. Mung Chiang (presently Dean of Engineering, Purdue)

DataMi (TUBE Inc.), MA 2013-
Co-founder
Offers sponsored data and pricing solutions to Internet service providers worldwide (e.g., AT&T, Telefonica, Orange, MTN). Released a popular mobile bandwidth management app (*DataWiz*) with 500K+ users and was covered widely in the media.

VietTel Communications, Vietnam 2017
Consultant, VTTEK Group

Intel Research, CA May-Aug 2007
Intern, Communications Technology Group

Bell Labs Research, NJ May-Aug 2006
Intern, Networking Research Laboratory

LG, India Jan-June 2005
Intern, Mobile Handset Development Lab

Research Areas

IT Systems Design, Network economics, Security, Social networks
Citations: 1,676 (Google Scholar)

Honors

Mary & Jim Lawrence Fellow 2018
Awardee: Carlson School of Management

Adobe Digital Experience Research Award 2018

Awardee: Adobe

IEEE INFOCOM Best Workshops Paper Runner-up Award 2017
Awardee: The Institute of Electrical and Electronics Engineers & Bell Labs

Outstanding Service Award 2017
Awardee: Carlson School of Management

IEEE Senior Member 2016
Awardee: The Institute of Electrical and Electronics Engineers

Timothy J. Nantell Grant for Excellence in Teaching 2016
Awardee: Carlson School of Management

INFORMS ISS Design Science Award 2014
Awardee: Information Systems Society

Keller Center IP Acceleration Award 2013
Awardee: Princeton University

IEEE INFOCOM Best Paper Award 2012
Awardee: The Institute of Electrical and Electronics Engineers

BITSAA 30 Under 30 Award 2012
Awardee: Birla Institute of Technology & Sciences Alumni Association

Vodafone Wireless Innovation Award (Finalist) 2011
Awardee: Vodafone

Teaching

Introduction to Programming (IDSC 3101)
Intermediate Programming (IDSC 3102)
Information Technology & Solutions (IDSC 6050)
Experiential Learning (MSBA 6450)
Modeling & Heuristics for Decision Making & Support (MSBA 6450)
Innovating with Technology: Global IT Entrepreneurship in China (IBUS 3055 - S'19)
Effectively Managing Your Organization's Cyber-Security Risks (Exec Ed - 2019)

University Services

- Director of Research, MISRC, Sep 2018 -
- Member, Honors Thesis Award Committee, 2018
- Member, Committee for IDSC 3101-3102 curriculum design, 2018 -
- Member, Committee for IDSC Online MBA core, 2018 -
- Chair, University Learning Technology Advisors (ULTA) committee for the Provost, 2017-present
- PhD committee, A. Narayanan - Dept. of Computer Sci., UMN, 2017 - present
- Proposer, Global IT Entrepreneurship course in China, 2017 -
- Instructor, Coursera MIS Major - 2017 - present
- Mentor, Adobe Analytics Challenge for MSBA students, 2017 - present
- Member, University Learning Technology Advisors (ULTA), 2016-2017
- Introduced the new fully online PTMBA core course: Information Technology & Solutions (IDSC 6050) - 2015 - present

- PhD student recruitment committee of IDS, 2014 - 2015

Academic Leadership

- Associate Editor, Special Issue of Information Systems Research, 2019
- Chair, Smart Data Pricing Forum - Carlson School of Management, May 2018
- Steering Committee Member, IEEE Workshop on Smart Data Pricing 2016, 2017
- Associate Editor, JAIS Special Issue on “Addressing Societal Challenges through Analytics”, 2017
- Guest Editor, IEEE Network Special Issue on Smart Data Pricing, 2015
- General co-Chair: IEEE Workshop on Smart Data Pricing (SDP) 2015 (Hong Kong), SDP 2014 (Toronto), SDP 2013 (Turin, Italy), SDP 2012 (Princeton)
- Panel Chair, National Exchange Carrier Assoc. Expo 2012 (Seattle), IEEE GLOBECOM Industry Forum 2012 (Los Angeles), CISS 2012 Track on Ad-hoc Networks (Princeton)
- Organizer, Forum for Collaboration between Internet Service Operators of Minnesota and the University of Minnesota - Twin Cities, January, 2014
- Co-chair, IT Teaching Workshop, Minneapolis, 2014.

Academic Services

- Research Prototypes & Teaching Tool Awards Chair, WITS 2019
- Technical Program Committee: ECOFEC 2019, ECIS 2019, WITS 2018, CIST 2018, NetGCoop 2018, ECIS 2018, WITS 2017, CIST 2017, ICIS 2017, ECIS 2017, WITS 2016, ICIS 2016, CIST 2016, ACM MobiData 2016, CIST 2015, IEEE GameNets 2014, ICEC 2014, NetGCoop 2014, Globecom SAC 2014, IEEE GLOBECOM 2013, SDP 2012
- Conferences reviewed for: WITS 2017, WITS 2016, WISE 2016, CIST 2015, WITS 2014, IEEE INFOCOM 2012, CISS 2012, ISIT 2012, CDC 2012, MILCOM 2012, CoNEXT 2011, WiOpt 2011
- Journals reviewed for:
 - INFORMS Journal on Computing
 - INFORMS Information Systems Research
 - INFORMS Management Science
 - INFORMS Operations Research
 - Management Informations Systems Quarterly
 - Journal of MIS
 - Journal of AIS
 - Production and Operations Management
 - IEEE/ACM Transactions on Networking
 - IEEE Journal on Selected Areas in Communications
 - IEEE Transactions on Network and Service Management
 - IEEE Transactions of Information Technology
 - IEEE Transactions on Multimedia
 - IEEE Transactions on Parallel & Distributed Computing
 - IEEE Transactions on Multi-Scale Computing Systems
 - IEEE Transactions on Services Computing
 - IEEE Transactions on Cognitive Communications & Networking

- IEEE Transactions on Communications
 - IEEE Transactions on Automatic Control
 - IEEE Transactions on Vehicular Technology
 - IEEE Wireless Communications Magazine
 - IEEE Internet Computing
 - ACM SIGCOMM Computer Communication Review
 - Communications of the ACM
 - Elsevier Computer Networks
 - Elsevier’s Decisions Support Systems
 - Springer’s Computational Management Science
- Media Coverage of research in Forbes, MIT Technology Review, The Wall Street Journal, Yahoo News, ACM Tech News, CNET, Politico, Knowledge@Wharton, MN Daily, MinnPost, WCCO-TV

Patents

- “Systems and methods for variable pricing of data usage”, US9865009B2, 2018
- “Systems and methods for time dependent Internet pricing”, US2013/0226669 A1, 2013

Book & Special Issues

1. Editor, “Innovation in Network Pricing,” IEEE Networks, vol. 30:2, 2016
2. Editor, “Smart Data Pricing,” ISBN: 978-1-118-61166-1, 536 pages, John Wiley & Sons, September 2014

Book Chapters

1. C. Joe-Wong, L. Zheng, S. Ha, S. Sen, C. W. Tan, M. Chiang, “Smart Data Pricing in 5G Systems,” Emerging Technologies for 5G Wireless Systems (ed. 1), **Cambridge University Press**, 2017
2. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, “Human Factors in Smart Data Pricing”, Smart Data Pricing, **John Wiley & Sons**, September 2014
3. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, “Smart Data Pricing (SDP): Economic Solutions to Network Congestion,” Chapter 5, **ACM SIGCOMM eBook** on “Recent Advances in Networking”, August 2013

Journal Publications

1. C. Joe-Wong, S. Sen, “Harnessing the Power of Cloud: Revenue and Fairness Considerations in Multi-Resource Allocations,” **Journal of MIS**, 2018
2. C. Joe-Wong, S. Ha, S. Sen, “Sponsored Data: Analyzing the Impact on the Internet Stakeholders,” **IEEE/ACM Transactions on Networking**, 2018
3. Y. Im, C. Joe-Wong, S. Ha, S. Sen, T. Kwon, M. Chiang, “AMUSE: Empowering Users for Cost-Aware Offloading with Throughput-Delay Tradeoffs,” **IEEE Transactions on Mobile Computing**, pp. 1062-1076, vol. 15:5, 2016
4. F. Wong, C. W. Tan, S. Sen, M. Chiang, “Quantifying Political Leaning from Tweets, Retweets, and Retweeters,” **IEEE Transactions on Knowledge and Data Engineering**, vol. 28(8), 2158-2172, 2016
5. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, “Smart Data Pricing: Using Economics To Manage Network Congestion,” **Communications of the ACM**, (Top CS publication. Impact Factor: 2.87), December 2015

6. C. Joe-Wong, S. Sen, S. Ha, "Offering Supplementary Network Technologies: Adoption Behavior and Offloading Benefits," **IEEE/ACM Transactions on Networking** (ranked 2nd among all Computer Science journals by Times Higher Education), pp. 355-368, vol. 23: 2, 2015
7. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "A Survey of Broadband Data Pricing: Past Proposals, Current Plans, and Future Trends," **ACM Computing Survey**, pp. 1-37, vol. 46, issue 2, November 2013 (Top CS journal. Impact Factor: 5.24)
8. C. Joe-Wong, S. Sen, T. Lan, M. Chiang, "Multi-Resource Allocation: Fairness-Efficiency Tradeoffs in a Unifying Framework," **IEEE/ACM Transactions on Networking** (ranked 2nd among all Computer Science journals by Times Higher Education), pp. 1785-1798 vol. 21:6, 2013
9. C. Joe-Wong, S. Sen, S. Ha, M. Chiang, "Optimized Day-Ahead Pricing for the Smart Grid with Device-Specific Scheduling Flexibility," **IEEE Journal on Selected Areas in Communications** (ranked 1st among all Computer Science journals by Times Higher Education), pp. 1075-1085, vol. 30, no. 6, July 2012
10. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "Incentivizing Time-Shifting of Data: A Survey of Time-Dependent Pricing for Internet Access", **IEEE Communications** (Impact Factor: 4.46), pp. 91-99, November 2012
11. S. Sen, R. Guérin, K. Hosanagar, "Functionality-rich versus Minimalist Platforms: A Two-sided Market Analysis", **ACM SIGCOMM Computer Communication Review**, pp. 36-43, vol. 41, issue 5, 2011
12. S. Sen, Y. Jin, R. Guérin, K. Hosanagar, "Modeling the Dynamics of Network Technology Adoption and the Role of Converters," **IEEE/ACM Transactions on Networking** (ranked 2nd among all Computer Science journals by Times Higher Education), pp. 1793-1805, vol. 18:(6), 2010
13. H. Peterson, S. Sen, J. Chandrashekar, L. Gao, R. Guerin, Z.-L. Zhang, "Message-efficient dissemination for loop-free centralized routing," **ACM SIGCOMM Computer Communication Review**, pp. 65-74, vol. 38, Issue 3, 2008
14. S. Sen, R. Vikas, V. K. Chaubey, "Designing and simulation of a modified WDM ring network with improved grade of service," pp. 266-277, vol. 11, **Elsevier Optical Fiber Technology**, 2005

Working Papers

1. S. Sen, R. Guérin, K. Hosanagar, X. Li, "Shared or Dedicated Infrastructures?: On the Impact of Re-provisioning" (Minor R&R in MISQ)
2. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "Time-Dependent Pricing of Mobile Data: Model, System & Field Trial" (R&R in ISR)
3. R. Bapna, A. Gupta, J. Jung and S. Sen, "Analyzing the Impact of Incentive Structure on Referral Program Design: Evidence from Two Experiments" (to be submitted to POM)
4. S. Sen, G. Burtch, A. Gupta, R. Rill, "Incentive Design for Ad-Sponsored Content: Results from an Experiment" (work in progress; undergoing 2nd round of experiments)
5. A. Gupta, W. Ketter, S. Sen, "Using Optimal Grid Resources for Coordinating Electrical Vehicle Charging" (work in progress)
6. C. Joe-Wong, S. Sen, A. Gupta, "On the Role of Congestion Externalities in Internet Fragmentation" (work in progress)

**Conference &
Workshop
Publications**

1. S. Sen, G. Burtch, A. Gupta, R. Rill, "Incentive Design for Ad-sponsored Content," **SCECR 2017 & WITS 2017**
2. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "Time-Dependent Pricing in Mobile Data Plans: Results from a field deployment in Alaska," **WITS 2016**
3. Y. Wang, C. Joe-Wong, S. Sen, "Congestion Externalities, Content Exclusivity, and Internet Fragmentation," **WITS 2016**
4. S. Sen, C. Joe-Wong, S. Ha, and M. Chiang, "Time-Dependent Pricing of Mobile Data," **SCECR 2016**
5. K. Valogianni, A. Gupta, W. Ketter, S. Sen and E. Van Heck "Using Optimal Grid Resources for Coordinating Electrical Vehicle Charging," Winter Conference on Business Intelligence, **WCBI 2016**
6. K. Valogianni, A. Gupta, W. Ketter, S. Sen and E. Van Heck "Maximizing Social Welfare in Grid Resource Allocation in Electric Vehicle Charging," **WITS 2015**
7. S. Sen, "On the Role of Converters in the Adoption of New Network Technologies," Annual Meeting of **INFORMS 2015**
8. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "Time-dependent Pricing For Mobile Data: Analysis, Systems, And Trial," Annual Meeting of **INFORMS 2015** (invited)
9. K. Valogianni, A. Gupta, W. Ketter, S. Sen, E. van Heck, "Maximizing Social Welfare in Grid Resource Allocation for Electric Vehicle Charging," Conference on Information Systems, **CIST 2015**
10. C. Joe-Wong, S. Ha, S. Sen, and M. Chiang, "Do Mobile Data Plans Affect Usage? Results from a Pricing Trial with ISP Customers", Passive and Active Measurement Conference, **PAM 2015**
11. A. Seethaiseelan, G. Tyson, S. Sen, "Exploring the Role of Smart Data Pricing in Enabling Affordable Internet Access," IEEE INFOCOM Workshop on Smart Data Pricing, **SDP 2015**
12. R. Bapna, A. Gupta, J. Jung, S. Sen, "A Randomized Field Experiment to Study the Impact of Incentives on the Diffusion of Mobile Social Games", 26th Workshop on Information Systems and Economics **WISE 2014**
13. R. Bapna, A. Gupta, J. Jung, S. Sen, "Analyzing the Impact of Incentive Structure on the Diffusion of Mobile Social Games: A Randomized Field Experiment," **MIT CODE & SCECR 2014**
14. S. Sen, "On Economic Models of Network Technology Adoption, Design, and Viability," IETF/IRTF Internet Architecture Board (IAB), U. of Cambridge, Workshop on Internet Technology Adoption & Transition, **ITAT 2013**
15. C. Joe-Wong, S. Sen, "Pricing the Cloud: Resource Allocation, Fairness, and Revenues," Workshop on Information Technology & Systems **WITS 2013**
16. S. Sen, "Smart Data Pricing: Research Agenda and Directions", Univ. of Illinois - Urbana Champaign, **Allerton Conference 2013**
17. S. Sen, C. Joe-Wong, S. Ha, J. Bawa, M. Chiang, "When the Price is Right: Enabling Time-Dependent Pricing of Broadband Data," **ACM SIGCHI 2013** (the flagship conference in Computer-Human Interaction; acceptance rate: 18% of 1963 submissions)
18. C. Joe-Wong, S. Sen, S. Ha, "Offering Supplementary Wireless Technologies: Adoption Behavior and Offloading Benefits," **IEEE INFOCOM 2013** (flagship conference of IEEE in networks; *Acceptance rate: 17%*)

19. M. H. R. Khouzani, S. Sen, N. Shroff, "An Economic Analysis of Regulating Security Investments in the Internet," **IEEE INFOCOM 2013** (*Acceptance rate: 17%*)
20. S. Ha, S. Sen, C. Joe-Wong, Y. Im, M. Chiang, "TUBE: Time Dependent Pricing of Mobile Data", Proc. of **ACM SIGCOMM 2012** (flagship conference of ACM in networks; *Acceptance rate: 13%*)
21. Y. Im, C. Joe-Wong, S. Ha, S. Sen, T. Kwon, M. Chiang, "AMUSE: Empowering Users for Cost-Aware Offloading with Throughput-Delay Tradeoffs," **IEEE INFOCOM 2013**, Turin, Italy (*Acceptance rate: 17%*)
22. M. Khouzani, S. Sen, N. Shroff, "Incentive Analysis of Bidirectional Filtering in the Internet," Wksp. on the Econ. of Information Security, **WEIS 2013**
23. Y. Xiang, B. Balasubramanian, M. Wang, T. Lan, S. Sen, M. Chiang, "Self-adaptive, Deadline-aware Resource Control in Cloud Computing," AHANS workshop of Self-Adaptive and Self-Organizing systems conference, **SASO 2013**
24. F. M. F. Wong, C. W. Tan, S. Sen, M. Chiang, "Quantifying Political Leanings from Tweets and Retweets," Proc. of International AAAI Conference on Weblogs and Social Media, **ICWSM 2013** (*Acceptance rate: 20%*)
25. J. Chen, S. Sen, D. J. Dorsey, M. Chiang, "A Framework for Energy-efficient Adaptive Jamming of Adversarial Communications", Proc. of Conference on Information Sciences and Systems, **CISS 2013**
26. S. Sen, D. J. Dorsey, R. Guerin, M. Chiang, "Analysis of Slotted Aloha with Multipacket Messages in Clustered Surveillance Networks", IEEE International Conference for Military Communications, **MILCOM 2012**
27. M. H. R. Khouzani, S. Sen, N. B. Shroff, "Managing the Adoption of Asymmetric Bidirectional Firewalls: Seeding and Mandating", IEEE Global Communications Conference, **GLOBECOM 2012**
28. S. Ha, C. Joe-Wong, S. Sen, R. Rill, M. Chiang, "Demo: A System for Time-Dependent Pricing," IEEE International Conference on Mobile Systems, Applications, and Services, **MobiSys 2012**
29. S. Sen, C. Joe-Wong, S. Ha, "The Economics of Shared Data Plans", Workshop of Information Technologies and Systems, **WITS 2012**
30. F. M. F. Wong, S. Sen, M. Chiang, "Why Watching Movie Tweets Won't Tell the Whole Story?", ACM SIGCOMM Workshop on Online Social Networks, **WOSN 2012** (*Acceptance rate: 20%*)
31. P. Zakin, S. Sen, M. Chiang, "Aperator: A new Twitter command tool for enabling application-specific actions", USENIX Conference on **WebApps 2012**
32. S. Wagner, E. van den Berg, J. Giacopelli, A. Ghetie, J. Burns, M. Tauil, M. Wang, S. Sen, M. Chiang, T. Lan, R. Laddaga, P. Robertson, P. Manghwani, "Autonomous, Collaborative Control for Resilient Cyber Defense (ACCORD)", Workshop on Adaptive Host and Network Security, **AHANS 2012**
33. C. Joe-Wong, S. Sen, T. Lan, M. Chiang, "Multi-Resource Allocation: Fairness-Efficiency Tradeoffs in a Unifying Framework," **IEEE INFOCOM 2012** (*Acceptance rate: 17%*), Winner of the **Best Paper Award**
34. S. Ha, C. Joe-Wong, S. Sen, M. Chiang, "Pricing by Timing: Innovating Broadband Data Plans", SPIE Broadband Access Communication Technologies VI Conference, **OPTO 2012**
35. C. S. Leberknight, S. Sen, M. Chiang, "On the Volatility of Online Ratings: An Empirical Study," Workshop on e-Business, **WEB 2011**, Lecture Notes in Business Information Processing, Springer-Verlag, December 2011.

36. S. Sen, K. Yamauchi, R. Guérin, K. Hosanagar, “The Impact of Re-provisioning on the Choice of Network Infrastructures,” Proc. of the Workshop on e-Business, **WEB 2010**
37. S. Sen, R. Guerin, K. Hosanagar, “Shared versus separate networks: The impact of re-provisioning,” CoNEXT ReArchitecting the Internet, **ReArch 2009**
38. S. Sen, Y. Jin, R. Guérin, K. Hosanagar, Z.-L. Zhang, “Dynamics of competition between incumbent and emerging network technologies,” Proc. of ACM SIGCOMM Workshop on Network Economics, **NetEcon 2008**

Invited Talks

- “Designing IT systems for secure and resilient networks,” **University of Arizona MIS Speaker Series**, 2017
- “Workshop: Smart Data Pricing,” **VietTel** - the largest mobile operator in Vietnam and serving niche markets in Asia and Africa, 2017
- “Incentive Design for Ad-Sponsored Data Plans,” **The Chinese University of Hong Kong**, 2017
- “Information Technology & Solutions: Culturalization of IT for Emerging Markets,” **IT Teaching Workshop**, 2017
- “Developing IT Solutions for Sustainable Demand Growth on the Internet,” **Georgia Tech ITM Distinguished Speaker Series**, March 2017
- “Time-dependent Pricing For Mobile Data,” **TEIS 2017**
- “On the Role of Incentive Structure in Word-of-Mouth based Adoption of Mobile Apps,” **Columbia University, Carnegie Mellon University - Silicon Valley, & Princeton University**, 2016
- “Developing IT Solutions for Sustainable Demand Growth on the Internet,” Policy, Awareness, Security & Sustainability Workshop, **WITS**, 2016
- “On the Role of Converters in the Adoption of New Network Technologies,” Annual Meeting of **INFORMS 2015**
- “Exploring the Role of Smart Data Pricing in Enabling Affordable Internet Access,” IEEE INFOCOM Workshop on **Smart Data Pricing**, Hong Kong, June 2015
- “On Creating an Affordable Internet With Smart Data Pricing,” invited talk at **IETF/IRTF Workshop on Global Access to the Internet for All (GAIA)**, University of Cambridge, UK, 2014
- “A Randomized Field Experiment to Study the Impact of Incentives on the Diffusion of Mobile Social Games”, Workshop on Information Systems and Economics **WISE**, Auckland, NZ, 2014
- “Smart Data Pricing: Research Agenda and Directions”, invited talk at **Univ of Illinois - Urbana Champaign**, Allerton Conference, 2013
- “Directions in Smart Data Pricing: Lessons from Theory & Practice”, invited talk at **Alcatel-Lucent Bell Labs**, Murray Hill, & **Time Warner Cable**, NYC, January 2013
- “Shared or Dedicated Infrastructures?: On the Impact of Reprovisioning,” invited talk at **University of Washington, University of Minnesota - Twin Cities, and University of Illinois Chicago**, 2013
- “Smart Data Pricing for Broadband Networks”, invited talk at **Georgia Institute of Technology Workshop on Internet Technology & Economics (WITE)**, November, 2012

- “Shared Data Plans & Sponsored Access”, invited talk at the **National Exchange Carrier Association (NECA) Expo**, Seattle, October, 2012. Also presented at WITS 2012
- “Time Dependent Pricing for Mobile Data”, invited talk at **Bell Labs**, Crawford Hill, May, 2012
- “Exploring the Trade-offs between Functionality-rich and Minimalist Design: A Two-sided Market Analysis”, presented at the **University of Minnesota**, Minneapolis, December, 2010
- “On the Adoption and Deployment of New Network Technologies: An Economic Perspective”, presented at the **Georgia Institute of Technology**, Atlanta, November, 2010
- “Dynamics of Network Technology Competition - the Role of Gateways,” presented at 2nd Computer Sciences & Economics Day, **New York Academy of Sciences**, November, 2009

Funding Proposals

- “Designing Effective Ad-Video Delivery Strategies,” Adobe Digital Research Award (\$50k), 2018.
- “Smart Data Pricing Workshop Sponsorship,” WITS (\$3k), 2018.
- “MIS Specialization,” Coursera (\$75k), 2017.
- “Understanding the Community Ecology of Alternative Fuel Vehicle Adoption Using Data Analytics and Mobile Technology in Randomized Field Trials,” UoM Provost’s Grand Challenge Research Initiative, 2017.
- “Exploring How the Temporal Evolution of Referral Reward Structure Impacts Viral Adoption: A Randomized Field Trial,” \$5K sponsored by SOBACO (Social Media and Online Business Collaboration), Univ. of Minnesota, 2015.
- “On the Efficacy of Sponsored Content for Mobile Broadband Data Users (Pilot Trial Funding)”, \$5K from Dean’s Small Grant Carlson School, Univ. of Minnesota, 2014.
- “Understanding the Impact of Incentives on the Offline Adoption of Mobile Social Game Apps”, \$5K sponsored by SOBACO (Social Media and Online Business Collaboration), Univ. of Minnesota, 2014.
- “On the Efficacy of Sponsored Content for Mobile Broadband Data Users”, \$32K Grant-in-Aid, Univ. of Minnesota, 2014.
- “DataMi: Finding Solutions to Network Congestion”, \$100K Princeton IP Accelerator Fund, 2013.
- “Autonomous Collaborative Control for Resilient Cyber Defense (ACCORD)”, \$6M funded by DARPA, co-written with M. Chaing, Telcordia (Stuart S. Wagner et al.), DOLL Inc., and GWU, 2011.
- “TUBE-ing over Digital Divide”, Vodafone Wireless Innovations Project 2011 Finalist, San Francisco, CA, with M. Chaing, S. Ha, C. Joe-Wong, 2011.
- “Pricing Innovations Forum” (whitepaper), an initiative to form a consortium of service providers, vendors, academics, and Government agencies for Pricing for Sustainable Broadband, with M. Chiang. (Subsequently became “Smart Data Pricing (SDP) Forum” in 2012, <http://scenic.princeton.edu/SDP2012/>).

Media Coverage

- “Trump administration’s repeal of net neutrality a big gift to America’s internet providers,” S. Brodey, MinnPost, Nov 29, 2017
- “Everyone claims to be for an open internet. So what’s the latest net neutrality fight really about?,” S. Brodey, MinnPost, July 17, 2017
- “The Net Neutrality Debate: Why There Is No Simple Solution,” Forbes, May 31, 2017 (<https://www.forbes.com/sites/nelsongranados/2017/05/31/the-net-neutrality-debate-why-there-is-no-simple-solution/>)
- “How Will the Vodafone-Idea Merger Shape India’s Telecom Market?,” Knowledge@Wharton, April 4, 2017 (<http://knowledge.wharton.upenn.edu/article/will-vodafone-india-idea-cellular-merger-shape-indias-telecom-market/>)
- “Insta-Famous,” Y. Lee, The Minnesota Daily, April 26, 2016 (<http://www.mndailyprojects.com/insta-famous>)
- “How Facebook Lost Its Face In India,” Knowledge@Wharton, February 15, 2016 (<http://knowledge.wharton.upenn.edu/article/how-facebook-lost-face-in-india/>)
- “Good Question: What Are The Password Rules For Streaming Services?” H. Brown, CBS Minnesota, September 21, 2015 (<http://minnesota.cbslocal.com/2015/09/21/good-question-what-are-the-password-rules-for-streaming-services/>)
- “Net Neutrality Goes Into Effect: What Consumers Should Expect”, N. Granados, Forbes, June 11, 2015 (<http://www.forbes.com/sites/nelsongranados/2015/06/11/net-neutrality-goes-into-effect-what-consumers-should-expect/>)
- “New Net Neutrality Rules Take Effect: What You Should Know,” N. Arce, Tech Times, June 12, 2015 (<http://www.techtimes.com/articles/59915/20150612/new-net-neutrality-rules-take-effect-what-you-should-know.htm>)
- “The Real Threat to Net Neutrality,” S. Sen and A. Gupta, LiveMint (Op-ed in The Hindustan Times, one of the largest daily newspapers of India), April 20, 2015 (<http://www.livemint.com/Opinion/xLMD24lnahPmBfHBE13xaN/The-real-threat-to-Net-neutrality.html>)
- “Will Free Data Become the Next Free Shipping?,” R. Knutson, Wall Street Journal (discusses Prof. Sen’s startup, DataMi’s, efforts in offering sponsored content for affordable Internet), October 24, 2014 (<http://www.wsj.com/articles/will-free-data-become-the-next-free-shipping-1414105542>)
- “University officials, experts weigh in on net neutrality,” P. Lemke, MN Daily, September 24, 2014 (<http://www.mndaily.com/news/nation/2014/09/23/university-officials-experts-weigh-net-neutrality>)
- “MBA Course Adopts New Open Source Model for Student Projects”, Carlson School of Management – UMN, June 16, 2014. (<http://carlsonschool.umn.edu/news/mba-course-adopts-new-open-source-model-student-projects>)
- “TUBE: Time Dependent Pricing”, Innovation Magazine, Princeton Journal of Science & Technology, 2013 (<http://www.tc.umn.edu/ssen/press/innovation-mag.pdf>)
- “How To Predict A Box Office Hit,” W. Herrmann, BuzzFeed, June 26, 2013 (<http://www.buzzfeed.com/wherrmann/how-to-predict-a-box-office-hit>)
- “Princeton’s ‘Intellectual Property Accelerator Fund’ fuels innovation” (Interview on Datami winning \$100K Princeton IP Accelerator Funding), The Times of Trenton, B. Clerkin, February 7, 2013 (http://www.nj.com/mercer/index.ssf/2013/02/princeton_program_gives_funds.html)
- “DataWiz Is a Complete Data Usage Tracking Tool for iPhone,” T. Klosowski, Lifehacker, October 1, 2012 (<http://lifehacker.com/5947815/datawiz-is-a-complete-data-usage-tracking-tool-for-iphone>)

- “Worried about your data caps on your iPhone? Try this app”, CNET Asia, September 28, 2012 (<http://asia.cnet.com/worried-about-the-data-cap-on-your-iphone-try-this-app-62218874.htm>)
- “Tweets aren’t big fans of #oscar nominated films, princeton team finds,” R. Zhang, Daily Princetonian, April 24, 2012 (<http://dailyprincetonian.com/2012/04/24/30745/>)
- “Incentivizing Time-Shifting of Data: A Survey of Time-Dependent Pricing for Internet Access”, featured article of IEEE Communications Technology News, November 2012 (<http://www.comsoc.org/ctn/incentivizing-time-shifting-data-survey-time-dependent-pricing-internet-access>)
- “Social media as election predictor? Not so fast,” P. Murgai, Politico, April 4, 2012 (<http://www.politico.com/news/stories/0412/74841.html>)
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