Carlee Joe-Wong

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Education

Ph.D. Applied and Computational Mathematics, Princeton University 2016

M.A. Applied and Computational Mathematics, Princeton University 2013

A.B. Mathematics, Princeton University (*magna cum laude*) 2011

Certificate in Applied and Computational Mathematics

Phi Beta Kappa Society

Professional Experience

Assistant Professor of Electrical and Computer Engineering 2016–present

Carnegie Mellon University

External Consultant 2019–present

Stinger Ghaffarian Technologies, NASA Ames Research Center

Co-Founder and Director of Research (2013–2014) 2012

DataMi, named a startup-to-watch by Forbes in 2014.

Honors and Awards

ARO Young Investigator Award 2019

N2Women Rising Stars in Networking and Communications List 2018

NSF CAREER Award 2018

Porter Ogden Jacobus Fellowship 2015–2016

The fellowship, awarded to four students each year, is the highest honor awarded by the Graduate School at Princeton.

INFORMS ISS Design Science Award 2014

For my research on smart data pricing.

Artiman B.E.T.A. member 2014

I was one of 12 students invited to join the B.E.T.A. (Biology, Economics, Technology, Arts) network, which recognizes student innovators who have the potential to become entrepreneurs and founders.

IEEE INFOCOM Best Paper Award 2012

Multi-Resource Allocation: Fairness-Efficiency Tradeoffs in a Unifying Framework

National Defense Science and Engineering Graduate Fellowship (NDSEG) 2011 – 2013

National Science Foundation Graduate Fellowship (declined to accept NDSEG) 2011

Princeton Graduate School Centennial Fellowship 2011-2016

George B. Wood Legacy Junior Prize for the Class of 2011 2010

The prize, awarded annually to two students at the beginning of their senior year, recognizes an exceptional academic record as a junior at Princeton University.

Teaching Experience

Introduction to Machine Learning for Engineers, CMU Fall 2018, 2019; Spring 2020

New undergrad/M.S. course co-developed with Virginia Smith and Gauri Joshi; co-taught with Virginia Smith (2018), Yuejie Chi (2019), and Gauri Joshi (2020).

Mathematical Foundations of Electrical Engineering, CMU Spring 2018, Fall 2020

Sophomore-level course, co-taught with Soummya Kar (2018) and Franz Franchetti (2020).

Network Economics and Resource Allocation, CMU Fall 2016, 2017; Spring 2019

Ph.D.-level seminar course that I taught and developed.

Networks: Friends, Money, and Bytes, Princeton University Fall 2014

Assistant in Instruction for Prof. Mung Chiang.

Mathematical Neuroscience, Princeton University Fall 2012

Assistant in Instruction for Prof. Phil Holmes.

Numerical Methods, Princeton University Fall 2012

Assistant in Instruction for Prof. Bart Vandereycken.

Mentoring Experience

Postdoctoral Scholars

Xiaoxi Zhang CMU, 2017–

Ph.D. Students

I-Cheng (Delphi) Lin (co-advised with Osman Yagan) CMU ECE, 2019–

Yuhang Yao CMU ECE, 2019–

Taejin Kim CMU ECE, 2018–

Yichen (Ethan) Ruan CMU ECE, 2018–

Jinhang Zuo CMU ECE, 2017–

Madhumitha Harishankar (co-advised with Patrick Tague) CMU ECE, 2016–

Yuxuan Jiang CMU, visiting from HKUST, 2017–2018

Ph.D. Thesis Committees

Yang Li	CMU ECE, Ph.D. expected 2021
Parisa Rahimzadeh	CU Boulder, Ph.D. expected 2020
Nandi Zhang	CMU EPP, 2019
Rusheng Zhang	CMU ECE, 2019
Susu Xu	CMU CEE, 2019
Rongye Shi	CMU ECE, 2019
Hsu-Chieh Hu	CMU ECE, 2019
Xiaoli Wang	Princeton University, 2017

M.S. Independent Research

Chia-Kai Chang (Spring 2020), Xuan Chen (Spring 2020), Yucai Fan (Spring 2020), Bonan Jin (Spring 2020), Akansha Kalra (Spring 2020), Juntao Li (Spring 2020), Shu-Che Liang (Spring 2020), Siddharth Mehta (Spring 2020), Aarushi Wadhwa (B.S., Spring 2020), Tom Yang (Spring 2020), Sweta Hari Kumar (Fall 2019), Gavin Lee (Fall 2019 and Spring 2020), Wanquan Wu (Fall 2019), Cheng-Hung Yao (Fall 2019), Pratyush Shandilya (Summer 2019), Satyavrat Wagle (Summer 2019), Akshay Bhaskar (Spring 2019), Jakob Cassiman (Spring 2019), Nithin Venkat Sonti (Spring 2019), Ye Li (Fall 2018), Fangjing Wu (Fall 2018), Jiawei Yang (Fall 2018), Serhan Oztekin (Spring 2018), Chenxi Wang (Fall 2017), Haoxiang Gao (Spring/Fall 2017), Yao Cai (Spring 2017), Jie Chen (Spring 2017), Vaishnavi Ramesh Jayaraman (Spring 2017), Takuma Oda (Spring 2017), Nagarjun Srinivasan (Spring 2017), Bingzhang Wu (Spring 2017)

Publications

Books and Book Chapters

Y. Ruan, L. Zheng, M. Gorlatova, M. Chiang and **C. Joe-Wong**, The Economics of Fog Computing: Pricing Tradeoffs for Data Analytics, *Fog and Fogonomics: Challenges and Practices of Fog Computing, Networking, Strategy and Economics*, Wiley, 2020.

J. Chung, **C. Joe-Wong** and S. Ha, Extending the Cloud to Fog: Highly Available Elastic Fog, *Fog and Fogonomics: Challenges and Practices of Fog Computing, Networking, Strategy and Economics*, Wiley, 2020.

C. Joe-Wong, L. Zheng and J. Chen, Oligopoly Pricing, *Encyclopedia for Wireless Networks*, Springer, 2018.

C. Joe-Wong, L. Zheng, S. Ha, S. Sen, C. W. Tan and M. Chiang, Smart Data Pricing in 5G Systems, in *Key Technologies for 5G Wireless Systems*, Cambridge University Press, 2017.

C. Joe-Wong, S. Ha, Z. Liu, F. M. F. Wong and M. Chiang, Mind Your Own Bandwidth, in *Fog for 5G and IoT*, Wiley, 2017.

S. Sen, **C. Joe-Wong**, S. Ha and M. Chiang, Human Factors in Smart Data Pricing, in *Smart Data Pricing*, Wiley, 2014.

S. Sen, **C. Joe-Wong**, S. Ha and M. Chiang, eds., *Smart Data Pricing*, Wiley, 2014.

S. Sen, **C. Joe-Wong**, S. Ha and M. Chiang, Smart Data Pricing (SDP): Economic Solutions to Network Congestion, in *SIGCOMM eBook on Recent Advances in Networking*, Volume 1, 2013.

Journal Articles

S. Liu, **C. Joe-Wong**, J. Chen, C. G. Brinton, C. W. Tan and L. Zheng, Economic Viability of a Virtual ISP, accepted to *IEEE/ACM Transactions on Networking*.

X. Chen, S. Xu, J. Han, H. Fu, X. Pi, **C. Joe-Wong**, L. Zhang, H. Noh and P. Zhang, ASC: Actuation System for City-scale Ride Sharing Vehicular Mobile Crowdsensing, accepted to *IEEE Internet of Things Journal*, 2020.

C. Joe-Wong, T.-S. Ho and H. Rabitz, Assessing the Structure of Classical Molecular Optimal Control Landscapes, *Chemical Physics*, 2019.

S. Xu, X. Chen, **C. Joe-Wong**, P. Zhang and H. Noh, iLoCuS: Incentivizing Vehicle Mobility to Optimize Sensing Distribution in Crowd Sensing, *IEEE Transactions on Mobile Computing*, 2019.

S. Sen, **C. Joe-Wong**, S. Ha and M. Chiang, Time-Dependent Pricing for Multimedia Data Traffic: Analysis, Systems, & Trials, *IEEE Journal on Selected Areas in Communications*, 2019.

M. Harishankar, S. Pilaka, P. Sharma, N. Srinivasan, **C. Joe-Wong** and P. Tague, Procuring Spontaneous Session-Level Resource Guarantees for Real-Time Applications: An Auction Approach, *IEEE Journal on Selected Areas in Communications*, 2019.

C. Ruiz, S. Pan, A. Bannis, X. Chen, **C. Joe-Wong**, H. Y. Noh and P. Zhang, IDrone: Robust Drone Identification through Motion Actuation Feedback, *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, formerly *ACM UbiComp*, 2018.

C. Joe-Wong and S. Sen, Harnessing the Power of the Cloud: Revenue, Fairness, and Cloud Neutrality, *Journal of Management and Information Systems*, March 2018.

C. Joe-Wong, S. Sen and S. Ha, Sponsoring Mobile Data: Analyzing the Impact on Internet Stakeholders, *IEEE/ACM Transactions on Networking*, May 2018.

L. Zheng, **C. Joe-Wong**, C. W. Tan, S. Ha and M. Chiang, Customized Data Plans for Mobile Users: Feasibility and Benefits of Data Trading, *IEEE Journal of Selected Areas in Communications*, May 2017.

K. Shin, **C. Joe-Wong**, S. Ha, Y. Yi, I. Rhee and D. Reeves, T-Chain: A General Incentive Scheme for Cooperative Computing, *IEEE/ACM Transactions on Networking*, April 2017.

T.-Y. Yang, C. G. Brinton, **C. Joe-Wong** and M. Chiang, Behavior-Based Grade Prediction for MOOCs via Time Series Neural Networks, *IEEE Journal of Special Topics in Signal Processing*, March 2017.

Y. Im, **C. Joe-Wong**, S. Ha, S. Sen, T. Kwon and M. Chiang, AMUSE: Empowering Users for Cost-Aware Offloading with Throughput-Delay Tradeoffs, *IEEE Transactions on Mobile Computing*, May 2016.

S. Sen, **C. Joe-Wong**, S. Ha and M. Chiang, Smart Data Pricing: Using Economics to Manage Network Congestion, *Communications of the ACM*, December 2015.

C. Joe-Wong, I. Kamitsos and S. Ha, Inter-Datacenter Job Routing and Scheduling with Variable Costs and Deadlines, *IEEE Transactions on Smart Grid*, November 2015.

C. Joe-Wong, T.-S. Ho and H. Rabitz, On Choosing the Form of the Objective Functional for Optimal Control of Molecules, *Journal of Mathematical Chemistry*, September 2015 (letter to the editor).

C. Joe-Wong, T.-S. Ho, H. Rabitz and R. Wu, Topology of Classical Molecular Optimal Control Landscapes for Multi-Target Objectives, *Journal of Chemical Physics*, April 2015.

C. Joe-Wong, S. Sen and S. Ha, Offering Supplementary Network Technologies: Adoption Behavior and Offloading Benefits, *IEEE/ACM Transactions on Networking*, April 2015.

S. Sen, **C. Joe-Wong**, S. Ha and M. Chiang, Pricing Data: A Look at Past Proposals, Current Plans, and Future Trends, *ACM Computing Surveys*, February 2014.

C. Joe-Wong, S. Sen, T. Lan and M. Chiang, Multi-Resource Allocation: Fairness-Efficiency Tradeoffs in a Unifying Framework, *IEEE/ACM Transactions on Networking*, December 2013.

C. Joe-Wong, T.-S. Ho, R. Long, H. Rabitz and R. Wu, Topology of Classical Molecular Optimal Control Landscapes in Phase Space, *Journal of Chemical Physics*, March 2013.

A. M. S. Palanca, S.-L. Lee, L. E. Yee, **C. Joe-Wong**, L. A. Trinh, E. Hiroyasu, M. Husain, S. E. Fraser, M. Pellegrini and A. Sagasti, New Transgenic Reporters Identify Somatosensory Neuron Subtypes in Larval Zebrafish, *Developmental Neurobiology*, February 2013.

S. Sen, **C. Joe-Wong**, S. Ha and M. Chiang, Incentivizing Time-Shifting of Data: A Survey of Time-Dependent Pricing for Internet Access, *IEEE Communications Magazine*, November 2012.

C. Joe-Wong, S. Sen, S. Ha and M. Chiang, Optimized Day-Ahead Pricing for the Smart Grid with Device-Specific Scheduling Flexibility, *IEEE Journal on Selected Areas in Communications*, July 2012.

Conference Papers

P. Rahimzadeh, J. Lee, Y. Im, S.-C. Mau, E. C. Lee, B. O. Smith, F. Al-Duoli, **C. Joe-Wong** and S. Ha, SPARCLE: Stream Processing Applications over Dispersed Computing Networks, to appear in *IEEE ICDCS 2020*.

Z. Liu, G. Lan, J. Stojkovic, Y. Zhang, **C. Joe-Wong** and M. Gorlatova, CollabAR: Edge-assisted Collaborative Image Recognition for Mobile Augmented Reality, to appear in *ACM IPSN 2020*.

K. T. Kim, **C. Joe-Wong** and M. Chiang, Coded Edge Computing, to appear in *IEEE INFOCOM 2020*.

T. Mohamed, **C. Joe-Wong**, R. Babbar and M. Di Francesco, Distributed Inference Acceleration with Adaptive DNN Partitioning and Offloading, to appear in *IEEE INFOCOM 2020*.

Y. Ruan and **C. Joe-Wong**, On the Economic Value of Mobile Caching, to appear in *IEEE INFOCOM 2020*.

Y. Tu, Y. Ruan, S. Wagle, C. G. Brinton and **C. Joe-Wong**, Network-Aware Optimization of Distributed Learning for Fog Computing, to appear in *IEEE INFOCOM 2020*.

X. Zhang, J. Wang, G. Joshi and **C. Joe-Wong**, Machine Learning on Volatile Instances, to appear in *IEEE INFOCOM 2020*.

J. Zuo, X. Zhang and **C. Joe-Wong**, Observe Before Play: Multi-Armed Bandits with Pre-Observations, to appear in *AAAI 2020*.

X. Zhang, S. Chen, Y. Im, M. Gorlatova, S. Ha and **C. Joe-Wong**, Towards Automated Network Management: Learning the Optimal Protocol Selection for Network Flows, *IEEE ICNP 2019* (short paper).

E. Aryafar, A. Keshavarz-Haddad and **C. Joe-Wong**, Proportional Fair RAT Aggregation in HetNets, *ITC 31 (International Teletraffic Congress 2019)*.

P. Rahimzadeh, Y. Im, G. Jung, **C. Joe-Wong** and S. Ha, ECHO: Efficiently Overbooking Applications to Create a Highly Available Cloud, *IEEE ICDCS 2019*.

J. Lee, J. Lee, Y. Im, S. D. Sathyanarayana, P. Rahimzadeh, X. Zhang, M. Hollingsworth, **C. Joe-Wong**, D. Grunwald and S. Ha, CASTLE over the Air: Distributed Scheduling for Cellular Data Transmissions, *ACM MobiSys 2019*.

S. Xu, X. Chen, **C. Joe-Wong**, P. Zhang and H. Y. Noh, Incentivizing Large-Scale Vehicular Crowdsensing System for Smart City Applications, *SPIE Conference on Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, 2019*.

Y. Im, P. Rahimzadeh, B. Shouse, S. Park, **C. Joe-Wong**, K. Lee and S. Ha, I Sent It: Where Does Slow Data Go to Wait?, *ACM EuroSys 2019*.

Y. Jiang, M. Shahrad, D. Wentzlaff, D. H. K. Tsang and **C. Joe-Wong**, Burstable Instances for Clouds: Performance Modeling, Equilibrium Analysis, and Revenue Maximization, *IEEE INFOCOM 2019*.

P. Kortoci, L. Zheng, **C. Joe-Wong**, M. Di Francesco and M. Chiang, Fog-based Data Offloading in Urban IoT Scenarios, *IEEE INFOCOM 2019*.

W. Chen, **C. Joe-Wong**, C. G. Brinton, L. Zheng and D. Cao, Principles of Assessing Adaptive Online Courses, *Educational Data Mining 2018*.

M. Harishankar*, N. Srinivasan*, **C. Joe-Wong** and P. Tague, To Accept or Not to Accept: The Question of Supplemental Discount Offers in Mobile Data Plans, *IEEE INFOCOM 2018*.

*These authors contributed equally to the paper.

M. Khodak, L. Zheng, A. S. Lan, **C. Joe-Wong** and M. Chiang, Learning Cloud Dynamics to Optimize Spot Instance Bidding Strategies, *IEEE INFOCOM 2018*.

T. Oda and **C. Joe-Wong**, MOVI: A Model-Free Approach to Dynamic Fleet Management, *IEEE INFOCOM 2018*.

T.-Y. Yang, C. G. Brinton and **C. Joe-Wong**, Predicting Learner Interactions in Social Learning Networks, *IEEE INFOCOM 2018*.

L. Zheng, **C. Joe-Wong**, M. Andrews and M. Chiang, Optimizing Data Plans: Usage Dynamics in Mobile Data Networks, *IEEE INFOCOM 2018*.

L. Zheng, J. Chen, **C. Joe-Wong**, C. W. Tan and M. Chiang, An Economic Analysis of Wireless Network Infrastructure Sharing, *WiOpt 2017*.

E. Aryafar, A. Keshavarz-Haddad, **C. Joe-Wong** and M. Chiang, Max-Min Fair Resource Allocation in HetNets: Distributed Algorithms and Hybrid Architecture, *IEEE ICDCS 2017*.

Y. Im, J. Han, J. H. Lee, Y. Kwon, **C. Joe-Wong**, T. Kwon and S. Ha, FLARE: Coordinated Rate Adaptation for HTTP Adaptive Streaming in Cellular Networks, *IEEE ICDCS 2017*.

Z. Huang, M. Weinberg, L. Zheng, **C. Joe-Wong** and M. Chiang, Discovering Valuations and Enforcing Truthfulness in a Deadline-Aware Scheduler, *IEEE INFOCOM 2017*.

P. Rahimzadeh, **C. Joe-Wong**, K. Shin, Y. Im, J. Lee and S. Ha, SVC-TChain: Incentivizing Good Behavior in Layered P2P Video Streaming, *IEEE INFOCOM 2017*.

L. Zheng, **C. Joe-Wong**, J. Chen, C. G. Brinton, C. W. Tan and M. Chiang, Economic Viability of a Virtual ISP, *IEEE INFOCOM 2017*.

C. Joe-Wong, Y. Im, K. Shin and S. Ha, A Performance Analysis of Incentive Mechanisms for Cooperative Computing, *IEEE ICDCS 2016*.

L. Zheng, **C. Joe-Wong**, C. Brinton, C. W. Tan, S. Ha and M. Chiang, On the Viability of a Cloud Virtual Service Provider, *ACM SIGMETRICS 2016*.

L. Zheng, **C. Joe-Wong**, C. W. Tan, M. Chiang and X. Wang, How to Bid the Cloud, *ACM SIGCOMM 2015*.

K. Shin, **C. Joe-Wong**, S. Ha, Y. Yi, I. Rhee and D. Reeves, T-Chain: A General Incentive Scheme for Cooperative Computing, *IEEE ICDCS 2015*.

F. M. F. Wong, **C. Joe-Wong**, S. Ha, Z. Liu and M. Chiang, Improving User QoE for Residential Broadband: Adaptive Traffic Management at the Network Edge, *IEEE/ACM IWQoS 2015*.

C. Joe-Wong, S. Ha and M. Chiang, Sponsoring Mobile Data: An Economic Analysis of the Impact on Users and Content Providers, *IEEE INFOCOM 2015*.

L. Zheng, **C. Joe-Wong**, C. W. Tan, S. Ha and M. Chiang, Secondary Markets for Mobile Data: Feasibility and Benefits of Traded Data Plans, *IEEE INFOCOM 2015*.

J. Chung, **C. Joe-Wong**, S. Ha, J. W.-K. Hong and M. Chiang, CYRUS: Towards Client-Defined Cloud Storage, *EuroSys 2015*.

C. Joe-Wong, S. Sen, S. Ha and M. Chiang, Do Mobile Data Plans Affect Usage? Results from a Pricing Trial with ISP Customers, *PAM 2015*.

S. Sen, **C. Joe-Wong**, S. Ha, J. Bawa and M. Chiang, When the Price Is Right: Enabling Time-Dependent Pricing of Broadband Data, *ACM SIGCHI 2013*.

C. Joe-Wong, S. Sen and S. Ha, Offering Supplementary Wireless Technologies: Adoption Behavior and Offloading Benefits, *IEEE INFOCOM 2013*.

Y. Im, **C. Joe-Wong**, S. Ha, S. Sen, T. Kwon and M. Chiang, AMUSE: Empowering Users for Cost-Aware Offloading with Throughput-Delay Tradeoffs, *IEEE INFOCOM 2013* (mini-conference).

S. Ha, S. Sen, **C. Joe-Wong**, Y. Im and M. Chiang, TUBE: Time-Dependent Pricing for Mobile Data, *ACM SIGCOMM 2012*.

C. Joe-Wong, S. Sen, T. Lan and M. Chiang, Multi-Resource Allocation: Fairness-Efficiency Tradeoffs in a Unifying Framework, *IEEE INFOCOM 2012*.

S. Ha, **C. Joe-Wong**, S. Sen and M. Chiang, Pricing by Timing: Innovating Broadband Data Plans, *SPIE-OPTO Broadband 2012* (invited paper).

C. Joe-Wong, S. Ha and M. Chiang, Time-Dependent Broadband Pricing: Feasibility and Benefits, *IEEE ICDCS 2011*.

Workshop Papers, Demos, and Posters

Q. Qiu, M. Bozsik, G. Ren, **C. Joe-Wong**, M. Nazzal and J. Burns, Geographic Disparities in Access to Lymphedema Treatment, *AcademyHealth 2020 Annual Research Meeting*.

J. Stojkovic, Z. Liu, G. Lan, **C. Joe-Wong** and M. Gorlatova, Demo: Edge-assisted Collaborative Image Recognition for Augmented Reality, *ACM SenSys 2019*.

S. Yerabolu, S. Gomena, E. Aryafar and **C. Joe-Wong**, An Edge Computing Marketplace for Distributed Machine Learning, demo at *ACM SIGCOMM 2019*.

S. D. Sathyanarayana, J. Lee, J. Lee, Y. Im, P. Rahimzadeh, X. Zhang, M. Hollingsworth, **C. Joe-Wong**, D. Grunwald and S. Ha, CASTLE over the Air: Distributed Scheduling for Cellular Data Transmissions, demo at *ACM MobiSys 2019*.

X. Zhang, S. Chen, Y. Im, M. Gorlatova, S. Ha and **C. Joe-Wong**, Optimal Learning-based Network Protocol Selection, *ACM/IEEE ISCA Workshop on Machine Learning for Systems*, part of ACM FCRC 2019.

S. Xu, X. Chen, X. Pi, **C. Joe-Wong**, P. Zhang and H. Y. Noh, Vehicle Dispatching for Sensing Coverage Optimization in Mobile Crowdsensing Systems, poster at *ACM IPSN 2019*.

X. Chen, S. Xu, H. Fu, **C. Joe-Wong**, L. Zhang, H. Noh and P. Zhang, ASC: Actuation System for City-wide Crowdsensing with Ride-sharing Vehicular Platform, *4th Workshop on Science of Smart City Operations and Platforms Engineering (SCOPE) 2019*, part of CPS-IoT Week 2019.

M. Harishankar, P. Tague and **C. Joe-Wong**, Network Slicing as an Ad-Hoc Service: Opportunities and Challenges in Enabling User-Driven Resource Management in 5G, *Workshop on Trustworthy & Real-time Edge Computing for Cyber-Physical Systems (TREC4CPS)*, co-located with IEEE RTSS 2018.

Y. Ruan and **C. Joe-Wong**, On the Economic Value of Vehicular Caching, *ACM SIGMETRICS Work-in-Progress 2018*.

J. Zuo, X. Zhang and **C. Joe-Wong**, Observe before Play: Multi-armed Bandit with Pre-Observations, *ACM SIGMETRICS Work-in-Progress 2018*.

A. Jauhri, **C. Joe-Wong** and J. P. Shen, On the Real-Time Vehicle Placement Problem, *NIPS Workshop on Machine Learning for Intelligent Transportation Systems 2017*.

S. Sen, **C. Joe-Wong**, S. Ha and M. Chiang, Time-Dependent Pricing in Mobile Data Plans: Results from a Field Deployment in Alaska, *WITS (Workshop on Internet Technologies and Systems) 2016*.

Y. Wang, **C. Joe-Wong** and S. Sen, Congestion Externalities, Content Exclusivity, and Internet Fragmentation, *WITS (Workshop on Internet Technologies and Systems) 2016* (poster).

L. Zheng and **C. Joe-Wong**, Understanding Rollover Data, *Smart Data Pricing Workshop 2016*.

C. Joe-Wong and S. Sen, Pricing the Cloud: Resource Allocations, Fairness, and Revenue, *WITS (Workshop on Internet Technologies and Systems) 2013*.

M.-J. Sheng, **C. Joe-Wong**, S. Ha, F. M. F. Wong and S. Sen, Smart Data Pricing: Lessons from Trial Planning, *Smart Data Pricing Workshop 2013*.

S. Sen, **C. Joe-Wong** and S. Ha, Economics of Shared Data Plans, *WITS 2012*.

S. Ha, S. Sen, **C. Joe-Wong**, R. Rill and M. Chiang, Demo: Enabling Mobile Time-Dependent Pricing, *ACM MobiSys 2012*.

S. Ha, S. Sen, **C. Joe-Wong**, J. Mifkovich, R. Rill, Y. Im, D. Butnariu, J. Bawa and M. Chiang, Demo: Pricing by Timing for Mobile Data, *IEEE INFOCOM 2012*.

C. Joe-Wong, S. Ha, S. Sen and M. Chiang, TUBE: Pricing by Timing, poster session at New York Computer Science and Economics Day, September 2011.

S. Ha, S. Sen, **C. Joe-Wong** and M. Chiang, TUBE Trials: Pricing by Timing, NECA (National Exchange Carrier Association) EXPO 2011.

C. Joe-Wong, S. Ha and M. Chiang, Time-Dependent Broadband Pricing, *ITA (Information Theory and Applications) Workshop 2011*.

Patents

M. Chiang, **C. Joe-Wong**, S. Ha and S. Sen, System and Methods for Time Deferred Transmission of Mobile Data, U.S. Patent #10536584, January 2020.

M. Chiang, S. Ha, S. Sen and **C. Joe-Wong**, System and Method for Variable Pricing of Data Usage, U.S. Patent #9865009, January 2018.

M. Chiang, S. Ha, **C. Joe-Wong**, J. Shantigram and W. Sweldens, System and Method for Scheduling Mobile Data during a Spectrum Valley, U.S. Patent #9820291, November 2017.

J. Shantigram, M. Shi, **C. Joe-Wong** and S. Ha, System and Method for Coordinating Client-side Inference of Mobile Network Loading and Capacity, U.S. Patent #9794155, October 2017.

M. Chiang, S. Ha, **C. Joe-Wong**, H. S. Saluja, J. Shantigram and W. Sweldens, Client-Side Inference of Wireless Network States, U.S. Patent #9407508, August 2016.

Academic Service

Editorial Board: IEEE Networking Letters (2018–present); Computer Networks (2019–present); OJ-COMS (Open Journal of the IEEE Communication Society, 2019–present)

Associate Editor: IEEE Journal on Selected Areas in Communications, Special Issue on Smart Data Pricing for Next-Generation Networks

Co-Chair: NSF NeTS Early Career Workshop 2019; Smart Data Pricing Forum, University of Minnesota (2018); Sixth Workshop on Smart Data Pricing (at IEEE INFOCOM 2017); Wireless of the Students, by the Students, and for the Students (S^3) Workshop (at ACM MOBICOM 2014)

TPC Member: ICML 2020, ACM SIGMETRICS 2018–2020, IEEE INFOCOM 2018–2020 (Distinguished TPC Member in 2019 and 2020), ACM MobiHoc 2017–2020, IEEE WiOpt 2019, HDR-Nets 2019 (co-located with IEEE ICNP), RAWNET 2019 (co-located with WiOpt), NetEcon 2017–2019, NetGCoop 2018, ITC29, Fog World Congress 2017, IEEE INFOCOM Workshops on Smart Data Pricing 2013–16

TPC Co-Chair: IEEE Sarnoff Symposium 2019; First Workshop on the Economics of Fog, Edge and Cloud Computing (ECOFEC, co-located with IEEE INFOCOM 2019)

Workshop Co-Chair: ACM MobiHoc 2020

Publicity Chair: ACM SIGMETRICS 2019

Tutorial Chair: IEEE WiOpt 2018

Student Activities Chair: ACM SIGMETRICS, ACM MOBICOM 2018

Web Chair: Fog World Congress 2017

Journal reviewer: IEEE/ACM Transactions on Networking, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Information Theory, ACM Transactions on Modeling and Performance Evaluation of Computing Systems, ACM Transactions on Internet Technology, IEEE Transactions on Mobile Computing, IEEE Transactions on Smart Grid, IEEE Transactions on Automatic Control, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Communications, IEEE Network, IEEE Communications Letters, IEEE Transactions on Wireless Communications.

Grant reviewer: US Army Research Office (2019), Maryland Industrial Partnerships Program (2019), NSF Computer and Network Systems Program (2018 and 2019), Israel Science Foundation (2017)

Outreach Activities

Chair of the ACM SIGMETRICS Committee on Student Engagement 2019–present

Speaker at the UNCF Silicon Valley CS Academy Program 2019

Panelist for the NCWIT Aspirations in Computing Award Ceremony 2018

N2Women Mentor at IEEE INFOCOM 2018

Smart Data Pricing 2017
Research@CMU (Professional development program for area educators)

The Economics of Energy Choices 2017–2018
Summer Engineering Experience (SEE) for Girls, CMU College of Engineering

Judge for CMU ECE's Grace Hopper Conference Scholarships 2017–2018

Junior Faculty Panel 2016
Rising Stars in EECS Workshop, hosted by CMU

Smart Data Pricing: From Mathematical Theory to a Startup Company 2016
Program for Women and Mathematics, Institute for Advanced Study and Princeton University

Invited Talks and Panels

Optimizing the Cost of Distributed Learning 2020
Pennsylvania State University

Multi-Player Bandits with Pre-Observations 2019
Adobe Research

Learning How to Request Network Services 2019
HDR-NETS Workshop, co-located with IEEE ICNP 2019

Burstable Instances: Models, Equilibria, and Revenue 2019
Invited participant, 15th Annual Cloud Control Workshop, Sandhamn, Sweden

On the Optimization of Distributed Learning 2019
LGS Innovations, AT&T Research, Princeton University EDGE10 Workshop

Real-Time Resource Allocation: Meeting Interactive Application Needs in Clouds and Networks 2019
Aalto University

Real-Time Network Slicing: Opportunities and Challenges 2019
ACM MobiHoc TPC Meeting Workshop, University of Michigan Ann Arbor

Towards Automated Network Management: Learning Optimal Protocols 2018
Speaker and panelist, IEEE Sarnoff Symposium

Networking the Intelligent Edge 2018
Panelist, IEEE LANMAN

Secure Routing for the Internet 2018
Invited participant, Schloss Dagstuhl seminar

Learning to Compete in Networked Systems 2018
University of California, Riverside

Smart Data Pricing: Creating Incentives for Better Quality-of-Experience 2017
Samsung Research America

Network Optimization in Urban Environments: Smart Grids and Taxis 2017
Carnegie Mellon University (Civil and Environmental Engineering)

Letting Go of Network Neutrality: Some Implications for Internet Stakeholders 2017
University of California, Berkeley

Applied and Cognitive Symposium: Human Usage of the Worldwide Web 2017
Eastern Psychological Association Annual Meeting

The Demand Side of Network Management: Using Incentives to Alleviate Network Congestion 2017
Intel Corporation, BAE Systems

Using Pricing to Manage the Cloud 2017
Johns Hopkins University, California Institute of Technology, Yelp Inc., Microsoft Research, IBM T.J. Watson Research Center

Smart Data Pricing: Incentives in Network Resource Allocation 2016
ECE Department Seminar, Carnegie Mellon University

Understanding Fairness in Multi-Resource Allocation 2016
University of Pennsylvania (Wharton); Cornell University; Stanford Graduate School of Business

Smart Data Pricing 2015, 2016
Purdue University; University of Waterloo; Johns Hopkins University; Georgia Institute of Technology; University of California, San Diego; Carnegie Mellon University; Massachusetts Institute of Technology; Duke University; University of Pennsylvania; Rice University; Arizona State University; University of Illinois, Urbana-Champaign; University of Southern California

Optimal Control Landscapes for Molecules Described by Classical Mechanics 2015
Multidisciplinary Research Seminar, Princeton University

An Economic Look at Sponsoring and Trading Mobile Data 2015
Alcatel-Lucent Bell Labs

Valuation for High-Tech Startups Panel 2015
Princeton University Keller Center

Sponsored Data and Net Neutrality 2015
Chinese University of Hong Kong Workshop on Network Optimization and Economics

Whom to Charge: Open Toll-free and Zero-rating 2015

SDP Industry Forum Panel, Princeton, NJ, USA

Multi-Resource Allocation: Fairness, Efficiency, and Applications 2015

Korea Advanced Institute of Science and Technology; Cornell University; University of California, Los Angeles; University of Southern California; California Institute of Technology

Industry-Academia Panel at the Third International Workshop on Smart Data Pricing 2014

Smart Data Pricing 2012

Time Warner Cable/NYC Media Labs Research Summit

Pricing Complementary Wireless Technologies 2012

PACM Graduate Student Seminar, Princeton University

Multi-Resource Allocation: Fairness-Efficiency Tradeoffs in a Unifying Framework 2012

NEC Labs; Applied Communication Sciences; Princeton University

TUBE: Pricing by Timing 2011

Princeton University Keller Center Innovation Forum

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`http://www.andrew.cmu.edu/user/cjoewong/CV.pdf`