CURRICULUM VITAE

SOUMYA SEN

IDENTIFYING INFORMATION

Academic Rank

Associate Professor, Information & Decision Sciences
Director of Research, Management Information Systems Research Center

Education

Degree	Institution	Date Degree Granted
Ph.D.	University of Pennsylvania Electrical & Systems Engineering	2011
M.S.	University of Pennsylvania Electrical & Systems Engineering	2007
B.E. (Hons.)	Birla Institute of Technology & Sciences - Pilani, India Electronics & Instrumentation Engineering	2005

Positions/Employment

University of Minnesota, Twin Cities, MN
Academic Director of MS in Business Analytics Programs	2021 – 2022
Associate professor	2019 –
Director of research, MIS Research Center	2018 –
Assistant professor	2013 – 2019

Princeton University, Princeton, NJ
Postdoctoral research associate	2011 – 2013

Viettel Communications, Hanoi, Vietnam
Consultant	2017 – 2018

DataMi Inc., Boston, MA
Co-founder	2013

Intel Research, Santa Clara, CA
Intern – Member of research staff	2007

Bell Laboratories, Holmdel, NJ
Intern – Member of research staff	2006

University of Pennsylvania, Philadelphia, PA

Graduate research assistant (Dean's Fellowship)   2005 – 2011

LG, Bangalore, India
Intern – Mobile Handset Development Lab   2005

Current Membership in Professional Organizations

Senior Member, Institution of Electrical & Electronics Engineers (IEEE)
Member, Institute for Operations Research and the Management Sciences (INFORMS)

HONORS AND AWARDS FOR RESEARCH, TEACHING, AND SERVICE

University of Minnesota

BOLD Ideas Award	2020
McKnight Presidential Fellow	2019
Outstanding Research Award	2019
Jim & Mary Lawrence Fellow	2018
Outstanding Service Award	2017
Timothy J. Nantell Award for Excellence in Teaching	2016
UMN Grant in Aid Award	2015

External Sources

NIHCM Digital Media Awards Finalist	2021
AACSB Innovations That Inspire	2021
US Patent (#10536584) on system for time-deferred pricing	2020
Adobe Digital Experience Research Award	2018
US Patent (#9865009) on dynamic pricing system for mobile data	2018
IEEE INFOCOM Workshop Best Paper Runner-up Award	2017
IEEE Senior Member	2016
INFORMS Information Systems Society Design Science Award	2014
Keller Center IP Acceleration Award	2013
IEEE INFOCOM Best Paper Award	2012
BITSAA 30 Under 30 Award	2012
Vodafone Wireless Innovation Finalist	2011

RESEARCH, SCHOLARSHIP, AND CREATIVE WORK

Grants and Contracts

External Sources

Received at the University of Minnesota:

External Agency: Coursera
Project title and Dates: Prescriptive Analytics Specialization, 2019
Direct costs: $79,000

External Agency: Adobe
Project title and Dates: Designing Effective Ad-Video Delivery Strategies, 2018
Investigator status: Co-Principal investigator
Direct costs: $50,000

External Agency: Workshop on Information Technologies & Systems
Project title and Dates: Smart Data Pricing workshop, 2018
Direct costs: $3,000

External Agency: Coursera
Project title and Dates: MIS Specialization, 2017
Direct costs: $75,000

Received at another institution:

Investigator status: Co-PI
External Agency: Princeton IP Accelerator Fund
Project title and Dates: DataMi – Finding Solutions to Network Congestion, 2013

Investigator status: Co-PI
External Agency: DARPA & Telcordia
Project title and Dates: Autonomous Collaborative Control for Resilient Cyber Defense, 2011

Investigator status: Co-Investigator
Principal Investigator: Lockheed Martin
External Agency: DARPA
Project title and Dates: Behavioral Learning for Adaptive Electronic Warfare, 2011

University Sources

BOLD Ideas Grant Award, Office of Academic Clinical Affairs
Project Title: Using Natural Language Processing to Extract Predictors of Medical Device
Adverse Events (7 awards out of 64 submissions)
Direct costs: $30,000

Dean's Small Grant, 2019
Project title: Incentivizing Word-of-Mouth Based Adoption of Mobile Games
Direct costs: $5,000

University of Minnesota Grant-in-Aid, 2015 - 2017
Project title: On the Efficacy of Sponsored Content for Mobile Broadband Data Users
Direct costs: $32,000

Social Media & Business Analytics Collaboration Grant, 2017
Project title: Exploring How the Temporal Evolution of Referral Reward Structure Impacts
Viral Adoption – A Randomized Field Trial
Direct costs: $5,000

Social Media & Business Analytics Collaboration Grant, 2016

      Project title: Understanding the Impact of Incentives on the Offline Adoption of Mobile
                Social Game Apps
      Direct costs: $5,000

      Dean's Small Grant, 2015
      Project title: Pilot Study on the Efficacy of Sponsored Content
      Direct costs: $5,000

Publications

Books

Smart Data Pricing (Editor), 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. (Contributed to the analysis of the trends in pricing worldwide and the implications of sponsored data for net neutrality)

2. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "Human Factors in Smart Data Pricing", *Smart Data Pricing, John Wiley & Sons,* September 2014. (Contributed to the focus group studies used in developing this chapter as well as the organization and presentation of the chapter)

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. (Contributed to proposing, conceptualizing, and writing the drafts for this chapter)

Patents

1. "System and Methods for Variable Pricing of Data Usage," USPTO 9865009, Granted 2018 [This patent addresses a variety of problems with implementing dynamic pricing systems for network resource allocation, including a user interface that uses time-dependent pricing to schedule user-specified non-critical applications to remain within a given monthly budget, and middleware that may be located at a base station in a cellular network and/or in pricing servers in wired networks to support different types of pricing schemes and data plans.]

2. "Systems and methods for Time Deferred Transmission of Mobile Data", USPTO 10536584, Granted 2020. [This patent provides a specific system design and optimization approach for realizing time-dependent pricing in mobile networks].

Software Development

1. COVID-19 Hospitalization Tracking, 2020.

[It provides a free, public-facing dashboard that provides data on daily hospitalizations, ICU usage, deaths across US states and several counties. The backend IT database stores historic data collected from different state department of health agencies. Collaborated with HHS as a part of this project to streamline the data collection efforts].

2. NURM (mobile app), 2018.
[Network User Reward Mechanism (NURM) is a proprietary mobile app created with iOS enterprise-developer license as a platform to experiment with user response to advertisements and incentives].

3. Adaptive bandwidth Management for User Empowerment (AMUSE), 2015.
[It is a Linux based software that can automate data offloading decisions from 3G/4G to WiFi networks in an optimized way that accounts for location, application usage needs, and budget].

4. DataWiz (mobile application), 2013.
[This is a free mobile app for user-driven bandwidth usage management software that was made available on Android and iOS devices, resulting in 700k+ downloads. Eventually the product has been absorbed into the startup, DataMi.]

5. Autonomous, Collaborative Control for Resilient Cyber Defense (ACCORD), 2012.
[It is a software system that uses Nash bargaining techniques to rapidly adjust resource allocations while preserving critical mission expectations. It has been adopted by DARPA's Mission-Resilient Cloud initiative (https://www.darpa.mil/program/mission-oriented-resilient-clouds)].

6. Intelligent Wireless Signal Jamming Software module, 2012.
[This optimization-based software was provided to Lockheed Martin for DARPA's Behavioral Learning for Adaptive Electronic Warfare (BLADE) program. It uses Markovian models to intelligently jam various network protocols to disrupt adversarial communications in energy-constrained environments. (https://www.militaryaerospace.com/articles/2014/03/lockheed-darpa-blade.html)].

Refereed Journal Articles

1. Z. Levin, K. Choyke, A. Georgiou, S. Sen, P. Karaca-Mandic, "Trends in Pediatric Hospitalizations for COVID-19," **JAMA Pediatrics** (Impact factor: 14), October 2020.

2. P. Karaca-Mandic, S. Sen, A. Georgiou, Y. Zhu, A. Basu, "Association of COVID-19-related hospital use and overall COVID-19 mortality in the United States," **Journal of General Internal Medicine,** (Impact factor: 4.61), July 2020.

3. P. Karaca-Mandic, A. Georgiou, S. Sen, "Racial and ethnic disparities in COVID-19 hospitalizations in 12 states," **JAMA Internal Medicine** (Impact factor: 20.8), July 2020.

4. S. Sen, P. Karaca-Mandic, A. Georgiou, "Association of Stay-at-Home Orders with COVID-19 Hospitalizations in 4 States," **Journal of American Medical Association (JAMA)** (Impact factor: 51.3), vol. 323:24, 2020.

5. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "Time-Dependent Pricing for Multimedia Data Traffic: Analysis, Systems, and Trials," *IEEE Journal of Selected Areas in Communications* (Impact factor: 7.17), vol. 37:7, 2019.

6. R. Guerin, K. Hosanagar, X. Li, S. Sen, "Shared or Dedicated Infrastructures?: On the Impact of Reprovisioning", *Management Information Systems Quarterly* (Impact factor: 5.43), pp. 1059 – 1079, vol. 43:4, 2019.

7. C. Joe-Wong and S. Sen, "Harnessing the Power of Cloud: Revenue and Fairness Considerations in Multi-Resource Allocations," *Journal of Management Information Systems* (Impact factor: 3.1), vol. 35:3, 2018.

8. C. Joe-Wong, S. Ha, S. Sen, "Sponsored Data: Analyzing the Impact on the Internet Stakeholders," *IEEE/ACM Transactions on Networking* (Impact factor: 3.9; ranked 2nd among all Computer Science journals by Times Higher Education), pp. 1179-1192, vol. 26:3, 2018.

9. 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* (Impact factor: 4.098; top EE/CS journal), pp. 1062-1076, vol. 15:5, 2016.

10. F. Wong, C. W. Tan, S. Sen, M. Chiang, "Quantifying Political Leaning from Tweets, Retweets, and Retweeters," *IEEE Transactions on Knowledge and Data Engineering* (Impact factor: 4.23), pp. 2158-2172, vol. 28(8), 2016.

11. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "Smart Data Pricing: Using Economics To Manage Network Congestion," *Communications of the ACM*, (Impact Factor: 4.027), December 2015.

12. C. Joe-Wong, S. Sen, S. Ha, "Offering Supplementary Network Technologies: Adoption Behavior and Offloading Benefits," *IEEE/ACM Transactions on Networking* (Impact factor: 3.9), pp. 355-368, vol. 23: 2, 2015.

13. 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* (Impact Factor: 8.82), pp. 1-37, vol. 46, issue 2, November 2013.

14. C. Joe-Wong, S. Sen, T. Lan, M. Chiang, "Multi-Resource Allocation: Fairness-Efficiency Tradeoffs in a Unifying Framework," *IEEE/ACM Transactions on Networking* (Impact factor: 3.9), pp. 1785-1798, vol. 21:6, 2013.

15. 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* (Impact Factor: 7.17), pp. 1075-1085, vol. 30, no. 6, July 2012.

16. 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.

17. S. Sen, R. Guerin, 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.

18. S. Sen, Y. Jin, R. Guerin, K. Hosanagar, "Modeling the Dynamics of Network Technology Adoption and the Role of Converters,*" **IEEE/ACM Transactions on Networking** (Impact factor: 3.9), pp. 1793-1805, vol. 18:(6), 2010.

19. 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.

Peer-reviewed Conferences Papers

1. A. Chen and S. Sen, "Two-sided Platform Pricing & Integration, First-party and Third-party Content Creation," Conference on Information Systems & Technologies (CIST), 2020.

2. Y. Zhu, A. Everhart, P. K.-Mandic, S. Sen, "Using NLP to Extract Predicate History from Medical Device Approvals," International Conference on Information Systems (ICIS), 2020.

3. P. Karaca-Mandic, A. Georgiou, A. Sen, Y. Zhu, K. Vu, and A. Everhart, "Early Insights from the COVID-19 Hospitalization Tracking Project of University of Minnesota Carlson School of Management," Health Management, Policy and Innovation, vol. 5:1, 2020.

4. A. Chen, S. Sen, A. Gupta, "Net Neutrality: Network Congestion, Social Welfare and Service Tiering Regulations," China Workshop on Economics of Information Systems & Theory, June 2020.

5. P. Kienscherf, J. Collins, C. Joe-Wong, W. Ketter and S. Sen, "Time-Dependent Electricity Pricing Using Variable Announcement Horizons," Energy Informatics, 2020.

6. A. Chen, S. Sen, A. Gupta, "Net Neutrality: Network Congestion, Social Welfare and Service Tiering Regulations," Conference on Information Systems & Technologies (CIST), Seattle, 2019.

7. K. Valogianni (student), A. Gupta, W. Ketter, S. Sen and E. Van Heck, "Multiple Vickrey Auctions for Sustainable Electric Vehicle Charging," International Conference on Information Systems (ICIS), Munich 2019.

8. S. Sen, G. Burtch, A. Gupta, R. Rill, "Incentive Design for Ad-sponsored Content," Workshop on Information Technology & Systems (WITS), Seoul 2017.

9. S. Sen, C. Joe-Wong, S. Ha, M. Chiang, "Time-Dependent Pricing in Mobile Data Plans: Results from a field deployment," Workshop on Information Technology & Systems (WITS), Dublin, 2016.

10. Y. Wang (student), C. Joe-Wong, S. Sen, "Congestion Externalities, Content Exclusivity, and Internet Fragmentation," Workshop on Information Technology & Systems (WITS), Dublin, 2016.

11. K. Valogianni (student), 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), Utah, 2016.

12. K. Valogianni (student), A. Gupta, W. Ketter, S. Sen and E. Van Heck, "Maximizing Social Welfare in Grid Resource Allocation in Electric Vehicle Charging," Workshop on Information Technology & Systems (WITS), Dallas, 2015.

13. 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), New York, 2015.

14. 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), Atlanta, 2015.

15. C. Joe-Wong, S. Sen, "Pricing the Cloud: Resource Allocation, Fairness, and Revenues," Workshop on Information Technology & Systems (WITS), Milan, 2013.

16. 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 (Computer Human Interaction), Paris, 2013. [It is the flagship conference in Computer-Human Interaction; acceptance rate: 18% of 1963 submissions.]

17. C. Joe-Wong, S. Sen, S. Ha, "Offering Supplementary Wireless Technologies: Adoption Behavior and Offloading Benefits," IEEE INFOCOM, Turin, 2013 [It is the flagship conference of IEEE in networks; Acceptance rate: 17%.]

18. M. H. R. Khouzani, S. Sen, N. Shroff, "An Economic Analysis of Regulating Security Investments in the Internet," IEEE INFOCOM, Turin, 2013 [Acceptance rate: 17%].

19. S. Ha, S. Sen, C. Joe-Wong, Y. Im, M. Chiang, "TUBE: Time Dependent Pricing of Mobile Data", Proc. of ACM SIGCOMM 2012 [It is the flagship conference of ACM in networks; Acceptance rate: 13%].

20. 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%].

21. M. Khouzani, S. Sen, N. Shroff, "Incentive Analysis of Bidirectional Filtering in the Internet," Workshop on the Economics of Information Security (WEIS), Washington DC, 2013.

22. 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), Philadelphia, 2013.

23. 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), Boston, 2013 [Acceptance rate: 20%].

24. J. Chen, S. Sen, D. J. Dorsey, M. Chiang, "A Framework for Energy-efficient Adaptive Jamming of Adversarial Communications", Conference on Information Sciences and Systems (CISS), Princeton, 2013.

25. 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), Orlando, 2012.

26. M. H. R. Khouzani, S. Sen, N. B. Shroff, "Managing the Adoption of Asymmetric Bidirectional Firewalls: Seeding and Mandating", IEEE Global Communications Conference (GLOBECOM), Anaheim, 2012.

27. S. Sen, C. Joe-Wong, S. Ha, "The Economics of Shared Data Plans", Workshop of Information Technologies and Systems (WITS), Orlando, 2012.

28. 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), Helsinki, 2012 (Acceptance rate: 20%).

29. P. Zakin, S. Sen, M. Chiang, "Aperator: A new Twitter command tool for enabling application-specific actions", USENIX Conference on WebApps, Boston, 2012.

30. C. Joe-Wong, S. Sen, T. Lan, M. Chiang, "Multi-Resource Allocation: Fairness-Efficiency Tradeoffs in a Unifying Framework," IEEE INFOCOM, Orlando, 2012 [Acceptance rate: 17%; Winner of the Best Paper Award].

31. S. Ha, C. Joe-Wong, S. Sen, M. Chiang, "Pricing by Timing: Innovating Broadband Data Plans", SPIE Broadband Access Communication Technologies VI Conference (OPTO), San Francisco, 2012.

32. C. S. Leberknight, S. Sen, M. Chiang, "On the Volatility of Online Ratings: An Empirical Study," Workshop on e-Business (WEB), Shanghai, 2011. Available as Lecture Notes in Business Information Processing, Springer-Verlag, December 2011.

Working papers

1. A. Chen, S. Sen, A. Gupta, "Net Neutrality versus Service Tiering: Analyzing Social Welfare and the Need for Policy Intervention" (under submission).

2. R. Bapna, A. Gupta, J. Jung and S. Sen, "Analyzing the Impact of Incentive Structure on Referral Program Design: Evidence from Two Experiments" (under submission).

3. K. Valogianni, A. Gupta, W. Ketter, S. Sen, E. Van Heck, "Multiple Vickrey Auctions for Real-time Electric Vehicle Charging: Design, Analysis and Impact" (under submission).

4. S. Sen, G. Burtch, A. Gupta, "Incentive Design for Ad-Sponsored Content: Results from an Experiment".

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).

Presentations, Posters, and Exhibits

Invited Presentations at Professional Meetings, Conferences, etc.

"Designing IT systems for secure and resilient networks," University of Arizona MIS Speaker Series, Tucson, 2017.

"Workshop: Smart Data Pricing," VietTel (he largest mobile operator in Viet-
nam and serving niche markets in Asia and Africa), Hanoi, 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, Irvine, 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," Workshop on Theory and Economics of Information Systems (TEIS), Napa, 2017.

"On the Role of Incentive Structure in Word-of-Mouth based Adoption of Mobile Apps," Presented at Columbia University, Carnegie Mellon University – Silicon Valley, & Princeton University, 2016.

"Developing IT Solutions for Sustainable Demand Growth on the Internet," WITS Policy, Awareness, Security & Sustainability Workshop (PASS), Minneapolis, 2016.

"On the Role of Converters in the Adoption of New Network Technologies," Annual Meeting of INFORMS, Philadelphia, 2015.

"Time-dependent Pricing For Mobile Data: Analysis, Systems, And Trial," Annual Meeting of INFORMS, Philadelphia, 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 Economic Models of Network Technology Adoption, Design, and Viability," IETF/IRTF Internet Architecture Board (IAB) Workshop on Internet Technology Adoption & Transition, U. Cambridge, 2013.

"Smart Data Pricing: Research Agenda and Directions", Allerton Conference, Univ. of Illinois-Urbana Champaign, 2013.

"Directions in Smart Data Pricing: Lessons from Theory & Practice", invited talk at Alcatel-Lucent Bell Labs, Murray Hill, & Time Warner Cable, NYC, 2013.

"Smart Data Pricing for Broadband Networks", invited talk at Georgia Institute of Technology Workshop on Internet Technology & Economics (WITE), 2012.

"Shared Data Plans & Sponsored Access", invited talk at the National Exchange Carrier Association (NECA) Expo, Seattle, 2012.

"Time Dependent Pricing for Mobile Data", Bell Labs, Crawford Hill, May, 2012.

"On the Adoption and Deployment of New Network Technologies: An Economic Perspective", Georgia Institute of Technology, Atlanta, 2010.

"Dynamics of Network Technology Competition - the Role of Gateways," New York Academy of Sciences, November, 2009.

Contributed Papers Presented at Professional Meetings, Conferences, etc.

S. Sen, G. Burtch, A. Gupta, R. Rill, "Incentive Design for Ad-sponsored Content," Symposium on Statistical Challenges in Electronic Commerce Research (SCECR), Hanoi, 2017.

S. Sen, C. Joe-Wong, S. Ha, and M. Chiang, "Time-Dependent Pricing of Mobile Data," Symposium on Statistical Challenges in Electronic Commerce Research (SCECR), Naxos, 2016.

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", Workshop on Information Systems and Economics (WISE), Auckland, 2014.

TEACHING AND CURRICULUM DEVELOPMENT

University of Minnesota

Courses Taught
      Introduction to Programming (IDSC 3101) – Undergraduate
      Intermediate Programming (IDSC 3102) – Undergraduate
      Information Technology & Solutions (IDSC 6050) – PTMBA
      Modeling & Heuristics for Decision Making (MSBA 6450) – MS in Business Analytics (MSBA)
      Experiential Learning (MSBA 6510) – MS in Business Analytics (MSBA)
      Innovating with Technology: Global IT Entrepreneurship in China (IBUS 3055)
      IT Infrastructure & Emerging Trends, MIS Specialization, Coursera (2018 -)

Curriculum Development

Proposed and designed a Prescriptive "Analytics for Decision Making" Specialization for Coursera (2019) – launching in 2021.

Proposed and designed a new interdisciplinary Carlson Global Institute (CGI) course on IT entrepreneurship (IBUS 3055) with SME. The 4 credit course teaches IT and entrepreneurship concepts in Spring and take students to Hong Kong, Guangzhou, and Shenzhen.

Redesigned the MSBA course (MSBA 6450) on Modeling & Heuristics for Decision Making with a focus on optimization, simulation, and Bayesian learning (2018 – 2019).

Co-designed a new Executive Education course on Cybersecurity (2018)

Served on the committee to help design the curriculum for IDSC core course for the online MBA program (2018).

Co-designed and created the MIS Specialization for Coursera (2018) with IDS faculty.

Served on UG programming course syllabus evaluation committee (2018).

Redesigned the UG programming courses (IDSC 3101 & 3102) with more hands-on learning and evaluation components to ensure their ability to apply logic and demonstrate coding skills.

Participated in the session on network economics in the PhD course, Research Seminar in Information and Decision Sciences (IDSC 8801).

Created the first online IDSC core course (IDSC 6050) for the MBA program (2015).

Faculty Development Activities regarding teaching

Speaker at IT Teaching Workshop at Georgia Tech, May 8, 2020.

Organized the Carlson School Faculty Workshop on "Using Visuals in Teaching" with speakers from Dpict - a design and visualization firm specializing in online teaching, February 15, 2019.

Invited to the Brierly Professors Institute at the Southern Methodist University, 2019.

Invited to the Coursera workshop on online teaching methods in San Jose, 2018.

Presented the course structure and tools used in the online IT solutions course (IDSC 6050) at the IT Teaching Workshop in Irvine, 2017.

Co-organized the IT Teaching Workshop at the Carlson School in 2014.

ADVISING AND MENTORING

Undergraduate Student Activities

Undergraduate research projects: Ad-sponsored Data Plans
Student names: Hieu Nguyen, 2014 – 2015.

Graduate Student Activities

Doctoral Committees Served on
Student Names: Arvind Narayanan, Computer Science, UMN
              V Satya Aditya M, Electrical Engineering, IIT Mumbai
Doctoral Students (Collaborator/RAs)
Student Names: JaeHwuen Jung, Yaqiong Wang, Alan Chen, Yi Zhu

Visiting Student Activities

Doctoral Students (Collaborator)
Student Names: Konstantina Valogianni (Erasmus)

Postdoctoral Student Activities
Student Names: MVS Aditya (2019 -)

Professional Student Activities
Zheming Lian, MSBA student research volunteer, 2020
MSBA team for Adobe Analytics Challenge for MSBA students, 2017
Supervised MSBA Experiential Learning teams of Land O' Lakes (2020), Hazelden Foundation (2020), City of St Paul Fair Housing Work Group (2019), Hennepin County – McKnight Foundation (2019), Mall of America (2018), Patterson (2017), Carlisle (2017).

SERVICE AND PUBLIC OUTREACH

Service To The Discipline/Profession/Interdisciplinary Area(s)

Editorships/Journal Reviewer Experience

Associate Editor, Management Information Systems Quarterly, Special Issue on Digital Resilience, 2020.

Editor, IEEE Journal of Selected Areas in Communication, Special Issue on "Smart Data Pricing for Next-generation Networks", forthcoming in March 2020.

Associate Editor, Information Systems Research, Special Issue on Market Design and Analytics, forthcoming in 2020.

External Reviewer, Research Grants Council of Hong Kong, General Research Fund & Early Career Scheme, 2020

External Reviewer, Research Grants Council of Hong Kong, Faculty Development Scheme, 2020

External Reviewer, Indian Institute of Technology Mumbai, PhD Thesis, 2019

Editorial Board, Journal of AIS, Special Issue on "Addressing Societal Challenges through Analytics," 2019.

Editor, IEEE Networks Special Issue on "Innovations in Network Pricing," March 2016.

Journals Reviewed for:
      Journal of American Medical Association
      Information Systems Research
      Management Information Systems Quarterly
      Management Science
      Production and Operations Management
      Journal of Management Information System
      INFORMS Journal on Computing
      Journal of Association of Information Systems
      IEEE/ACM Transactions on Networking
      IEEE Transactions on Knowledge & Data Engineering
      IEEE Transactions on Parallel & Distributed Computing
      IEEE Journal on Selected Areas in Communications
      IEEE Transactions of Information Technology
      IEEE Transactions on Vehicular Technology
      IEEE Transactions on Communications
      IEEE Transactions on Automatic Control
      IEEE Transactions on Services Computing
      IEEE Transactions on Cognitive Communications & Networking
      IEEE Transactions on Multi-Scale Computing Systems
      ACM SIGCOMM Computer Communication Review
      Communications of the ACM
      Elsevier Computer Networks
      Elsevier's Decisions Support Systems

Organization of conferences, workshops, panels, symposia

General Chair, Workshop on Information Technology & Systems (WITS), 2020

Research Prototypes & Teaching Tool Awards Chair, Workshop on Information Technology & Systems (WITS), Munich, 2019

Discussant, WISE, Munich, 2019.

Chair, Smart Data Pricing Forum, Minneapolis, 2018

Track Chair, Workshop on Information Technology & Systems, 2017, 2018

Steering Committee Member, IEEE Workshop on Smart Data Pricing 2016, 2017

General co-Chair: IEEE Workshop on Smart Data Pricing (SDP) 2015 (Hong Kong), SDP 2014 (Toronto), SDP 2013 (Turin, Italy)

Co-chair, IT Teaching Workshop, Minneapolis, 2014

Organizer, Discussion forum between Internet Service Operators of Minnesota and the University of Minnesota, 2014

Panel Chair, National Exchange Carrier Assoc. Expo 2012

Panelist, IEEE GLOBECOM Industry Forum 2012

Session Chair, CISS 2012 Track on Ad-hoc Networks

Committee memberships

Senior Member, Institute of Electrical & Electronics Engineers (IEEE)
Member, Internet Architecture Board task force on Global Access to Internet for All (GAIA)

Technical Program Committee Member: WITS 2019, MobiHoc 2019, 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 2019, WITS 2018, WITS 2017, WITS 2016, WISE 2016, CIST 2015, WITS 2014, IEEE INFOCOM 2012, CISS 2012, ISIT 2012, CDC 2012, MILCOM 2012, CoNEXT 2011

Service To The University/College/Department

University of Minnesota

University-wide service
    Co-lead, COVID-19 Hospitalization Tracking Project, 2020 – 2021
    Co-chair, Healthcare Analytics Symposium Series (with MILI and the School of Nursing), 2018 –
    Chair, University Learning Technology Advisors to Provost & CIO, 2017 – 2019
    Member representative of the Carlson School, ULTA committee, 2016 – present

Collegiate Service and Intercollegiate Service
    Undergraduate Strategic Review Committee, 2020 – 2021
    Fourth year review committee for tenure-track faculty, 2020 –
    Director of Research, MIS Research Center, 2018 –
    Member, Digital Technology Center, 2018 –
    Member, Honors Thesis Award Committee, 2018
    Member of PhD committee, A. Narayanan, Computer Science, UMN, 2017 –

Department/Unit Service
    First & Second Year Doctoral Exam committee, 2020
    MIS IDSC 3101/2 course overhaul committee, 2020
    IDSC Junior faculty evaluation committee, 2020
    PhD student recruitment committee of IDSC, 2020
    MSIS Program Evaluation committee, 2019

Chair, Committee for MS in Information Systems, 2019
Member, MISRC Postdoc recruitment committee, 2019
Member, Committee for IDSC Online MBA core, 2018
Member, UG programming language evaluation committee, 2018
Member, Committee for developing Coursera MIS Major, 2017
PhD student recruitment committee of IDS, 2015

Public and Other Services

Media Mentions of Research, Op-eds, and Interviews

Received media coverage of research works in The Wall Street Journal, The New York Times, Star Tribune, CNN, Forbes, Discover, MIT Technology Review, MSNBC, Politico, US News, CNET, WCCO, KSTP, MinnPost, Knowledge@Wharton, The Chronicle of Higher Education.

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2. "Covid-19 Hospitalizations, Single-Day Deaths Hit New U.S. Highs," M. Evans, The Wall Street Journal, December 3, 2020.
3. "Federal Data Show Growing Hospital Staff Shortages Across the U.S." NPR, November 20, 2020.
4. "KSTP Medical Expert Weighs in on New Coronavirus Restrictions," C. Gray, November 18, 2020.
5. "Covid's Rampage Means No Medical Cavalry Coming to the Rescue," J. Tozzi and J. Levine, Bloomberg, November 14, 2020.
6. "COVID-19 Hospitalizations are Surging. Where Are Hospitals Reaching Capacity?" W. Stone, NPR, November 10, 2020.
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9. "New Minnesota COVID-19 Milestone Shows Significant Amount of Virus Transmission, Health Officials Say," C. Snowbeck, Star Tribune, October 11, 2020.
10. "Chinese 5G Not Living Up to Its Hype," J. Xie, Voice of America News, October 10, 2020.
11. "Minnesota Adds New COVID-19 Hospital Data; 8 New Deaths, 1,276 New Cases," J. Olson, Star Tribune, October 8, 2020.
12. "Finding a connection: Broadband access a barrier to remote learning," K. Coss, Inquiry (UMN OVPR), September 14, 2020.
13. "A path-breaking professor brings the world to future business leaders," Carlson Global Institute annual report, 2020.
14. "COVID-19 still spreading among young adults in Minnesota," C. Snowbeck, Star Tribune, August 22, 2020.
15. "A Carlson school study looks at racial disparities and COVID hospitalizations," D. Schultz, PBS Almanac, August 21, 2020.
16. "COVID-19 hospital bed occupancy tied to death rates in US states," CIDRAP News, August 21, 2020.
17. "Failure to 'flatten the curve' will kill more people than we thought," J. Ellison, UW News, August 21, 2020.
18. "Black Hoosiers hospitalized for COVID-19 more often than white counterparts, study finds," Indianapolis Star, August 20, 2020.
19. "Aug. 19 update on COVID-19 in MN: As deaths rise, a plea to 'do the right thing'," MPR News, August 19, 2020.

20. "U of M Study Finds People of Color Most Likely to Be Hospitalized for COVID-19," T. Lukk, MSP Magazine, August 19, 2020.
21. "Study finds racial and ethnic disparities in Covid-19 hospitalizations," N. Thomas, CNN, August 17, 2020.
22. "Minorities hit hardest by Covid-19, Study confirms," R. Preidt, US News, August 17, 2020.
23. "1 big thing: People of color hurt most by failed coronavirus response," C. Owens, Axios, August 17, 2020.
24. "Black Americans are hospitalized with coronavirus at up to FOUR TIMES the rate of white residents in 12 states, study finds," M. Kekatos, Daily Mail (UK), August 17, 2020.
25. "New study shows disparities across racial, ethnic groups in US COVID-19 hospitalizations," Xinhua (China), August 17, 2020.
26. "Minnesota among states with largest racial disparities in COVID-19, U of M study shows," P. Cox, Minnesota Public Radio News, August 17, 2020.
27. "People of color are hospitalized for COVID-19 at higher rates," K. Doran, ABC5/KSTP News, August 17, 2020.
28. "Analysis: 'Significant Disparities' Found In COVID-19 Hospitalizations In Minnesota, Other States," WCCO-TV, August 17, 2020.
29. "COVID-19 study finds racial disparity in hospitalizations in Minnesota," C. Snowbeck, Star Tribune, August 17, 2020.
30. "University of Minnesota study finds racial disparities in COVID-19 hospitalizations," Fox9, August 17, 2020.
31. "Minnesota among states showing disparities in COVID-19 hospitalizations," S. Perry, MinnPost, August 17, 2020.
32. "University of Minnesota study finds 'significant' disparities in hospitalization rates for communities of color across US," K. Busche, Duluth News Tribune, August 17, 2020.
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34. "Where the virus is sending people to hospitals," L. Gamio, S. Mervosh, and K. Collins, The New York Times, July 23, 2020.
35. "Face-Mask Mandates Expand as U.S. Coronavirus Death Toll Tops 142,000," T. Ansari, and A. Prang, The Wall Street Journal, July 23, 2020.
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61. "Minnesota officials cautious after first week with fewer COVID-19 deaths," C. Snowbeck, Star Tribune, May 16, 2020.
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81. "New U of M website offers state-by-state comparison of COVID-19 hospitalizations," E. Rasmussen, KSTP 5ABC, April 7, 2020.
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91. "Three Myths CEOs & Executives Believe About Cybersecurity," Carlson Executive Education Blog, March 6, 2019.
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Community Development

Launched the Carlson Analytics Capability Maturity Model (CACMM) to evaluate data science capabilities of business and non-profit organizations and help them create value from such initiatives through better investments.

Launched research collaboration with the Hazelden Betty Ford Foundation to use data analytics and machine learning to address addiction and substance abuse problems.

Launched the first nationwide trackers of hospital bed usage for COVID-19 in collaboration with MILI, with the goal of helping states to share information and support one another when cases surge. (Press: https://minnesota.cbslocal.com/2020/04/07/university-of-minnesota-researchers-launch-u-s-covid-19-hospitalization-tracking-project/)

Worked with MSBA students and the City of St Paul's Fair Housing Workgroup to analyze housing rental and safety data to design tools for monitoring evictions and demographic shifts.

(Press: www.twincities.com/2018/04/22/st-paul-fair-housing-work-group-city-council/)

Worked with MSBA students of Carlson and the Mall of America on analyzing data from electronic directories to help improve experience of mall visitors.
(Promotional Video: https://www.youtube.com/watch?time_continue=1&v=zWToxdk0zOE)