Srinivasan Keshav

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EDUCATION

Ph.D. in Computer Science, University of California at Berkeley *August 1991*
Awarded the Sakrison Prize for the best dissertation in the EECS department

B.Tech. in Computer Science, Indian Institute of Technology, Delhi *May 1986*
Awarded the Director's Gold Medal

EMPLOYMENT

University of Cambridge, *Robert Sansom Professor* *October 2019-*
Fellow of Fitzwilliam College
University of Waterloo, *Associate Professor, Professor* *July 2003–September 2019*
Cornell University, *Associate Professor* *August 1996 – June 1999*
Columbia University, *Visiting Faculty* *September - December 1995*
Indian Institute of Technology, Delhi, *Visiting Faculty* *January - May 1993*

Turing Institute for Data Science, London, *Visiting Researcher* *June-August 2017*
Technicolor Research, Paris, *Visiting Researcher* *June-August 2010*
Intel Research, Cambridge, *Visiting Researcher* *June-July 2006*
AT&T Bell Laboratories, *Member of Technical Staff* *August 1991 - August 1996*

GreenTag Corp., *Co-founder, and Director* *November 2023 –*
Bee Networx Corp., *Co-founder, and Director* *June 2007 –*
Ensim Corp., *Co-founder, CTO, General Manager, and Director* *June 1998 - July 2003*
GreenBorder Technologies Inc., *Co-Founder* *October 2000 - March 2007*

AWARDS AND HONORS

- Fellow, Royal Society of Canada, 2019
- Distinguished Alumni, Indian Institute of Technology, Delhi, 2019
- Fellow, Institute of Electrical and Electronics Engineers, 2019
- Fellow, Association for Computing Machinery, 2012
- Elected Chair of ACM SIGCOMM--the premier professional organization for computer networking researchers, 2013-2017
- Cisco Systems Research Chair in Smart Grid, 2012-2017
- Tier II Canada Research Chair in Tetherless Computing, 2004-2014
  1000 such chairs were awarded across all disciplines in Canada
- Invited to testify as an expert on cell phone pricing at the US Senate Judiciary Committee, 2009.
- Fiona Ip Li '78 and Donald Li '75 Excellence in Teaching Award, Cornell University, 1998
- Alfred P. Sloan Fellow in Computer Science, 1997-1999.
  A total of 112 fellowships are awarded annually in seven fields

- ACM SIGCOMM selected two of my papers as among the ``... most important papers that have appeared in *Computer Communication Review* over the past 25 years,'' January 1995. These papers also received Test-of-Time awards in 2006
- Co-recipient of a Test-of-Time award from ACM SigENERGY in 2024
- Best Paper Awards at ACM SIGCOMM 1991, ACM MOBICOM 2009, ACM SIGCOMM Green Networking Workshop, 2010, IEEE SmartGridComm 2012, ACM eEnergy 2013, and BuildSys 2013
- Recipient of the Sakrison Prize, awarded annually for a ``truly outstanding piece of research," EECS department, UC Berkeley, 1992
- Director's Gold Medal for best all-round performance in the graduating class, Indian Institute of Technology, Delhi, May 1986
- National Talent Scholarship, Government of India, 1980-86.
  Awarded annually to 100 students selected from over ~100,000 applicants

PUBLICATIONS

***Note on author order**: Student co-authors appear first unless they are marginal contributors; peer co-authors are in order of relative contribution.*

Books

B1. O. Ardakanian, S. Keshav, C. Rosenberg, Integration of Renewable Generation and Elastic Loads into Distribution Grids, *Springer*, July 2016. (80 pages)

B2. S. Keshav, Mathematical Foundations of Computer Networking, *Addison-Wesley*, April 2012. (475 pages). Chinese Translation published by Tsinghua Press in 2015.

B3. S. Keshav, An Engineering Approach to Computer Networking, *Addison-Wesley*, May 1997. (660 pages)

Refereed Journals

J1. Z. Feng, Y. She, and S. Keshav, SPREAD: A large-scale, high-fidelity synthetic dataset for multiple forest vision tasks, *Ecological Informatics*, **87**, February 2025.

J2. L. Capol, S. Keshav, and Z. Nagy, Activity hours: Assessing liveability during heatwaves, Building and Environment, **269**, February 2025.

J3. J. Wang, L. Chang, S. Aggarwal, O. Abari, and S. Keshav. Sustainable and Low-Cost Greenhouse Soil Moisture Monitoring Using Battery-Free RFID Sensors, *ACM Transactions on Sensor Networks,* January 2025.

J4. Z. Feng, M. Xie, A. Holcomb, and S. Keshav, "An app for tree trunk diameter estimation from coarse optical depth maps, *Ecological Informatics*, **82** , September 2024.

J5. E-P. Rau, J. Gross, D. A. Coomes, T. Swinfield, A. Madhavapeddy, A. Balmford, and S. Keshav, "Mitigating risk of credit reversal in nature-based climate solutions by optimally anticipating carbon release", *J. Carbon Management* ,**15** (1), September

2024.

J6. M. C. Lisaius, A. Blake, S. Keshav and C. Atzberger, "Using Barlow Twins to Create Representations from Cloud-corrupted Remote Sensing Time Series," *IEEE J. of Selected Topics in Applied Earth Observations and Remote Sensing* , **17** , pp13162-13168, August 2024.

J7. A. Holcomb, P. Burns, S. Keshav, and D. Coomes, "Repeat GEDI footprints measure moderate-scale tropical forest disturbance," *Remote Sensing of the Environment*, **308**, May 2024.

J8. A. Berkes and S.Keshav, SPAGHETTI: a synthetic data generator for post-Covid electric vehicle usage, *Energy Informatics*, **7**(15), Jan 2024.

J9. A. Holcomb, S. Mathis, S. Keshav, and D. Coomes, Computational tools for assessing forest recovery with GEDI shots and forest change maps, *Science of Remote Sensing*, **8** , November 2023.

J10. A. Balmford, S. Keshav, F. Venmans et al. Realizing the social value of impermanent carbon credits, *Nature Climate Change*, **13** , October 2023.

J11. A. Balmford et al., Credit credibility threatens forests, *Science*, **380**, 466-467, May 2023.

J12. H.S. Bhundar, L. Golab, S. Keshav, Using EV charging control to provide building load flexibility. *Energy Informatics,* **6**(1):5, January 2023.

J13. A. Holcomb, L. Tong, and S. Keshav, Robust Single-Image Tree Diameter Estimation with Mobile Phones, *MDPI Remote Sensing*, **15**, 772, January 2023.

J14. V. Bajpai, O. Hohfield, J. Crowcroft, S. Keshav, H. Schulzrinne, J. Ott, S. Ferlin, G. Care, A. Hines, A. Rake, Recommendations for Designing Hybrid Conference, *ACM SIGCOMM Computer Communications Review*, July 2022.

J15. Y. Aussat, A. Rosmanis, S. Keshav, A Power-Efficient Self-Calibrating Smart Lighting System, *Energy and Buildings*, V. 259, March 2022.

J16. C. Gorenflo, L. Golab, S. Keshav, FastFabric: Scaling Hyperledger Fabric to 20,000 Transactions per Second, *International Journal of Network Management*, 2020.

J17. F. Kazhamiaka, Y. Ghiassi-Farrokhfal, S. Keshav, and C. Rosenberg, Comparison of Different Approaches for Solar PV and Storage Sizing, *IEEE Transactions on Sustainable Computing*, September 2019.

J18. J. Wang, O. Abari, and S. Keshav, RFID Hacking for Fun and Profit, *GetMobile: Mobile Comp. and Comm.* 23, 1 July 2019, 21-23. DOI: https://doi.org/10.1145/3351422.3351430

J19. F. Kazhamiaka, C. Rosenberg, and S. Keshav, Tractable Lithium-Ion Storage Models for Optimizing Energy Systems, *Energy Informatics*, 2:1, 2019.

J20. M. Jain, R. Kalaimani, S. Keshav, and C. Rosenberg, "Using Personal Environmental Comfort Systems to Mitigate the Impact of Occupancy Prediction Errors on HVAC

Performance," *Energy Informatics*, 2018 1:60, https://doi.org/10.1186/s42162-018-0064-9, December 2018.

J21. F. Kazhamiaka, S. Keshav, C. Rosenberg, and K.-H. Pettinger, "Simple Spec-Based Modelling of Lithium-Ion Batteries, " *IEEE Transactions on Energy Conversion,* Vol 33, No. 4, December 2018. (9 pages)

J22. R. Kalaimani, M. Jain, S. Keshav, and C. Rosenberg, "On the Interaction between Personal Comfort Systems and Centralized HVAC Systems in Office Buildings, " *J. Advances in Building Energy Research*, August 2018, V7:p.1-29. (29 pages)

J23. A. Adepetu, A. Alyousef, S.Keshav, and H. de Meer, "Comparing Solar Photovoltaic and battery adoption in Ontario and Germany: an agent-based approach, " *Energy Informatics*, 1(1), p.6, 2018. (22 pages)

J24. S. Edge, J. Dean, M. Cuomo, and S. Keshav,"Exploring e-bikes as a mode of sustainable transport: a temporal qualitative study of the perspectives of a sample of novice riders in a Canadian city, " *Canadian Geographer/Le Geographe Canadien,* April 2018.

J25. G. Tang, S. Keshav, L. Golab, and K. Wu, "Bikeshare Pool Sizing for Bike-And-Ride Multimodal Transit, " *IEEE Transactions on Intelligent Transportation Systems*, 19(7), p. 2279-2289, 2018. (13 pages)

J26. S. Keshav, Paradoxes of Internet Architecture, Invited paper, *IEEE Internet Computing*, January/February 2018. (4 pages)

J27. F. Kazhamiaka, P. Jochem, S. Keshav, and C. Rosenberg, "PV-Storage System Profitability in Multiple Jurisdictions," *Energy Policy*, Vol. 109, Oct. 2017. (13 pages)

J28. C. Gorenflo, I. Rios, L. Golab, S. Keshav, "Usage Patterns of Electric Bicycles: An Analysis of the WeBike Project," *Journal of Advanced Transportation*, vol. 2017, Article ID 3739505, 2017. https://doi.org/10.1155/2017/3739505. (15 pages)

J29. F. Kazhamiaka, C. Rosenberg, S. Keshav, "Practical Strategies for Storage Operation in Energy Systems: Design and Evaluation," *IEEE Transactions on Sustainable Energy*, Vol. 7, no. 4, pp. 1602-1610, Oct. 2016. (10 pages)

J30. R. P. Singh, B. Cassell, S. Keshav, T. Brecht, "TussleOS: Managing Privacy Versus Functionality Trade-Offs on IoT Devices," *SIGCOMM Computer Communication Review*, July 2016. (6 pages)

J31. A. Adepetu, V. Arya, and S. Keshav, "An Agent-Based Electric Vehicle Ecosystem Model: San Francisco Case Study,"*Transport Policy*, 46 (2016): 109-122.

J32. Y. Ghiassi-Farrohkfal, C. Rosenberg, S. Keshav, and M.-B. Adjaho, "Optimal Operation and Design of Hybrid Energy Storage Systems, " *IEEE Journal on Selected Areas in Communication*, Vol. 34, No. 3, March 2016.

J33. Y. Ghiassi-Farrokhfal, F. Kazhamiaka, C. Rosenberg, and S. Keshav, "Optimal Design of Solar PV Farms with Storage, " *IEEE Transactions on Sustainable Energy*, Vol. 6, No. 5, October 2015.

J34. A. Adepetu and S. Keshav, "The Relative Importance of Price and Driving Range on Electric Vehicle Adoption: Los Angeles Case Study," *Transportation*, August 2015 pp. 1-21.

J32. Y. Ghiassi-Farrokhfal, S. Keshav, and C. Rosenberg, "Towards a Realistic Performance Analysis of Storage Systems in Smart Grids," *IEEE Trans on Smart Grids*, Vol 6, No. 1, January 2015, pp. 402-410.

J33. Y. Ghiassi-Farrokhfal, S. Keshav, C. Rosenberg, and F. Ciucu, "Solar Power Shaping: An Analytical Approach," *IEEE Transactions on Sustainable Energy*, Vol 6, No. 1, Jan. 2015.

J34. S. Singla, Y. Ghiassi-Farrokhfal, and S. Keshav, "Using Storage to Minimize Carbon Footprint of Diesel Generators for Unreliable Grids," *IEEE Transactions on Sustainable Energy*, Vol. 5, No. 4, pp. 1270-1277, 2014.

J35. O. Ardakanian, S. Keshav, and C. Rosenberg, "Real-Time Distributed Control for Smart Electric Vehicle Chargers: From a Static to a Dynamic Study," *IEEE Transactions on Smart Grid*, vol.5, no.5, pp.2295,2305, Sept. 2014.

J36. R.P. Singh, T. Brecht, and S. Keshav, "IP address multiplexing for VEEs," *ACM SIGCOMM Computer Communication Review*, April 2014.

J37. T. Carpenter, S. Keshav, and J.W. Wong, "Sizing Finite Population Vehicle Pools," *IEEE Trans. on Intelligent Transportation Systems*, Volume PP issue 99, Jan 2014.

J38. S. Singla, Y. Ghiassi-Farrokhfal, and S. Keshav, "Battery Provisioning and Scheduling For a Hybrid Battery-Diesel Generator System," *ACM Performance Evaluation Review*, December 2013.

J39. T. Carpenter, A. R. Curtis, and S. Keshav, "The Return On Investment For Taxi Companies Transitioning To Electric Vehicles," *Transportation*, June 2013.

J40. H. Zarkoob, S. Keshav, and C. Rosenberg, "Optimal Contracts For Providing Load-Side Frequency Regulation Service Using Fleets of Electric Vehicles," *J. Power Sources*, 2013. (22 pages)

J41. S. Guo, M. Derakhshani, M.H. Falaki, U. Ismail, R. Luk, E.A. Oliver, S. Ur Rahman, A. Seth, M.A. Zaharia, S. Keshav, "Design and implementation of the KioskNet system *Computer Networks*," 55(1):264-281, January 2011 pp. (18 pages)

J42. M.A. Zaharia and S. Keshav, "Gossip-Based Algorithms for Efficient Search Selection," *Journal of Concurrency and Computation: Practice and Experience*, 2008 (14 pages)

J43. S. Guo, M.H. Falaki, E.A. Oliver, S. Ur Rahman, A. Seth, M.A. Zaharia, and S. Keshav, "Very Low-Cost Internet Access Using KioskNet," *ACM SIGCOMM Computer Communication Review*, 37(5):95-100, October 2007. (6 pages)

J44. L. Qiu, Y. Zhang, and S. Keshav, "Understanding the Performance of Many TCP Flows," *Computer Networks*, 37(3-4):277-306, November 2001. (29 pages)

J45. M. Grossglauser*, S. Keshav, and D. Tse, "RCBR: A Simple and Efficient Service for Multiple TimeScale Traffic," *IEEE/ACM Transactions on Networking*, 5(6):741-755,

December 1997. (15 pages)

J46. A.E. Kaplan, S. Keshav, N.L. Schryer, and J.H. Venutolo, "An Internet-accessible Telepresence," *ACM Multimedia Systems Journal*, 5(3):140-144, Summer 1997. (5 pages)

J47. C.R. Kalmanek, S. Keshav, W.T. Marshall, S.P. Morgan, and R.C. Restrick, "Xunet 2: Lessons from an Early WideArea ATM Testbed," *IEEE/ACM Transactions on Networking,* 5(1):40-55 April 1997. (16 pages)

J48. R. Ahuja, S. Keshav, and H. Saran, "Design, Implementation, and Performance of a Native-Mode ATM Transport Protocol," *IEEE/ACM Transactions on Networking*, 4(4): 502-515, August 1996. (14 pages)

J49. S. Keshav, C. Lund, S. Phillips, N. Reingold, and H. Saran, "An Empirical Evaluation of Virtual Circuit Holding Time Policies in IPoverATM Networks," *IEEE Journal on Selected Areas in Communication,* 13(8):1371-1382 October 1995. (12 pages)

J50. S. Keshav, "A Control-Theoretic Approach to Flow Control," *ACM SIGCOMM Computer Communication Review,* January 1995. **Appeared in the 25th Anniversary Special Issue on the "most important papers that have appeared in *Computer Communication Review* over the past 25 years."** (12 pages)

J51. A. Demers, S. Keshav and S. Shenker, "Analysis and Simulation of a Fair Queueing Algorithm," *ACM SIGCOMM Computer Communication Review,* January 1995. **Appeared in the 25th Anniversary Special Issue on the "most important papers that have appeared in *Computer Communication Review* over the past 25 years."** (12 pages)

J52. H. Saran, S. Keshav, and C.R. Kalmanek, "A Scheduling Discipline and Admission Control Policy for Xunet 2," *ACM Multimedia Systems Journa*l, 2(3):89-101, September 1994. (13 pages)

J53. S. Keshav, "On the Efficient Implementation of Fair Queueing," *Journal of Internetworking: Research and Experience*, 2(3):157-173, September 1991. (17 pages)

J54. A. Demers, S. Keshav, and S. Shenker, "Analysis and Simulation of a Fair Queueing Algorithm," *Journal of Internetworking Research and Experience*, 1(1):3-26, September 1990. (24 pages)

Refereed Conferences and Workshops

C1. A. Domiter and S. Keshav, Fine-Grained Mapping of Urban Energy Demand During Heatwaves, Poster, *To Appear, Proc. ACM eEnergy*, June 2025.

C2. J. Gschwind and S. Keshav, Predicting Optimal Sizing of Domestic PV Energy Systems, Poster, *To Appear, Proc. ACM eEnergy,* June 2025.

C3. A. Domiter and S. Keshav, Machine Learning for Building-Level Heat Risk Mapping, *To Appear, Proc. ACM eEnergy*, June 2025.

C4. G. Wilkins, S. Keshav, and R. Mortier, Offline Energy-Optimal LLM Serving: Workload-Based Energy Models for LLM Inference on Heterogeneous Systems", *Proc. HotCarbon Workshop*, July 2024.

C5. A. Berkes and S. Keshav, SOPEVS: Sizing and Operation of PV-EV-Integrated Modern Homes, *Proc. ACM eEnergy* 2024, June 2024.

C6. G. Wilkins, S. Keshav, and R. Mortier, Hybrid Heterogeneous Clusters Can Lower the Energy Consumption of LLM Inference Workloads", *Proc. EEDC workshop at ACM eEnergy* 2024, June 2024.

C7. S. Jaffer, M.W. Dales, P. Ferris, D. Sorensen, T. Swinfield, R. Message, S. Keshav, and A. Madhavapeddy, "Global, robust and comparable digital carbon assets", Poster, *Proc. IEEE ICBC 2024,* May 2024.

C8. Y. She, C. Atberger, A. Blake, and S. Keshav, "From Spectra to Biophysical Insights; End-to-End Learning with a Biased Radiative Transfer Model", *Proc. ICLR CCAI Workshop,* May 2024.

C9. S. Ghasemitaheri, A. Holcomb, L. Golab, and S. Keshav, On the Data Quality of Remotely Sensed Forest Maps, *Proc. VLDB Workshops*, April 2023.

C10. P. Dolezal, S.Keshav, and E. Shuckburgh, Using expired weather forecasts to supply up to 10 000 years of weather data, *European Geophysical Union General Assembly* 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-17356.

C11. J. Wang, L. Chang, O. Abari, and S. Keshav, How Manufacturers Can Easily Improve Working Range of Passive RFIDs, *Proc. IEEE SECON* 2022, October 2022.

C12. X. Wang, G. Tang, Y. Wang, S. Keshav, and Y. Zhang, EVSense: A Robust and Scalable Approach to Non-Intrusive EV Charging Detection, *Proc. ACM eEnergy,* June 2022.

C13. A. Findeis, F. Kazhamiaka, S. Jeen, and S. Keshav, Beobench: A Toolkit for Unified Access to Building Simulations for Reinforcement Learning, To Appear, *Proc. ACM eEnergy,* June 2022.

C14. M.S. Parsa, L. Golab, and S. Keshav, Climate Action During COVID-19 Recovery and Beyond: A Twitter Text Mining Study, *Proc. International Conference on Social, Cultural, and Behavioral Modeling*, July 2021.

C15. A. Holcomb, B. Tong, M. Penny, and S. Keshav, Measuring Forest Carbon with Mobile Phones, Poster *Proc. ACM Mobisys*, **Best Poster Award**, June 2021.

C16. B.G. Huang, F. Kazhamiaka, and S. Keshav, Sizing Solar Panels and Storage for Multiple Roofs, *Proc. ACM eEnergy*, June 2021.

C17. S. Keshav, Towards a Trusted Marketplace for Nature-based Solutions, Poster at *Climate Exp0*, May 2021.

C18. A. Mitra, C. Gorenflo, L. Golab, and S. Keshav, TimeFabric: Trusted Time for Hyperledger Fabric, *Proc. Foundations and Applications of Blockchain*, May 2021.

C19. D. Karakashev, S. Gorbunov, and S. Keshav, "Making Renewable Energy Certificates

Efficient, Trustworthy, and Anonymous," *Proc. IEEE SmartGridComm*, November 2020.

C20. J. Deller and S. Keshav, "The Benefits of Dynamically Resizing Storage," *Energy Storage Workshop at ACM eEnergy 2020,* June 2020.

C21. J. Wang, L. Chang, S. Aggarwal, O. Abari, and S. Keshav, "Soil Moisture Sensing with Commodity RFID Systems," *Proc. ACM Mobisys*, 2020.

C22. R. Agarwal, D. Kumar , L. Golab, S. Keshav, "Consentio: Managing Consent to Data Access using Permissioned Blockchains," *Proc. IEEE ICBC*, 2020.

C23. C. Gorenflo, L. Golab, S. Keshav, "XOX Fabric: A hybrid approach to blockchain transaction execution," *Proc. IEEE ICBC*, 2020.

C24. L. Chang, J. Wang, O. Abari, and S. Keshav, "A Battery-Free In-Class Response System using RFID Tags, " *Proc. IOTDI Conference*, 2020.

C25. F. Kazhamiaka, S. Keshav, and C. Rosenberg, "Adaptive Battery Control," *Proc. AMLIES Workshop at ACM eEnergy 2019*, June 2019.

C26. C. Gorenflo, L. Golab, and S. Keshav, "Using a Blockchain to Mitigate Trust in Electric Vehicle Charging," *Proc. ACM eEnergy 2019*, June 2019.

C27. S. Sun, F. Kazhamiaka, S. Keshav, and C. Rosenberg, "Using Synthetic Traces for Robust Energy System Sizing," *Proc. ACM eEnergy 2019*, June 2019.

C28. J. Wang, O. Abari, L. Chang, and S. Keshav, "Are RFID Sensing Systems Ready for the Real World?, "*Proc. Mobisys 2019,* June 2019.

C29. C. Gorenflo, S. Lee, L. Golab, and S. Keshav, FastFabric: Scaling Hyperledger Fabric to 20,000 Transactions per Second, "*Proc. IEEE International Conference on Blockchains and Cryptocurrency*, May 2019.

C30. J. Wang, O. Abari, and S. Keshav, "RFID Hacking for Fun and Profit," *Proc. ACM MOBICOM*, October 2018.

C31. F. Kazhamiaka, S. Keshav, and C. Rosenberg, "Robust and Practical Approaches for Solar PV and Storage Sizing," *Proc. ACM eEnergy 2018*, June 2018.

C32. S. Sun, S. Keshav, C. Rosenberg, M. Peloso, "Optimal Matching of Stochastic Solar Generators to Stochastic Loads," *Proc. ACM eEnergy 2018,* June 2018.

C33. M. Doroshenko, S. Keshav, C. Rosenberg, "Poster: Flattening the Duck Curve Using Grid-friendly Solar Panel Orientation," *Proc. ACM eEnergy 2018,* June 2018.

C34. S. Rizvi, B, Wong, and S. Keshav, "Canopus: A Scalable and Massively Parallel Consensus Protocol," *Proc. ACM CoNEXT 2017*, December 2017.

C35. C. Gorenflo, L. Golab, S. Keshav, "Managing Sensor Data Streams: Lessons Learned from the WeBike Project," *Proc. SSDBM 2017*, 1:1-1:11, May 2017.

C36. A. Rabbani and S. Keshav, "The SPOT* Personal Thermal Comfort System," *Proc. ACM BuildSys'16*, November 2016.

C37. F. Kazhamiaka, C. Rosenberg, S. Keshav, "Li-Ion Storage Models for Energy System Optimization: The Accuracy-Tractability Tradeoff," *Proc. ACM e-Energy,* 2016.

C38. A. Adepetu and S. Keshav, "Understanding Solar PV and Battery Adoption in Ontario: An Agent-Based Approach," *Proc. ACM e-Energy,* 2016.

C39. L. Gebhard, L. Golab. S. Keshav, and H. de Meer, "Range prediction for electric bicycles," *Proc. ACM e-Energy*, 2016.

C40. R. Kalaimani, S. Keshav, and C. Rosenberg, "Multiple Time-scale Model Predictive Control for Thermal Comfort in Buildings," *Poster in ACM e-Energy,* 2016.

C41. I. Rios, L. Golab. and S. Keshav, "Analyzing the Usage Patterns of Electric Bicycles," *Proc. EV-SYS Workshop at ACM e-Energy*, 2016.

C42. A. Pat, K. Larson, and S. Keshav, "Big-Data Mechanisms and Energy-Policy Design," *Proc. AAAI,* 2016.

C43. X. Gao, L. Golab, S. Keshav, "What's wrong with my solar panels: a data-driven approach," *Proc. Workshop on Energy Data Management*, March 2015, pp. 86-93.

C44. R. P. Singh, T. Brecht, and S. Keshav, "Towards VM Consolidation Using a Hierarchy of Idle States," *Proc. ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments (VEE)*, March 2015.

C45. O. Ardakanian, C. Rosenberg and, S. Keshav, "Quantifying the Benefits of Extending Electric Vehicle Charging Deadlines with Solar Generation," *Proc. IEEE Smart Grid Communications*, November 2014.

C46. Y.J. Liu, P.X. Gao, B. Wong, and S. Keshav, "Quartz: A New Design Element for Low-Latency DCNs," *Proc. ACM SIGCOMM*, August 2014.

C47. Y. Ghiassi-Farrokhfal, S. Keshav, and Catherine Rosenberg, "An EROI-Based Analysis of Renewable Energy Farms with Storage," *Proc. ACM e-Energy 2014*, June 2014.

C48. O. Ardakanian, N. Koochakzadeh, R. P. Singh, L. Golab, S. Keshav, "Computing Electricity Consumption Profiles from Household Smart Meter Data," *3rd Workshop on Energy Data Management*, 2014

C49. P.X. Gao and S. Keshav, Optimal Personal Comfort Management Using SPOT+, "*Proc. BuildSys Workshop*," 2013. **Best Student Paper Award.**

C50. A. Adepetu, E. Rezaei, D. Lizotte, and S. Keshav, "Critiquing Time-Of-Use Pricing in Ontario," *Proc. IEEE SmartGridComm Symposium 2013,* Vancouver, October 2013.

C51. K Kogan, S. Nikolenko, S. Keshav, and A. Lopez-Ortiz, "Efficient Demand Assignment in Multi-Connected Microgrids, Extended Abstract," *Proc. SustainIT*, October 2013.

C52. S. Alamdari, T. Biedl, T. M. Chan, E. Grant, K.R Jampani, S. Keshav, A. Lubiw and V.

Pathak, "Smart-grid Electricity Allocation via Strip Packing with Slicing," *Proc. WADS 2013*, August 2013.

C53. S. Singla, Y. Ghiassi-Farrokhfal, and S. Keshav, "Near-Optimal Scheduling for a Hybrid Battery-Diesel Generator for Off-Grid Locations," *Proc. GreenMetrics Workshop*, June 2013.

C54. Y. Ghiassi-Farrokhfal, S. Keshav, and C. Rosenberg, "Firming Solar Power, Extended Abstract/Poster," *Proc. ACM SIGMETRICS*, June 2013.

C55. O. Ardakanian, C. Rosenberg, and S. Keshav, Distributed Control of Electric Vehicle Charging," *Proc. ACM e-Energy 2013*, May 2013. **Best Paper award, ACMSIGENERGY Test of Time Award, 2024.**

C56. R.P. Singh, S. Keshav, and T. Brecht, "A Cloud-Based Consumer-Centric Architecture for Energy Data Analytics," *Proc. ACM e-Energy 2013*, May 2013.

C57. P. X. Gao and S. Keshav, "Personalized Smart Thermal Control System," *Proc. ACM e-Energy 2013*, May 2013.

C58. K. Kogan, S. Nikolenko, S. Keshav, and A. Lopez-Ortiz, "Efficient Demand Assignment in Multi-Connected Microgrids," *Proc. e-Energy 2013*, May 2013. (Poster)

C59. S. Alamdari, T. Biedl, T. M. Chan, E. Grant, K.R. Jampani, S. Keshav, A. Lubiw and V. Pathak, "Smart-grid Electricity Allocation via Strip Packing with Slicing," *Proc. EuroCG*, March 2013.

C60. P. Srikantha, S. Keshav, C. Rosenberg, "Distributed Control for Reducing Carbon Footprint in the Residential Sector," *Proc. IEEE SmartGridComm*, November 2012. (6 pages)

C61. S. Singla, S. Keshav, "Demand Response through a Temperature Setpoint Market in Ontario," *Proc. IEEE SmartGridComm*, November 2012. (6 pages).

C62. X.Gao, A.R. Curtis, B. Wong, and S. Keshav, "It's Not Easy Being Green," *Proc. ACM SIGCOMM*, August 2012. (12 pages)

C63. O. Ardakanian, C. Rosenberg, and S. Keshav, "Real Time Distributed Congestion Control for Electrical Vehicle Charging (invited paper)," *Proc. ACM SIGMETRICS Greenmetrics Workshop*, June 2012. (6 pages)

C64. O. Ardakanian, C. Rosenberg, and S. Keshav, "On the Impact of Storage in Residential Power Distribution Systems," *Proc. ACM SIGMETRICS Greenmetrics Workshop*, June 2012. (6 pages)

C65. P. Srikantha, C. Rosenberg, and S. Keshav, "An Analysis of Peak Demand Reductions due to Elasticity of Domestic Appliances," *Proc. e-Energy*, May 2012. (10 pages)

C66. T. Carpenter, S. Singla, P. Azimzadeh, and S. Keshav, "The Impact of Electricity Pricing Schemes on Storage Integration In Ontario," *Proc. e-Energy*, May 2012. (10 pages)

C67. O. Ardakanian, S. Keshav, and C. Rosenberg, "On the Use of Teletraffic Theory in Power

Distribution Systems," *Proc. e-Energy*, May 2012. (10 pages)

C68. A. R. Curtis, T. Carpenter, M. Elsheikh, A. López-Ortiz and S. Keshav. "REWIRE: An Optimization-based Framework for Unstructured Data Center Network Design," *Proc. INFOCOM*, March 2012. (8 pages)

C69. E. Oliver and S. Keshav, "An Empirical Approach to Smartphone Energy Level Prediction," *Proc. ACM UbiComp 2011,* September 2011. (10 pages)

C70. O. Ardakanian, S. Keshav, and C. Rosenberg, "Markovian Models for Home Electricity Consumption, *Proc. ACM SIGCOMM Green Networking Workshop*, August 2011. (6 pages)

C71. N. Ahmed, S. Keshav, and K. Papagiannaki, "OmniVoice: A Mobile Voice Solution for Small-scale Enterprises," *Proc. MobiHoc*, May 2011. (11 pages)

C72. A. Curtis, S. Keshav and A. Lopez-Ortiz, "LEGUP: Using Heterogeneity to Reduce the Cost of Data Center Network Upgrades," *Proc. ACM CoNEXT*, December 2010. (12 pages)

C73. S. Keshav and C. Rosenberg, "How Internet Concepts and Technologies Can Help Green and Smarten the Electrical Grid," *Proc. ACM SIGCOMM Green Networking Workshop,* August 2010. Selected as **one of the best papers** in the workshop and republished in ACM SIGCOMM CCR, January 2011 (6 pages)

C74. S. Keshav, "Design Principles for Robust Opportunistic Communication," *Proc. of ACM SIGCOMM Workshop on Networked Systems for Developing Regions (NSDR 2010),* June 2010. (6 pages)

C75. O. Ardakanian and S. Keshav, "Using Decision Making to Improve Energy Efficiency of Buildings," *POMDP Practitioner's Workshop*, May 2010. (3 pages)

C76. V. Shrivastava, N. Ahmed, S. Rayanchu, S. Banerjee, S. Keshav, K. Papagiannaki, A. Mishra. "CENTAUR: Realizing the Full Potential of Centralized WLANs using a Hybrid Data Path," *ACM MobiCom*, Beijing, September 2009 (14 pages). **Best paper award**

C77. N. Ahmed, U. Ismail, S. Keshav, and K. Papagiannaki, "Online Estimation of RF Interference," *Proc. ACM Conext,* Madrid, December 2008. (12 pages)

C78. E. Oliver and S. Keshav, "Design Principles for Opportunistic Communication in Constrained Computing Environments," *Proc. MobiCom Workshop on Wireless Networks and Systems for Developing Regions (WiNS-DR*), San Francisco, September 2008. (6 pages)

C79. S. Ur Rahman, U. Hengartner, U. Ismail and S. Keshav, "Practical Security for Rural Internet," *Proc. of ACM SIGCOMM Workshop on Networked Systems for Developing Regions (NSDR 2008),* Seattle WA, August 2008. (6 pages)

C80. J. Crowcroft, S. Keshav, and N. McKeown, "Scaling Internet Research Publication Processes to Internet Scale," *Proc. Workshop on Organizing Workshops, Conferences, and Symposia in Computer Systems*, April 2008. (6 pages).

C81. S. Guo and S. Keshav, "Fair and Efficient Scheduling in Data Ferrying Networks," *Proc. ACM CoNEXT 2007,* December 2007. (10 pages)

C82. S. Guo, M.H. Falaki, E.A. Oliver, S. Ur Rahman, A. Seth, M.A. Zaharia, U. Ismail, and S. Keshav, "Design and Implementation of the KioskNet System," *Proc. International Conference on Information Technologies and Development*, December 2007. (12 pages)

C83. N. Ahmed, V. Shrivastava, A. Mishra, S. Banerjee, S. Keshav, K. Papagiannaki, "Interference Mitigation in Enterprise WLANs through Speculative Scheduling (Extended Abstract)," *Proc. ACM Mobicom 2007*, September 2007. (6 pages)

C84. M. Karsten, S. Keshav, S. Prasad, and O. Beg, "An Axiomatic Basis for Communication," *Proc. ACM SIGCOMM*, August 2007. (12 pages)

C85. D. Hadaller, S. Keshav, T. Brecht, S. Agarwal, "Vehicular Opportunistic Communication Under the Microscope," *Proc. ACM Mobisys*, June 2007. (14 pages)

C86. M. Zaharia, A. Chandel, S. Saroiu, and S. Keshav, "Finding Content in File-Sharing Networks When You Can't Even Spell," *Proc. ACM International Peer-to-Peer Symposium 2007*, Feb 2007. (8 pages)

C87. M. Thomas, A. Gupta, and S. Keshav, "Group Based Routing in Disconnected Ad Hoc Networks," *Proc. 13th Annual IEEE International Conference on High Performance Computing*, December 2006. (12 pages)

C88. N. Ahmed and S. Keshav, "SMARTA: Self-Management Architecture for Thin Access Points," *Proc. ACM CoNEXT,* December 2006. (12 pages)

C89. M. Karsten, S. Keshav, and S. Prasad, "An Axiomatic Basis for Communication, *Proc. ACM HOTNETS V,"* November 2006. (6 pages)

C90. N. Ahmed, D. Hadaller, and S. Keshav, "GUESS: Gossiping Updates for Efficient Spectrum Sensing," *Proc. ACM MobiShare- 1st International Workshop on Decentralized Resource Sharing in Mobile Computing and Networking*, September 2006. (6 pages)

C91. D. Hadaller, S. Keshav, and T. Brecht, "MV-MAX: Improving Wireless Infrastructure Access for Multi-Vehicular Communication," *Proc. SIGCOMM 2006 Workshop on Challenged Networks,* September 2006. (8 pages)

C92. A. Seth, D. Kroeker, M. Zaharia, S. Guo, S. Keshav, "Low-cost Communication for Rural Internet Kiosks Using Mechanical Backhaul," *Proc. ACM MOBICOM 2006*, September 2006. (12 pages)

C93. S. Guo, M. Ghaderi, A. Seth, S. Keshav, "Opportunistic Scheduling in Ferry-Based Networks," *Proc. IEEE Workshop on Network Protocols for Transportation* 2006, August 2006. (6 pages)

C94. N. Ahmed and S. Keshav, "A Successive Refinement Approach to Wireless Infrastructure Network Deployment," *Proc. IEEE Wireless Communication and Networking Conference*, April 2006. (9 pages)

C95. H.J. Pan and S. Keshav, "Detection and Repair of Faulty Access Points," *Proc. IEEE Wireless Communication and Networking Conference*, April 2006. (8 pages)

C96. M.A. Zaharia and S. Keshav, "Gossip-Based Algorithms for Efficient Search Selection," *Proc. ACM International Peer-to-Peer Symposium 2006*, Feb 2006. (8 pages)

C97. A. Seth and S. Keshav, "Practical Security for Disconnected Nodes," *Proc. First Workshop on Secure Network Protocols (NPSEC)*, November 2005. (6 pages)

C98. M. Ghaderi and S. Keshav, "Multimedia Messaging Service: System Description and Performance Analysis," *Proc. Wireless Internet Conference*, July 2005. (8 pages)

C99. J. Wang, Y. Zhang, and S. Keshav, "Understanding End-to-End Performance: Testbed and Preliminary Results," *Proc. of IEEE Global Internet Symposium,* November 2001. (5 pages)

C100. Y. Zhang, L. Qiu, and S. Keshav, "Speeding Up Short Data Transfers: Theory, Architectural Support, and Simulation Results," *Proc. NOSSDAV'2000*, Chapel Hill, NC, June 2000. (11 pages)

C101. S. Keshav and S. Paul, "Centralized Multicast," *Proc. International Conference on Network Protocols '99,* October 1999. (10 pages)

C102. L. Qiu, Y. Zhang, and S. Keshav, "On the Performance of Individual and Aggregated TCP Connections," *Proc. International Conference on Network Protocols '99*, October 1999. (10 pages)

C103. J. Wang and S. Keshav, "Efficient and Accurate Ethernet Simulation," *Proc. Local Computer Networks '99,* October 1999. (10 pages)

C104. X.W.Huang, R. Sharma, and S. Keshav, "The Entrapid Protocol Development Environment," *Proc. INFOCOM '99*, March 1999. (9 pages)

C105. S. Keshav and R. Sharma, "Achieving Quality of Service through Network Performance Management," *Proc. NOSSDAV '98*, July 1998. (8 pages)

C106. R. Sharma, S. Keshav, M. Wu, and L. Wu, "Environments for Active Networks," *Proc. NOSSDAV '97*, May 1997. (8 pages)

C107. S. Keshav and S.P. Morgan, "SMART: Retransmission: Performance with Random Losses and Overload," *Proc. INFOCOM '97*, April 1997. (9 pages)

C108. A. Jain and S. Keshav, "Native-mode ATM in FreeBSD: Experience and Performance," *Proc. NOSSDAV '96,* April 1996. (8 pages)

C109. R. Ahuja, S. Keshav, and H. Saran, Design, "Implementation, and Performance of a Native-Mode ATM Transport Protocol," *Proc. INFOCOM'96*, March 1996. **Selected as one of the top ten papers of the approximately 500 submitted to the conference.** (12 pages)

C110. M. Grossglauser and S. Keshav, "On CBR Service," *Proc. INFOCOM'96*, March 1996. (8 pages)

C111. M. Grossglauser, S. Keshav, and D. Tse, "RCBR: A Simple and Efficient Service for Multiple TimeScale Traffic," *Proc. ACM SIGCOMM'95*, August 1995. (12 pages)

C112. M. Grossglauser, S. Keshav, D. Tse, "The Case Against VBR," *Proc. NOSSDAV '95* , April 1995. (4 pages)

C113. R. Sharma and S. Keshav, "Signaling and Operating System Support for Native-Mode ATM Applications," *Proc. ACM SIGCOMM'94*, September 1994. (12 pages)

C114. H. Saran and S. Keshav, "An Empirical Evaluation of Virtual Circuit Holding Times in IP-over-ATM Networks," *Proc. INFOCOM '94*, June 1994. (8 pages)

C115. S. Keshav, "Experience with Large Videoconferences in Xunet 2," *Proc. INET'94,* June1994. (5 pages)

C116. H. Saran, S. Keshav, and C.R. Kalmanek, "A Scheduling Discipline and Admission Control Policy for Xunet 2," *Proc. NOSSDAV '93*, November 1993. (8 pages)

C117. A. Banerjea and S. Keshav, "Queueing Delays in Rate-Controlled Networks," *Proc. INFOCOM '93*, March 1993. (8 pages)

C118. S. Keshav, "Flow Control in High-Speed Networks with Long Delays," *Proceedings of INET '92*, Kobe, Japan, June 1992. (8 pages)

C119. P.S. Khedkar and S. Keshav, "Fuzzy Prediction of Timeseries," *Proc. IEEE Conference on Fuzzy Systems, FUZZ-IEEE*, March 1992. (8 pages)

C120. S. Keshav, "A Control-theoretic Approach to Flow Control," *Proc. ACM SIGCOMM '91*, September 1991. **Winner of the Best Student Paper Award.** (12 pages)

C121. H. Zhang and S. Keshav, "Comparison of Rate-Based Service Disciplines," *Proc. ACM SIGCOMM '91,* September 1991. (12 pages)

C122. C.R. Kalmanek, H. Kanakia, and S. Keshav, "Rate-Controlled Servers for Very High-Speed Networks," *Proc. GLOBECOM '90*, San Diego, December 1990. (9 pages)

C123. A. Demers, S. Keshav and S. Shenker, "Analysis and Simulation of a Fair Queueing Algorithm," *Proc. ACM SIGCOMM '89*, September 1989. (12 pages)

C124. S. Keshav and D.P. Anderson, "A Workload Model for Large Distributed File Systems," *Proc. 19th Annual Pittsburgh Conference on Simulation and Modeling*, May 1988. (8 pages)

Unrefereed Articles

M1. A. Holcomb, P. Burns, S. Keshav, D.A. Coomes, "Quantifying the Impacts of Tropical Forest Disturbance Using Repeat GEDI Footprints", Proc. American Geophysical Union, December 2024.

M2. F. Begliomini, D.A. Coomes, S. Keshav, P. Brancalion, "Using Multi-Modal Orbital Remote Sensing to Track Ecological Restoration in the Atlantic Forest", Proc. American Geophysical Union, December 2024.

M3. V. Bajpai, O. Hohfield, J. Crowcroft, S. Keshav, H. Schulzrinne, J. Ott, S. Ferlin, G. Care, A. Hines, A. Rake, Recommendations for Designing Hybrid Conference, ACM SIGCOMM Computer Communications Review, 2022.

M4. V. Bajpai, O. Hohlfeld, J. Crowcroft, and S. Keshav, Climate-Friendly Internet Research Dagstuhl Seminar Report, December 2021.

M5. Cambridge Zero Policy Forum (2021) Carbon Offsetting & Nature-based Solutions to Climate Change, University of Cambridge, November 2021.

M6. G. Gordon, A. Holcomb, T. Kelly, S. Keshav, J. Ludlam, and A. Madhavapeddy, How Computer Science Can Aid Forest Restoration, *arXiv*, September 2021.

M7. S. Keshav, A Bit of Conversation, *Cambridge Journal of Law, Politics, and Art*, June 2021.

M8. S. Keshav, Reflections on being SIGCOMM Chair 2013-2017, ACM SIGCOMM CCR, October 2019.

M9. S. Keshav, Reflections on being CCR Editor 2008-2012, ACM SIGCOMM CCR, October 2019.

M10. S. Keshav, Reflections on "Analysis and Simulation of a Fair Queueing Algorithm,"ACM SIGCOMM CCR, October 2019.

M11. S. Keshav, Reflections on "A Control-Theoretic Approach to Flow Control", ACM SIGCOMM CCR, October 2019.

M12. S. Keshav, "A Skeptical Look at Blockchains," *Proc. 2019 Decentralization Conference*, Ann Arbor, April 2019.

M13. S. Keshav, "Paradoxes of Internet Architecture," *IEEE Internet Computing,* January/February 2018.

M14. S. Keshav, "How blockchain can democratize green power," *The Conversation*, January 2018.

M15. S. Keshav, "Technical Perspective: The power of Wi-Fi to deliver power," *Communications of the ACM*, 60(3), March 2017 (1 page).

M16. S. Keshav, "Technical Perspective: The chemistry of software-defined batteries." *Communications of the ACM*, 59(12), December 2016 (1 page).

M17. J. Crowcroft, S. Keshav, and N. McKeown, "Scaling the Academic Publication Process to Internet Scale," *Communications of the ACM*, January 2009 (3 pages).

M18. S. Keshav, "How to Read a Paper", *ACM SIGCOMM Computer Communication Review*, 37(3):83-84, July 2007. (2 pages)

M19. S. Keshav, "Efficient and Decentralized Computation of Approximate Global State," *ACM SIGCOMM Computer Communication Review*, 36(1):69-74, Jan. 2006. (6 pages)

M20. S. Keshav, "Why Cell Phones Will Dominate the Future Internet," *ACM SIGCOMM Computer Communication Review*, 35(2):83-86, April 2005. (4 pages)

M21. S. Keshav, "Blueprints for Web Hosting," *Web Hosting Magazine*, April 2001. (8 pages)

M22. D. Bergmark and S. Keshav, "Building Blocks for Internet Telephony," *IEEE Communications Magazine*, 37(4)4: 88-94, April 2000. (7 pages)

M23. S. Keshav and R. Sharma, "Issues and Trends in Router Design," *IEEE Communications Magazine*, 36(5):144-151, May 1998. (8 pages)

M24. A. Berenbaum, M.J. Dixon, A. Iyengar, and S. Keshav, "A Flexible ATM Host-Interface for Xunet 2," *IEEE Network Magazine*, 7(4):18-23, July 1993. (6 pages)

M25. S. Keshav, "Report on Workshop on Quality of Service Issues in High Speed Networks," *ACM SIGCOMM Computer Communication Review*, 22(5):74-85 October 1992. (10 pages)

Software

REAL: An early packet level public-domain network simulator that provided extensive support for research in flow and congestion control. 1989.

XUNET II: The first wide area ATM network. 1993.

IDLInet: The first Personal-Computer based ATM LAN. 1995.

ITX: A Java-based computer telephony platform. 1999.

KioskNet/VLink: KioskNet and VLink are comprehensive systems for low-cost internet access from rural kiosks using mechanical backhaul. 2010.

US Patents

I am a co-inventor of 73 US/EU patents on a wide variety of systems issues. The US patents include:

8,422,988 Controlling activity levels and reducing infrastructure data transmission costs for wireless mobile devices
8,412,101 Optimally controlling short-range wireless communication on mobile communication devices
8,351,449 Scheduling data communication for mobile communication devices with multiple wireless network interfaces associated with differing costs
8,238,913 Wireless network augmentation using other wireless networks
8,190,088 Optimally controlling short-range wireless communication on mobile communication devices
7,769,887 Opportunistic data transfer over heterogeneous wireless networks
7,219,354 Virtualizing super-user privileges for multiple virtual processes
7,143,024 Associating identifiers with virtual processes

6,985,937 Dynamically modifying the resources of a virtual server
6,976,258 Providing quality of service guarantees to virtual hosts
6,909,691 Fairly partitioning resources while limiting the maximum fair share
6,907,421 Regulating file access rates according to file type
6,754,716 Restricting communication between network devices on a common network
6,732,211 Intercepting I/O multiplexing operations involving cross-domain file descriptor sets
6,393,581 Reliable time delay-constrained cluster computing
6,363,483 Methods and systems for performing article authentication
5,864,605 Voice menu optimization method and system
5,835,595 Method and apparatus for crytographically protecting data
5,793,768 Method and apparatus for collapsing TCP ACKs on asymmetrical connections
5,761,289 800 number callback
5,627,970 Methods and apparatus for achieving and maintaining optimum transmission rates and preventing data loss in a processing system network
5,623,605 Methods and systems for interprocess communication and inter-network data transfer
5,604,731 Renegotiated bit-rate service system and method
5,559,798 Data segmentation within a renegotiated bit-rate service transmission system
5,272,697 Apparatus and method for time multiplexing a resource among a plurality of entities

STUDENTS

Postdoctoral fellows (doctoral degree)

- Ju Wang (Northeast University, China) 2018-2019
- Liqiong Chang (Northeast University, China) 2018-2019
- Sun Sun (Toronto) 2017-2019
- Ansis Rosmanis (Waterloo) 2016
- Rachel Kalaimani (IIT Bombay) 2015-16
- Yashar Ghiassi-Farrokhfal (U. Toronto) 2012-15
- Kirill Kogan (Ben Gurion) 2011-2012
- Weihong Wang (Toronto) 2010-2011
- Andre Allavena (Cornell) 2004-2005

Graduated PhD students (first position)

- *Christian Gorenflo*: 2015-2020, Waterloo. Thesis: Towards a New Generation of Permissioned Blockchain Systems (Employee at Axelar)
- *Fiodar Kazhamiaka*: 2014-2019, Waterloo. Thesis: Modelling, Design, and Control of Energy Systems: A Data-Driven Approach (Postdoc at Stanford)
- *Adedamola Adepetu*: 2012-2016, Waterloo. Thesis: An Agent-Based Modeling Framework for Energy Policies (CIBC Bank)
- *Rayman Preet Singh*: 2011-2015, Waterloo. Thesis: Personal Data Management in the Internet of Things (MTS at Samsung Research)
- *Omid Ardakanian*: 2009-2015, Waterloo. Thesis: On the Control of Active End-nodes in the Smart Grid (Postdoc at UC Berkeley) Currently Assistant Professor, U. Alberta

- *Tommy Carpenter*: 2010-2015, Waterloo. Thesis: Measuring & Mitigating Electric Vehicle Adoption Barriers (MTS at AT&T Research)
- *Earl Oliver*: 2006-2012, Waterloo. Thesis: Censorship Tolerant Networking (Founder, Brio Mobile)
- *Andy Curtis*: 2008-2012, Waterloo. Thesis: Reducing the cost of Operating a Datacenter Network (Nicera Inc.)
- *Nabeel Ahmed*: 2004-2009, Waterloo. Thesis: Interference Management in Dense 802.11 Networks (Post-doc at MIT)
- *Aaditeshwar Seth*: 2004-2008, Waterloo, Co-supervised by Prof. R. Cohen. Thesis: Design of a Recommender System for Participatory Media Built on a Tetherless Communication Infrastructure (IBM Research, India)
- *Majid Ghaderi*: 2004-2006, Waterloo, Co-supervised by Prof. R. Boutaba. Thesis: Resource management in heterogeneous wireless networks (PostDoc at U. Mass. Amherst)
- *Rosen Sharma*: 1996-99, Cornell. Thesis: 'Internet TV' (CEO at Ensim Inc.)

Graduated Master's students

- 2021: A. Holcombe
- 2020: D. Karakashev, D. Adeboye
- 2019: Y. Aussat
- 2016: A. Pat, A. Rabbani, M. Doroshenko
- 2015: I. Rios
- 2014: E. Rezaei, X. Gao
- 2013: P.X. Gao, S. Singla , P. Srikantha
- 2012: B. Hu, R. Case
- 2011: O. Ardakanian
- 2009: U. Ismail
- 2008: H. Falaki, S. Ur Rahman, D. Hadaller
- 2007: S. Guo, O. Beg, E. Oliver
- 2005: N. Ahmed
- 1999: Y. Xu, N. Sastry, J. Wann, P. Singh, A. Singh, M. Ranjan, W. Ng, J. Howes
- 1998: K. Lee, R. Schwager, R. Siamwalla
- 1997: D. Balakrishna, K. Chan, B. Nicks, J. Teo, M. Wu, L. Wu, H. Jamjoom
- 1995: M. Grossglauser

SELECTED RECENT PROFESSIONAL ACTIVITIES (Since 2010)

University Service

2021- : Co-founder and co-PI Cambridge Center for Carbon Credits
2020-2022 : Member, Faculty Board and Degree Committee
2019- : Member, Management committee and Research Committee, AI4ER CDT
2020, 2021 : Member and Chair, respectively, Admissions Committee, AI4ER CDT
2020- : Organizer of weekly Systems Research Group seminar series

College Service

2020- : Director of Studies for Computer Science, Part IB
2021- : Director of Studies for Computer Science, Part IB, Part II, and Part III
2021- : Graduate Tutor
2021- : Member, Environment Committee

Advisory Boards

2020- : Scientific Advisory Board, Institute of Energy Economics (EWI), Cologne
2020- : Advisor, Maker Bhavan Foundation
2019- : Academic Advisory Board, INATBA: International Association for Trusted Blockchain Applications
2020–2021 : Member, ACM Presidential Task Force on Virtual Conferences

Professional Societies

Member of ACM, ACM SIGENERGY
2021- : Founding Vice-Chair, ACM SIGENERGY
2008-2021: Member, Executive Committee, ACM SIGCOMM
2013-2017: Elected Chair, ACM SIGCOMM
2013-2017: Member of ACM SIG Governing Board
2019-2021 : Member, Executive Committee, ACM EIG-Energy

Editorial positions

2021 - 2024 : Founding Editor-in-Chief, ACM SIGENERGY Energy Informatics Review
2021 - 2022 : Editor, Proc. VLDB Foundation
2021 - : Editor, CACM Research Highlights
2016 - : Member, Steering Committee, ACM SIGMETRICS PACM Series
2017-2018: Editor, PeerJ Computer Science
2009-2013: Member/Chair, Steering Committee, IEEE/ACM Transactions on Networking
2008- 2012: Editor-in-chief, ACM SIGCOMM Computer Communication Review

Recent conference organization

2021 Co-General Chair, ACM HotNets
2021 Co-organizer Dagstuhl seminar on "Towards Climate-Friendly Internet Research"
2016 General Chair, ACM eEnergy
2013- Member Steering Committee, ACM e-Energy
2013 TPC Co-Chair, ACM eEnergy
2011 General Co-Chair, ACM SIGCOMM
2010 TPC Co-Chair, ACM Mobisys

Recent selected program committee memberships

2025 ACM eEnergy
2018-2022 IEEE ICBC
2018 ACM COMPASS
2013-2022 ACM eEnergy
2017 ACM NetEcon Workshop
2014, 2016-18 USENIX NSDI
2016 IEEE SmartGridComm
2015 ACM ICDCS
2015 ACM CoNEXT
2013-2017 ACM BuildSys
2008-2010 ACM SIGCOMM
2014 ACM APSys Workshop
2014, 17 ACM GreenMetrics Workshop
2013 IEEE SmartGridComm
2013 ACM COMSNETS
2011 ACM NSDR

Program review

Evaluation of the KIT Center Information · Systems · Technologies, 2021

Department of Computer Science, University of British Columbia, 2014.

Ph.D. examiner
Rachel Ward, Cambridge, 2021
Aravindh Raman, King's College London, 2020
Chien-Ming Tseng, Masdar Institute, Abu Dhabi, 2017
Mauricio Restrepo, Dept. of ECE, U. Waterloo, 2017
Nafeesa Mehboob, Dept. of ECE, U. Waterloo, 2016
Jelmer Kuiper, U. Twente, 2015
Alfredo Vaccaro, Dept. of ECE, U. Waterloo, 2015
Abbas Mehrabian, Department of Combinatorics and Optimization, U. Waterloo, 2014
ACM India Dissertation Award Committee 2014-16
Mikko Pervilä, U. Helsinki, 2013
Jing Su, U. Toronto, 2010

Summer Schools/Tutorials

"Blockchains and Energy," Tutorial at ACM eEnergy, **Online,** June 2020.

"Blockchain, Storage, and Demand-Side Management," Ph.D. CIESS Summer school, EWI **Cologne**, July 2019.

"Research Methods in Networks and Systems," Summer School, Sharif University, **Teheran**, Iran, August 2018 (over Skype)

"Communication Technologies for Energy Informatics," Summer School, University of Passau, **Passau**, Germany, September 2017

"How Internet Technologies Can Green the Grid," Tutorial at ACM SIGCOMM, **Helsinki**, Finland, August 2012

"Game Theory," U. Alberta Summer School, **Banff**, Canada, 2011

Keynotes/Invited talks/Conference presentations

"How Technology Can Inform Public Policy for Smart Cities," **Keynote** at ORION Smart Cities Governance Lab, March 28th, Catalyst 137 Kitchener, March 2019.

"Blockchain: Foundations and Applications", **Keynote** at IEEE Kitchener-Waterloo Section Annual General Meeting, **Waterloo**, November 2018.

"Scalable BFT Consensus using RCanopus," Invited presentation, Oasis Labs, **Berkeley**, August 2018; IIT **Delhi**, October 2018; IIT **Madras**, November 2018; UPMC/Sorbonne, **Paris**, November 2018; U. Waterloo, **Waterloo**, December 2018.

"Canopus: a Scalable and Massively Parallel Consensus Protocol," Dept. of Computer Science, University of Washington, **Seattle**, August 2018.

"On Trustworthy Cyber-physical Gateways for Blockchains", Keynote at ACM Open IoT Day, **Munich**, June 2018

"Solar + Storage + IoT + LED = $30 trillion," Invited Lecture, Karlsruhe Institute of Technology, **Karlsruhe**, June 2018

"Optimal Matching of Stochastic Solar Generators to Stochastic Loads," Presentation at ACM eEnergy conference, **Karlsruhe**, June 2018.

"Canopus: a Scalable and Massively Parallel Consensus Protocol," Dept. of Computer Science, University of Texas at Austin, **Austin**, February 2018

"Scalable Blockchains for Transactive Energy," Invited Lecture, Alan Turing Institute, **London**, July 2017

"Solar + Storage + IoT = $30 Trillion," Invited Lecture, King's College, **London**, July 2017

"Paradoxes in Internet Architecture," **Distinguished Lecture**, Queen Mary University of **London**, July 2017

"Paradoxes in Internet Architecture," Invited Lecture, Microsoft Research, **Cambridge**, UK, July 2017

"Paradoxes in Internet Architecture," Keynote at ACM TUR-C conference, **Shanghai**, May 2017

"Solar + Storage + IoT = $30 Trillion," Invited Lecture, SouthEast University, **Nanjing**, May 2017

"Solar + Storage + IoT = $30 Trillion," Invited Lecture, NorthWest University, **Xi'an**, May 2017

"Paradoxes in Internet Architecture," Invited Lecture, Tsinghua University, **Beijing**, July 2017

"Solar + Storage + IoT = $30 Trillion," Invited Lecture, Cyber Physical Institute Seminar Series, U. **Toronto**, April 2017

"Solar + Storage + IoT + LED = $30 trillion," Public Lecture, Waterloo Institute for Sustainable Energy, University of **Waterloo**, April 2017

"Optimal Lighting Control with Pervasive Sensing," Invited Lecture, South West Ontario OR Day, **Waterloo**, April 2017

"Solar + Storage + IoT + LED = $30 trillion," Invited Lecture, McGill University, **Montreal**, June 2016

"Solar + Storage + IoT + LED = $30 Trillion," Keynote at Erasmus Energy Day, Erasmus University, **Rotterdam**, Netherlands, May 2016

"The WeBike Project," presentation at the University of Twente, **Twente**, Netherlands, May 2016

"What is Smart Now?" Round-table discussion at WORKSHOP Design Center, **Toronto**, November 2014

"Smart Grid: Status and Challenges," Keynote at Communications and Control for Smart Energy Systems Workshop, IEEE INFOCOM, **Toronto**, April 2014

"The Challenge of Deployment," Keynote at Workshop on Lowest Cost Networking for Universal Access, ACM MOBICOM, **Miami**, Florida, 2013

"The Consumer-centric Smart Grid," WISE Advisory Council, **Waterloo**, May 2012

"Optimal Contracts for Providing Frequency Regulation Service Using Fleets of Electric Vehicles," Smart Grid Day Workshop, **Waterloo**, May 2012

"A Networking Approach to the Smart Grid," Invited Lecture, Cornell University, **Ithaca**, July 2012

"A Networking Approach to the Smart Grid," Invited Lecture, McMaster University, **Hamilton**, Feb. 2012

"A Networking Approach to the Smart Grid," Invited Lecture, ETH **Zurich**, Jan. 2012

"How the Internet can Green the Grid," Distinguished Lecture, University of North Carolina, **Chapel Hill**, November 2010

"How the Internet can Green the Grid," presentation made to Google **Waterloo**, April 2010.

"Cloud computing: Good, Bad, and Ugly," First Mysore Park Workshop on Cloud Computing, **Mysore**, India, January 2010.