Curriculum Vitae

Kyle Jamieson

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Personal Details

Name:	Kyle Andrew Stuart Jamieson
Department:	Computer Science
Present appointment:	Associate Professor

Education

Dates	Detail of degree	Institution
9/1996–6/2000	Bachelor of Science (B.S.) in Mathematics	M.I.T.
9/1996–6/2001	Bachelor of Science (B.S.) in Computer Science and Engineering	M.I.T.
6/2000–2/2002	Master of Engineering (M.Eng.) in Electrical Engineering and Computer Science. Thesis title: "Implementation of a Power-Saving Protocol for Ad Hoc Wireless Networks." Advisor: Prof. Hari Balakrishnan.	M.I.T.
2/2002–6/2008	Doctor of Philosophy (Ph.D.) in Computer Science. Dissertation topic: "The SoftPHY Abstraction: from Packets to Symbols in Wireless Network Design." Advisor: Prof. Hari Balakrishnan.	M.I.T.

Professional History

Dates	Detail of position	Institution
5/1998–8/1998	Research Intern (Supervisor: Dr. Ganesh Ramaswamy)	IBM Research
5/2002–9/2002	Research Intern (Supervisor: Dr. Victor Bahl)	Microsoft Research
5/2005–9/2005	Research Intern	Mazu Corporation
9/2008–9/2012	Lecturer (UK tenure-track faculty position)	University College London
10/2012–9/2015	Senior Lecturer (UK tenure-track faculty position)	University College London
10/2015–10/2016	Reader (UK tenured faculty position)	University College London
9/2015–6/30/2017	Assistant Professor	Princeton University
2/2020–7/2020	Visiting Research Scientist (on sabbatical)	M.I.T.
7/1/2017–	Associate Professor	Princeton University

Awards

- ACM SIGMOBILE Early Career Award (2018).
- Best Paper award, IEEE CSNDSP Symposium (2016) for "Truncating and Oversampling OFDM Signals in White Gaussian Noise Channels."
- Best Paper award, ACM CoNEXT Conference (2014) for "MIDAS: Empowering 802.11ac Networks with Multiple-Input Distributed Antenna Systems."
- Best Paper award, USENIX Annual Technical Conference (2014) for "HACK: Hierarchical ACKs for Efficient Wireless Medium Utilization."
- NTT Graduate Fellowship (2000).

Invited Talks

Date	Details
11/27/2007	"Partial Packet Recovery for Wireless Networks." At Tufts University ECE Department Colloquium (Medford, Massachusetts, USA). Host: Prof. Hwa Chang.
3/5/2008	University of California San Diego Department of Electrical and Computer Engineering (La Jolla, California, USA). Host: Prof. Curt Schurgers.
2/26/2009	"Wireless Networks: Overcoming the Challenges, Leveraging the Opportunities." At Cambridge University Computer Laboratory (Cambridge, UK). Host: Prof. Jon Crowcroft.
3/6/2009	"Wireless Networks: Overcoming the Challenges, Leveraging the Opportunities." At Microsoft Research Cambridge (Cambridge, UK). Host: Dr. Bozidar Radunovic.
11/9/2009	"Cross-Layer Wireless Bit Rate Adaptation." At National Univ. Singapore (NUS). Host: Dr. Haifeng Yu.
11/12/2009	—. At Microsoft Research Asia (Beijing). Host: Dr. Yonguang Zhang.
2/25/2010	"SecureAngle: Improving Wireless Security with Angle-of-Arrival." At the Scottish Networking Event, Edinburgh Napier University (Edinburgh, UK).
6/24/2010	"SecureAngle: Improving Wireless Security with Angle-of-Arrival." At Edinburgh University Informatics Forum (Edinburgh, UK). Host: Dr. Mahesh Marina.
6/14/2011	"Building Scalable, Secure, and Reliable 'Chaotic' Wireless Networks." At Telefónica I+D (Barcelona, Spain). Host: Dr. Dina Papagiannaki.
6/20/2012	"Exploiting Angle-of-Arrival Information for Highly Accurate and Responsive Indoor Localization." At School of Computer and Communication Sciences, École Polytechnique Fédérale de Lausanne (Lausanne, Switzerland). Host: Dr. Katerina Argyraki.
8/26/2012	"Should I Work on Wireless Networks? Advice for Early-Career Graduate Students." Invited keynote talk, ACM MobiCom S3 Workshop (Istanbul, Turkey).
2/4/2013	"Exploiting Angle-of-Arrival Information for Highly Accurate and Responsive Indoor Localization." At National University Singapore (NUS). Host: Dr. Haifeng Yu.
2/5/2013	"Exploiting Angle-of-Arrival Information for Highly Accurate and Responsive Indoor Localization." At Nanyang Technological University (Singapore). Host: Dr. Mo Li.
5/30/2013	"ArrayTrack: Exploiting Angle-of-Arrival for Accurate and Responsive Indoor Location." At Microsoft Research Redmond New Directions in Wireless Systems Design Summit (Redmond, Washington, USA). Host: Dr. Victor Bahl.
9/3/2013	"Scaling Distributed MIMO with Fine-Grained Frequency Synchronization." Invited seminar at NEC Laboratories America (Princeton, NJ, USA). Host: Dr. Karthik Sundaresan.
9/30/2013	"Scaling Distributed MIMO with Fine-Grained Frequency Synchronization." Distinguished Speaker Technical Talk at ACM MobiCom S3 Workshop (Miami, Florida).
6/24/2014	Lecturer, Microsoft Research Summer School 2014 on Wireless Networking. Microsoft Research India Summer School Series (Bangalore, India).
7/4/2014	"Elevator Pitch: ArrayTrack: Precise, real-time indoor location." ERC-ScienceBusiness Innovation Board New Technologies from the European Research Council Event (Brussels, Belgium).
7/15/2014	"SmartTap: Experiences Taking Wireless Research to the Market in the ERC Proof-of-Concept Programme." Invited Talk, Young Academy of Europe Annual Meeting 2014 (Barcelona, Spain).
8/26/2014	"Bringing Phased Array Signal Processing Indoors to Wi-Fi Networks." At Ohio State University (Columbus, OH). Host: Prof. Kannan Srinivasan.
10/14/2014	—. At Massachusetts Institute of Technology (Cambridge, Massachusetts). Host: Prof. Dina Katabi.
11/13/2014	—. At Stanford University NetSeminar (Stanford, CA).
11/24/2014	—. At Toshiba Research Europe (Bristol, UK). Host: Dr. Zhong Fan.
5/11/2015	—. At the Microsoft Research Devices and Networking Summit 2015 (Paris, France).
5/15/2015	"Leveraging Array Signal Processing in the Wireless Internet of Things." At RWTH Aachen (Aachen, Germany). Host: Prof. Petri Mähönen.
5/18/2015	—. At Trinity College Dublin (Dublin, Ireland). Host: Prof. Douglas Leith.
8/7/2015	—. At IIT Bombay (Mumbai, India). Host: Prof. Mythili Vutukuru.
8/10/2015	—. At IIT Madras (Chennai, India). Host: Prof. Krishna Sivalingam.
10/6/2015	ArrayTrack: Precise, Real-time Indoor Location. Princeton University Keller Center Industry Engagement Event, Princeton, NJ.

Date	Details
2/2/2016	"Wi-Fi Goes to Town." NSF Wireless Cities Workshop (Washington, D.C.)
3/15/2016	"From Wi-Fi Device Tracking to Continuous Spatial Awareness in the IoT." SIGCOMM/SIGMOBILE Industry Day, Santa Clara, CA.
5/16/2016	"Tracking Mobiles, Objects, and People in the Wireless Internet of Things." At University of Science and Technology China (Hefei, China). Host: Prof. Xiangyang Li.
5/17/2016	—. At Shanghai Jiaotong University (Shanghai, China). Host: Prof. Xinbing Wang.
5/18/2016	—. At Tsinghua University (Beijing, China). Host: Prof. Yunhao Liu.
5/19/2016	—. At Microsoft Research Asia (Beijing, China). Host: Dr. Kun Tan.
6/13/2016	—. At Rutgers WINLAB (New Brunswick, NJ). Host: Prof. Dipankar Raychaudhuri.
6/26/2016	—. Invited keynote talk at the 2016 ACM MobiSys Workshop on Physical Analytics (Singapore).
10/6/2016	"Continuous Spatial Awareness in the Wireless Internet of Things." Panelist at ACM MobiCom 2016 panel discussion on Emerging Mobile Technologies (New York, NY).
3/21/2017	—. Invited seminar at the University of Surrey 5G Innovation Centre (Surrey, UK). Host: Dr. Konstantinos Nikitopoulos.
5/12/2017	—. Keynote address, ACM-China Turing Award 50th Anniversary Celebration (Shanghai, China).
10/16/2017	"Wi-Fi Goes to Town." Invited talk at the 4th ACM Workshop on Hot Topics in Wireless Networks (HotWireless '17, Snowbird, UT).
12/14/2017	—. Google University Research Tech Talks Series (Mountain View, CA).
12/15/2017	"Towards Adiabatic Quantum Computation for Massive MIMO Wireless Systems." Universities Space Research Association/NASA Ames/Google Quantum Artificial Intelligence Laboratory Invited Seminar (Mountain View, CA). Host: Dr. Davide Venturelli.
6/28/2018	"Wi-Fi Goes To Town." ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc) 2018 Invited Keynote Talk (Los Angeles, CA).
7/18/2018	(with Lin Zhong, Rice University) "5G is a Software Play." Microsoft Research Faculty Summit Invited Talk. Redmond, WA.
10/5/2018	"Wi-Fi Goes to Town." Invited seminar at Imperial College London (London, UK). Host: Prof. Hamed Haddadi.
5/19/2019	"Quantum Compute-Enabled Wireless Networks." Invited seminar at University of Waterloo (Waterloo, Canada). Host: Prof. Srinivasan Keshav.
6/26/2019	—. Invited seminar at Inria-Institut Mines-Telecom-Sorbonne Universite-Nokia Bell Labs Laboratory of Information, Networking, and Communication Sciences (Paris, France). Host: Dr. Renata Teixeira.
7/3/2019	—. Cosener's Multiservice Networks Workshop (Abingdon, Oxford, U.K.)
9/23/2019	—. Invited seminar at the IEEE Sarnoff Symposium (Newark, NJ).
9/24/2019	—. Invited seminar at the D-Wave Qubits North America Symposium (Newport, RI).
4/30/2020	"Congestion Control via Endpoint-Driven, Physical-Layer Capacity Measurements." Cambridge University Computer Laboratory Inivited Seminar (Cambridge, U.K.)
6/18/2020	—. Rice University ECE Department Distinguished Speaker Series (Houston, TX)
7/9/2020	"Quantum Compute-Enabled Wireless Networks." Cosener's Multiservice Networks Workshop (Abingdon, Oxford, U.K.)
7/28/2020	"Quantum Compute-Enabled Wireless Networks" and "Smart Surfaces will Enable Better Wireless Networks." Invited seminar, Samsung Corporation Innovation Forum.

Student and Staff Mentoring and Supervision

Dates	Details
9/2008–6/2016	Co-supervisor, **UCL PhD student Mr. Georgios Nikolaidis** (MSc in Data Communications, Networks, and Distributed Systems, UCL, 2008). Thesis title: *Practical Interference Mitigation for Wi-Fi Systems*.
1/2009–8/2009	Thesis supervisor, Ms. Kanika Bahukuna, Mr. Zelalem Deresse, Mr. Jofrey Kyomo, and Mr. Piyakhun Nopphakun: MSc in Data Communications, Networks, and Distributed Systems, UCL. Project title: *Improving Wireless Security using Angle-of-Arrival Estimation*.
1/2010–8/2015	Supervisor, **UCL PhD student Mr. Jie Xiong** (MS in Electrical and Computer Engineering, Duke University, 2009). Thesis title: *Pushing the Limits of Indoor Localization in Today's Wi-Fi Networks*.
9/2010–6/2011	Thesis supervisor, **Mr. Calum Harrison** (MEng in Computer Science, UCL, 2010). Thesis title:

	Rateless Codes and Adaptive Demodulation in Wireless Networks.
7/2012–10/2013	Line manager, **Dr. Konstantinos Nikitopoulos, Postdoctoral Research Associate,** UCL.
9/2013–8/2014	Line manager, **Mr. Jon Gjengset, Research Assistant** (MSc in Networked Computer Systems, UCL, 2013).
12/2013–6/2014	Line manager, **Mr. Graeme McPhilips, Research Technician,** UCL.
8/2013–6/2015	Supervisor, **UCL MPhil student Mr. Jiwei Li** (MSc by Research in Informatics, Edinburgh University, 2013).
7/2013–	Supervisor, **UCL MPhil student Ms. Juan Zhou** (MEng in Pattern Recognition and Machine Intelligence, Shanghai Jiaotong University, 2009).
10/2015–4/2016	Thesis supervisor, **Princeton University B.S.E. student Mr. Hansen Qian** (date of thesis submission: April 29, 2016).
10/2015–	Line manager, **Dr. Longfei Shangguan, Postdoctoral Research Associate,** Princeton University.
2/2016–9/2016	Line manager, **Dr. Bo Tan, Postdoctoral Research Associate,** University College London.
5/2016–7/2016	Supervisor, **Summer Undergraduate Intern Mr. Deep Modh** (IIT Mumbai, India).
9/2016–3/2017	Supervisor, **Undergraduate Intern Mr. Zhenyu Song** (Shanghai Jiaotong University, China)
9/2017–	Supervisor, **Princeton University PhD student Mr. Minsung Kim**
9/2017–	Supervisor, **Princeton University PhD student Mr. Zhuqi Li**
9/2018–	Supervisor, **Princeton University PhD student Ms. Kun Woo Cho**
9/2018–	Supervisor, **Princeton University PhD student Mr. Sai Srikar Kasi**
8/2018–	Line manager, **Dr. Yaxiong Xie, Postdoctoral Research Associate**
9/2019–	Supervisor, **Princeton University PhD student Mr. Abhishek Kumar**
9/2019–	Supervisor, **Princeton University PhD student Mr. Fan Yi**

Refereed Conference Publications

- Lili Chen, Wenjun Hu, Kyle Jamieson, Xiaojiang Chen, Dingyi Fang, Jeremy Gummeson. Pushing the Physical Limits of IoT Devices with Programmable Metasurfaces. In Proceedings of the USENIX NSDI Symposium (Boston, MA, 2021), 14 pages. *Paper acceptance rate: 17%.*

- Srikar Kasi, Kyle Jamieson. Towards Quantum Belief Propagation for LDPC Decoding in Wireless Networks. In Proceedings of the ACM MobiCom Conference (London, U.K., 2020), 14 pages. *Paper acceptance rate: 18%.*

- Yaxiong Xie, Fan Yi, Kyle Jamieson. PBE-CC: Congestion Control via Endpoint-Centric, Physical-Layer Bandwidth Measurements. In Proceedings of the ACM SIGCOMM Conference (New York, NY, 2020), 14 pages. *Paper acceptance rate: 21%.*

- Tao Chen, Longfei Shangguan, Zhenjiang Li, Kyle Jamieson. Metamorph: Injecting Audible Commands into Over-the-air Voice Controlled Systems. In Proceedings of the Network and Distributed Security Symposium (San Diego, CA, 2020), 12 pages.

- Amy Tai, Andrew Kryczka, Shobit Kanaujia, Kyle Jamieson, Michael J. Freedman, Asaf Cidon. Who's Afraid of Uncorrectable Bit Errors? Online Recovery of Flash Errors with Distributed Redundancy. In Proceedings of the USENIX Annual Technical Conference (Renton, WA, 2019), 15 pages. *Paper acceptance rate: 20%.*

- Minsung Kim, Davide Venturelli, Kyle Jamieson. Leveraging Quantum Annealing for Large MIMO Processing in Centralized Radio Access Networks. In Proceedings of the ACM SIGCOMM Conference (Beijing, China, 2019), 14 pages. *Paper acceptance rate: 14.5%.*

- Branden Ghena, Joshua Adkins, Longfei Shangguan, Kyle Jamieson, Philip Levis, Prabal Dutta. Challenge: Unlicensed LPWANs are Not Yet the Path to Ubiquitous Connectivity. In Proceedings of the ACM MobiCom Conference (Los Cabos, Mexico, 2019), 12 pages. *Paper acceptance rate: 16.7%.*

- Zhuqi Li, Yaxiong Xie, Longfei Shangguan, R. Ivan Zelaya, Jeremy Gummeson, Wenjun Hu, Kyle Jamieson. Towards Programming the Radio Environment with Large Arrays of Inexpensive Antennas. In Proceedings of the USENIX NSDI Symposium (Boston, MA, 2019), 14 pages. *Paper acceptance rate: 12.5% (fall deadline).*

- Yaxiong Xie, Jie Xiong, Mo Li, Kyle Jamieson. mD-Track: Leveraging Multidimensionality for Passive Indoor Wi-Fi Tracking. In Proceedings of the ACM MobiCom Conference (2019), 14 pages. *Paper acceptance rate: 24%.*

- Yao Peng, Longfei Shangguan, Yue Hu, Yujie Qian, Xiangshang Lin, Dingyi Fang, Kyle Jamieson. PLoRa: A Passive Long-Range Data Network from Ambient LoRa Transmissions. In Proceedings of the ACM SIGCOMM Conference (Budapest, Hungary, 2018), 14 pages. *Paper acceptance rate: 18%.*

- Zhenyu Song, Longfei Shangguan, Kyle Jamieson. Wi-Fi Goes to Town: Rapid Picocell Switching for Transit Wireless Networks. In Proceedings of the ACM SIGCOMM Conference (Los Angeles, CA, 2017), 14 pages. *Paper acceptance rate: 14.4%.*

- Christopher Husmann, Georgios Georgis, Konstantinos Nikitopoulos, Kyle Jamieson. FlexCore: Massively Parallel and Flexible Processing for Large MIMO Access Points. In Proceedings of the USENIX NSDI Symposium (Boston, MA, 2017), 14 pages. *Paper acceptance rate: 18.2%.*

- Longfei Shangguan, Zimu Zhou, Kyle Jamieson. Enabling Gesture-Based Interactions with Objects. In Proceedings of the ACM MobiSys Conf. (Niagara Falls, NY, 2017), 13 pages. *Paper acceptance rate: 18%.*

- Giulio Grassi, Paramvir Bahl, Kyle Jamieson, Giovanni Pau. ParkMaster: An In-Vehicle, Edge-Based Video Analytics Service for Detecting Open Parking Spaces in Urban Environments. In Proceedings of the ACM/IEEE Symposium on Edge Computing (San Jose, CA, 2017), 14 pages.

- Kun Qian, Chenshu Wu, Zheng Yang, Yunhao Liu, Kyle Jamieson. Widar: Decimeter-Level Passive Tracking via Velocity Monitoring with Commodity Wi-Fi. In Proceedings of the ACM MobiHoc Conf. (Chennai, India, 2017), 10 pages. *Paper acceptance rate: 17%.*

- Longfei Shangguan and Kyle Jamieson. Leveraging Electromagnetic Polarization in a Two-Antenna Whiteboard in the Air. In Proceedings of the ACM CoNEXT Conf. (Irvine, CA, 2016), 14 pages. *Paper acceptance rate: 18.4%.*

- Ju Wang, Hongbo Jiang, Jie Xiong, Kyle Jamieson, Xiaojiang Chen, Dingyi Fang, Binbin Xie. LiFS: Low Human Effort, Device-Free Localization with Fine-Grained Subcarrier Information. In Proceedings of the ACM MobiCom Conf. (New York, NY, 2016), 12 pages. *Paper acceptance rate: 14.2%.*

- Longfei Shangguan and Kyle Jamieson. The Design and Implementation of a Mobile RFID Tag Sorting Robot. In Proceedings of the ACM MobiSys Conf. (Singapore, 2016), 12 pages. *Paper acceptance rate: 15.7%.*

- Yaxiong Xie, Zhenjiang Li, Mo Li, Kyle Jamieson. Augmenting Wide-band 802.11 Transmissions via Unequal Packet Bit Protection. In Proceedings of the IEEE Infocom Conf. (San Francisco, CA, 2016), nine pages. *Paper acceptance rate: 18%.*

- Georgios Nikolaidis, Mark Handley, Kyle Jamieson, Brad Karp. COPA: Cooperative Power Allocation for Interfering Wireless Networks. In Proceedings of the ACM CoNEXT Conf. (Heidelberg, Germany, 2015), 12 pages. *Paper acceptance rate: 20.9%.*

- Jie Xiong, Karthikeyan Sundaresan, Kyle Jamieson. ToneTrack: Leveraging Frequency-Agile Radios for Time-Based Indoor Wireless Localization. In Proceedings of ACM MobiCom Conf. (Paris, France, 2015), 13 pages. *Paper acceptance rate: 17.8%.*

- Zhenjiang Li, Yaxiong Xie, Mo Li, Kyle Jamieson. Recitation: Rehearsing Wireless Packet Reception in Software. In Proceedings of ACM MobiCom Conf. (Paris, France, 2015), 13 pages. *Paper acceptance rate: 17.8%.*

- Tan Zhang, Aakanksha Chowdhery, Paramvir Bahl, Kyle Jamieson, Suman Banerjee. The Design and Implementation of a Wireless Video Surveillance System. In Proceedings of the ACM MobiCom Conf. (Paris, France, 2015), 13 pages. *Paper acceptance rate: 17.8%.*

- Jon Gjengset, Jie Xiong, Graeme McPhillips, Kyle Jamieson. Phaser: Enabling Phased Array Signal Processing on Commodity Wi-Fi Access Points. In Proceedings of ACM MobiCom Conf. (Maui, HI, 2014), 11 pages. **Best presentation award to Jon Gjengset.** *Paper acceptance rate: 16.4%.*

- Konstantinos Nikitopoulos, Juan Zhou, Ben Congdon, Kyle Jamieson. Geosphere: Consistently Turning MIMO Capacity into Throughput. In Proceedings of ACM SIGCOMM Conf. (Chicago, IL, 2014), 12 pages. *Paper acceptance rate: 19%.*

- Lynne Salameh, Astrit Zhushi, Mark Handley, Kyle Jamieson, Brad Karp. HACK: Hierarchical ACKs for Efficient Wireless Medium Utilization. In Proceedings of the USENIX Annual Technical Conf. (Philadelphia, PA, 2014), 12 pages. **Best paper award.** *Paper acceptance rate: 17.6%.*

- Jie Xiong, Karthikeyan Sundaresan, Kyle Jamieson, Amir Khojastepour, Sampath Rangarajan. MIDAS: Empowering 802.11ac Networks with Multiple-Input Distributed Antenna Systems. In Proceedings of the ACM CoNEXT 2014 Conf. (Sydney, Australia, 2014), 12 pages. **Best paper award.** *Paper acceptance rate: 19.7%.*

- Jie Xiong, Kyle Jamieson. ArrayTrack: A Fine-Grained Indoor Location System. In Proceedings of the USENIX NSDI Symp. (Lombard, IL, 2013), 14 pages. *Cited by 167.[i] Paper acceptance rate: 22%.*

- Jie Xiong, Kyle Jamieson. SecureArray: Improving Wireless Security with Fine-Grained Physical-Layer Information. In Proceedings of the ACM MobiCom Conf. (Miami, FL, 2013), 12 pages. *Paper acceptance rate: 13.5%.*

- Omprakash Gnawali, Rodrigo Fonseca, Kyle Jamieson, David Moss, Philip Levis. Collection Tree Protocol. In Proceedings of the ACM SenSys Conf. (Berkeley, CA, 2009), 14 pages. *Cited by 1,173. Paper acceptance rate: 17.6%.*

- Mythili Vutukuru, Hari Balakrishnan, Kyle Jamieson. Cross-Layer Wireless Bit Rate Adaptation. In Proceedings of the ACM SIGCOMM Conf. (Barcelona, Spain, 2009), 12 pages. *Cited by 311. Paper acceptance rate: 10%.*

- Mythili Vutukuru, Kyle Jamieson, Hari Balakrishnan. Harnessing Exposed Terminals in Wireless Networks. In Proceedings of the USENIX NSDI Symp. (San Francisco, CA, 2008), 12 pages. *Cited by 146. Paper acceptance rate: 17.7%.*

- Kyle Jamieson, Hari Balakrishnan. PPR: Partial Packet Recovery for Wireless Networks. In Proceedings of the ACM SIGCOMM Conf. (Kyoto, Japan, 2007), pp. 409–420. *Cited by 272. Paper acceptance rate: 13.6%.*

- C. Emre Koksal, Kyle Jamieson, Emre Telatar, Patrick Thiran. Impacts of Channel Variability on Link-Level Throughput in Wireless Networks. In Proceedings of the ACM SIGMETRICS Conf. (Saint-Malo, France, 2006), pp. 51–62. *Paper acceptance rate: 13.8%.*

- Bret Hull, Kyle Jamieson, Hari Balakrishnan. Mitigating Congestion in Wireless Sensor Networks. In Proceedings of the ACM SenSys Conf. (Baltimore, MD, 2004), pp. 134–147. *Cited by 740. Paper acceptance rate: 14.5%.*

- Benjie Chen, Kyle Jamieson, Hari Balakrishnan, Robert Morris. Span: An Energy-Efficient Coordination Algorithm for Topology Maintenance in Ad Hoc Wireless Networks. In Proceedings of the ACM MobiCom Conf. (Rome, Italy, 2001), pp. 85–96. *Cited by 2,951. Paper acceptance rate: 10.7%.*

Refereed Workshop Publications

- Amy Tai, Andrew Kryczka, Shobhit Kanaujia, Kyle Jamieson, Michael J. Freedman, Asaf Cidon. Who's Afraid of Uncorrectable Bit Errors? 11th Non-Volatile Memories Workshop (San Diego, CA, 2020).

- Allen Welkie, Longfei Shangguan, Jeremy Gummeson, Wenjun Hu, Kyle Jamieson. Programmable Radio Environments for Smart Spaces. In Proceedings of the ACM Workshop on Hot Topics in Networks (Palo Alto, CA, 2017), six pages. *Paper acceptance rate: 22.5%.*

- Bo Tan, Kevin Chetty, Kyle Jamieson. ThruMapper: Through-Wall Building Tomography with a Single Mapping Robot. In Proceedings of the ACM HotMobile workshop (Sonoma, CA, 2017), 6 pages. *Paper acceptance rate: 36%.*

- Yaxiong Xie, Jie Xiong, Mo Li, Kyle Jamieson. xD-Track: Leveraging Information from Multiple Dimensions for Passive Wi-Fi Tracking. In Proceedings of the ACM HotWireless Workshop (New York, NY, 2016), six pages.

- Waseem Ozan, Kyle Jamieson, Izzat Darwazeh. Truncating and Oversampling OFDM Signals in White Gaussian Noise Channels. In Proceedings of the IEEE Symposium on Communication Systems, Networks, and Digital Signal Processing (Prague, Czech Republic, 2016), six pages.

- Jie Xiong, Kyle Jamieson, Karthikeyan Sundaresan. Synchronicity: Pushing the Envelope of Fine-Grained Localization with Distributed MIMO. In Proceedings of the ACM HotWireless Workshop (Maui, HI, 2014), six pages.

- Calum Harrison, Kyle Jamieson. Power-Aware Rateless Codes in Mobile Wireless Communications. In Proceedings of the ACM HotNets Workshop (Seattle, WA, 2012), six pages.

- Jie Xiong, Kyle Jamieson. Towards Fine-Grained Radio-Based Indoor Location. In Proceedings of the ACM HotMobile Workshop (San Diego, CA, 2012), six pages.

- Jie Xiong, Kyle Jamieson. SecureAngle: Improving Wireless Security Using Angle-of-Arrival Signatures. In Proceedings of the ACM HotNets Workshop, (Monterey, CA, 2010), six pages.

- Rodrigo Fonseca, Omprakash Gnawali, Kyle Jamieson, Phil Levis. Four-Bit Wireless Link Estimation. In Proceedings of the ACM-NSF HotNets Workshop (Atlanta, GA, 2007), six pages.

- Kyle Jamieson, Hari Balakrishnan, Y. C. Tay. Sift: a MAC Protocol for Event-Driven Wireless Sensor Networks. In Proceedings of the Third European Workshop on Wireless Sensor Networks (EWSN) (Zurich, Switzerland, 2006), 15 pages. *Cited by 344*.

- Prem Gopalan, Kyle Jamieson, Panayiotis Mavrommatis, Massimiliano Poletto. Signature Metrics for Accurate and Automated Worm Detection. In Proceedings of the ACM Workshop on Recurring Malcode (WORM) (Fairfax, VA, 2006), 7 pages.

- Kyle Jamieson, Bret Hull, Allen Miu, Hari Balakrishnan. Understanding the Real-World Performance of Carrier Sense. In Proceedings of the ACM SIGCOMM Workshop on Experimental Approaches to Wireless Network Design and Analysis (E-WIND) (Philadelphia, PA, 2005), six pages. *Cited by 159*.

Refereed Journal Publications

- Aakanksha Chowdhery, Kyle Jamieson. Aerial Channel Prediction and User Scheduling in Mobile Drone Hotspots. *IEEE/ACM Trans. on Networking* (2018), 14 pages. doi:10.1109/TNET.2018.2878287

- Ju Wang, Jie Xiong, Hongbo Jiang, Kyle Jamieson, Xiaojiang Chen, Dingyi Fang, Chen Wang. Low Human-Effort, Device-Free Localization with Fine-Grained Subcarrier Information. *IEEE Trans. on Mobile Computing* (2018), 14 pages. doi:10.1109/TMC.2018.2812746

- Georgios Georgis, Konstantinos Nikitopoulos, Kyle Jamieson. Geosphere: An Exact Depth-First Sphere Decoder Architecture Scalable to Very Dense Constellations. *IEEE Access*, **5**(1), 2017, 17 pages.

- Omprakash Gnawali, Rodrigo Fonseca, Kyle Jamieson, Maria Kazandjieva, David Moss, Phil Levis. *CTP: An Efficient, Robust, and Reliable Collection Tree Protocol for Wireless Sensor Networks*. ACM Transactions on Sensor Networks **10**:1, 1–49 (2013).

- Y. C. Tay, Kyle Jamieson, Hari Balakrishnan. *Collision-Minimizing CSMA and its Applications to Wireless Sensor Networks*. IEEE Journal on Selected Areas in Communications **22**:6 (2004), 1048–1057. *Cited by 273*.

- Benjie Chen, Kyle Jamieson, Hari Balakrishnan, Robert Morris. Span: An Energy-Efficient Coordination Algorithm for Topology Maintenance in Ad Hoc Wireless Networks. ACM Wireless Networks **8**:5 (2002), 481–494. Cited by 2,951.

Patents and Patents Pending

- U.S. Patent No. 7,016,827 (1999): Method and System for Ensuring Robustness in Natural Language Understanding. Ganesh Ramaswamy, Kyle Jamieson, Jan Kleindienst; IBM Corporation (assignee).

- Application Serial No. 11-387,087 (2006): Email-based Worm Propagation Properties. Prem Gopalan, Kyle Jamieson, Panayiotis Mavrommatis; Mazu Corp (assignee).

- U.S. Patent No. 8,006,306 (2013): Exploit-based Worm Propagation Mitigation. Prem Gopalan, Kyle Jamieson, Panayiotis Mavrommatis; Riverbed Technology, Inc. (assignee).

- U.S. Patent No. 8,386,892 (2013): Partial Packet Recovery for Wireless Networks. Kyle Jamieson, Hari Balakrishnan. Massachusetts Institute of Technology (assignee).

- U.S. Patent No. 8,578,479 (2013): Worm Propagation Mitigation. Prem Gopalan, Kyle Jamieson, Panayiotis Mavrommatis. Riverbed Technology, Inc. (assignee).

- PCT Application GB2013/052732 (2013): "Apparatus and method for determining the location of a mobile device using multiple wireless access points." UCL Business PLC (assignee)

- UK Patent Application No. 1401579.6 (30 January 2014): "Elevation Compensation for Antenna-Constrained Time-Difference of Arrival Indoor Localization." UCL Business PLC (assignee)

- UK Patent Application No. 1401580.4 (31 January 2014): "Auto Phase-Offset Calibration for Time-Difference of Arrival Indoor Localization." UCL Business PLC (assignee)

- Provisional US Patent Application 62/466,479 filed March 3, 2017. Rapid Picocell Switching for Wireless Transit Networks. Kyle Jamieson, Longfei Shangguan, Zhenyu Song. Assignee: Princeton University.

- Provisional US Patent Application 62/482,469 filed April 6, 2017. Pantomime: Enabling Gesture-Based Interactions with Objects. Longfei Shangguan and Kyle Jamieson. Assignee: Princeton University.
- Provisional US Patent Application 62/845,377 filed May 9, 2019. PCT application PCT/US2020/032380. Quantum Belief Propagation. Srikar Kasi and Kyle Jamieson. Assignee: Princeton University.
- Provisional US Patent Application 62/845,642 filed May 9, 2019. PCT application PCT/US2020/032398. Leveraging Quantum Annealing for Large MIMO Processing in Cloud-Based Radio Access Networks. Minsung Kim, Davide Venturelli, Kyle Jamieson. Assignee: Princeton University.
- U.S. Patent No. 10,433,274 (2019): Apparatus and Method for Calibrating a Wireless Access Point Comprising an Array of Multiple Antennas. Kyle Jamieson, Jon Gjengset; UCL Business PLC (assignee).

Other Research Outputs

- Zhuqi Li, Yuanchao Shu, Ganesh Ananthanarayanan, Longfei Shangguan, Kyle Jamieson, Victor Bahl. Spider: Next Generation Live Video Analytics over Millimeter-Wave Networks. MSR Technical Report MSR-TR-2020-17, May 2020.
- Zhuqi Li, Yaxiong Xie, Longfei Shangguan, R. Ivan Zelaya, Jeremy Gummeson, Wenjun Hu, Kyle Jamieson. Programmable Radio Environments with Large Arrays of Inexpensive Antennas. ACM GetMobile Magazine 23(3), September 2019.
- Christina Fragouli, Magnüs Halldórson, Kyle Jamieson, Bhaskar Krishnamachari. Foundations of Wireless Networking (Dagstuhl Seminar 17271). Dagstuhl Reports 7:7, June 2018, pp. 1–21, doi:10.4230/DagRep.7.7.1.
- Minsung Kim, Kyle Jamieson. Transforming MIMO BPSK Maximum Likelihood Detection into QUBO Form. Department of Computer Science Technical Report TR-010-17.
- Marco Gruteser, Kyle Jamieson. Final Report from the NSF Visioning Workshop on Extreme Wireless Networking. ACM SIGMOBILE, October 2017, pp. 1–22.
- Giulio Grassi, Matteo Sammarco, Paramvir Bahl, Kyle Jamieson, Giovanni Pau. Poster: ParkMaster—Leveraging Edge Computing in Visual Analytics. ACM MobiCom 2015 Poster (Paris, France).
- Kyle Jamieson. Wi-Fi Goes to Town: Seamless Internet Connectivity in Metropolitan Underground Transport. UCL CS Research Note RN/14/17 (January 8, 2015).
- Konstantinos Nikitopoulos, Juan Zhou, Ben Congdon, Kyle Jamieson. Geosphere: Consistently Turning MIMO Capacity into Throughput. UCL CS Research Note RN/13/20 (October 14, 2013).
- Konstantinos Nikitopoulos, Kyle Jamieson. FASTER: Fine and Accurate Synchronization for Large Distributed MIMO Wireless Networks. UCL CS Research Note RN/13/19 (October 14, 2013).
- Jie Xiong, Kyle Jamieson. ArrayTrack: A Fine-Grained Indoor Location System. UCL-CS Research Note RN/11/19 (October 19, 2011).
- Kyle Jamieson. The SoftPHY Abstraction: from Packets to Symbols in Wireless Network Design. MIT PhD Thesis, 2008.
- Kyle Jamieson. Implementation of a Power-Saving Protocol for Ad Hoc Wireless Networks. MIT M.Eng. Thesis, 2002.

External Grants and Gifts

- PI, National Science Foundation (NSF) Award CNS-2027647 ($100,000) RAPID: Fine-Grained, Privacy-Respecting Contact Traceback for COVID-19 Epidemiology, May 1, 2020–April 30, 2021.
- PI, Microsoft Corporation Research Award ($100,000) for *Intelligent Edge: Towards Building a Campus-Wide 5G Wireless Security Camera Infrastructure*. March 8, 2019.
- PI, National Science Foundation (NSF) Award #1824357 ($372,667) SpecEES: Collaborative Research: Advancing the Wireless Spectral Frontier with Quantum-Enabled Computational Techniques (QENeTs), October 1, 2018–July 31, 2022.
- Co-PI, National Science Foundation (NSF) Award #1763546 ($1,200,000) CSR: Medium: Rethinking Distributed SSD Storage Systems, August 15, 2018–July 31, 2022.

- PI, NSF CNS Award #1763309 ($191,278) for *Assessing Feasibility of Programming the Ambient Wireless Environment*, April 15, 2018–April 14, 2019.
- PI, NSF CNS Award #1617161 ($400,000) for *Continuous Spatial Awareness (CoSA) for Smart and Connected Objects*, October 1, 2016–September 30, 2019.
- PI, Google Faculty Research Award ($63,000) for *Wi-Fi Goes to Town*, February 2015.
- PI, European Research Council (ERC) Seventh Framework Program ("Ideas" Specific Program) Proof of Concept Award (€149,238 = $217,887[ii]) for *SmartTap: Tapping Wi-Fi Infrastructure for Fine-Grained Indoor Location*, April 2013–August 2014. The ERC is the pan-European funding body for basic frontier academic research in the EU's Seventh Framework program.
- PI, ERC Seventh Framework Program ("Ideas" Specific Program) Starting Investigator Award (€1.46m = $2.0m) for *CHAOSNETS: Building Scalable, Secure, and Reliable "Chaotic" Wireless Networks*, November 2011–October 2016.
- PI, UK Engineering and Physical Sciences Research Council (EPSRC) "Bridging the Gaps" award (£8,000 = $13,168) for *Energy Efficiency for the Compute Cloud*, March 2010–February 2011. The EPSRC is the UK funding body for research in Engineering and the Physical Sciences, including Computer Science.
- Unrestricted gift from Microsoft Research ($15,000), July 2010.

Internal Funding
- Princeton University Dean for Research COVID-19 Research Funding Call ($100,000) June 2020–May 2021.
- Princeton University Project X Fund ($150,000) February 1, 2018–Jan 31, 2020.
- Princeton University Office of Technology Licensing Intellectual Property Accelerator Fund Program award ($100,000) for *Wi-Fi Goes to Town*, January 2018.
- UCL Computer Science Departmental Strategic Research Fund (£3,190 = $5,252[iii]), October 2011.

Donations
- Hardware donation ($10,000 value) from the Microsoft Research Software Radio Academic Program, software donation ($25,000 value) from the Xilinx University Program.
- Hardware donation ($12,000 value), memory testing equipment from Intel Corporation (September 2016).
- Proposal selected for research time on a D-Wave Quantum Computer in the USRA-NASA-Google Quantum Artificial Intelligence Laboratory at NASA's Ames Research Center (February 2018).

Research Career Activity
The overall theme of my research is the design of wireless computer networks. The approach bridges the interdisciplinary gap between computer networking and digital communications, bringing the insights obtained through the latter to bear on architectural-level problems in wireless networks. A common thread running through all of the projects is an experimental grounding, which provides convincing experimental evidence to support the merit of the ideas, and more importantly, often points to further research problems worth solving.

Wireless Networks
Span (2000–2002). Span builds on the observation that when a region of an wireless network has a sufficient density of radios, only a small number need be on at any time to forward traffic for active connections. Radios make local decisions on whether to sleep or join a forwarding backbone, based on estimating benefit to others. I designed and implemented Span's medium access control, and tested Span in a wireless testbed. The 2001 ACM MobiCom conference paper describing Span has been widely cited, making it the 16th-most often cited paper of that year in the *entire field* of Computer Science with 2,951 citations to-date (Google Scholar).

Partial Packet Recovery (2006–2007). Bit errors occur in wireless communication when interference or noise overcomes the transmission itself. Current wireless protocols may add redundant bits to correct some small number of bit errors, but generally retransmit the whole packet if the coding is insufficient, hence wasting capacity. Using the proposed *SoftPHY*

interface, I designed a protocol that allows a receiver to compactly encode a request for retransmission of only those bits in a packet that are likely in error, asynchronously streaming acknowledgments back to the sender. This work was published and presented at the ACM SIGCOMM conference in 2007. Researchers at M.I.T., Stanford, and the University of Washington have used the SoftPHY interface in their work on wireless bit rate adaptation and network coding.

Conflict Map (2007–2008). Maximizing the number of successful concurrent transmissions is a good way to maximize throughput in wireless networks, but current techniques such as carrier sense concurrency fail to leverage "exposed terminal" opportunities. Conflict Map (*CMAP*) is a design where nodes optimistically assume that concurrent transmissions will succeed, and carry them out in parallel. Then, in response to observed packet errors, they discover which concurrent transmissions will likely succeed, creating a distributed data structure "mapping" conflicting transmissions. By listening to ongoing transmissions and consulting the conflict map just before sending, each node determines whether to transmit immediately, or defer. Our results showing a two-fold throughput improvement have been experimentally verified in real world, large-scale wireless testbeds. CMAP was published and presented at the USENIX NSDI conference in 2008, becoming the first paper to solve the exposed terminal problem, which had remained open for more than 20 years since Dr. Phil Karn of Qualcomm posed it as a challenge in his work on the MACA protocol. Proposals for new MAC protocols in system designs at the top-tier SIGCOMM and NSDI conferences now routinely include variations or enhancements of this work (for example, see the DIRC system by researchers at CMU and Intel Labs, appearing in SIGCOMM 2009).

SoftRate (2008–2009). Bit rate adaptation is crucial for efficient wireless networks, but existing designs use either frame receptions or signal-to-noise ratio estimates, wasting capacity or requiring training. SoftRate uses confidence information calculated by the physical layer and exported to higher layers via the SoftPHY interface to estimate the prevailing channel bit error rate (BER). Senders use this BER estimate to pick the best bit rate, even across different wireless environments and hardware, without requiring any retraining. SoftRate also uses abrupt changes in the BER estimate to identify interference, enabling it to reduce the bit rate only in response to channel errors caused by attenuation or fading, and making it the first research proposal to use cross-layer information to accurately classify wireless transmissions as colliding with each other or not, a problem the research community had been attempting to solve for about a decade. SoftRate was published and presented at the ACM SIGCOMM conference in 2009. The bit rate adaptation scheme proposed in that work is now the *de facto* standard that the SIGCOMM research community uses in the study of capacity of wireless networks. Our results have subsequently been tested and replicated in real-world wireless testbeds by groups at M.I.T. and at Stanford University.

ERC FP7 Project **CHAOSNETS** (2011–2016). As a result of their unplanned, license-free nature, Wi-Fi networks have grown quickly in recent years, giving users unprecedented improvements in wireless access to the Internet. But being "chaotic," *i.e.* unplanned, they have grown to be victims of their own success: when eager users set up too many wireless access points in a densely populated area, the resulting noise and interference hurt everyone's throughput and connectivity. We are currently investigating how to make such chaotic networks more scalable, secure, and reliable.

Bringing Phased Array Signal Processing Indoors to Wi-Fi Networks (2011–present). Phased array signal processing has long been employed outdoors in radar, underwater in sonar, and underground in seismic monitoring. This work takes these concepts indoors in the context of Wi-Fi networks, where it must cope with strong multipath reflections, packetized data transmissions, and commodity hardware.

- **ArrayTrack** (2011–present). ArrayTrack is the first indoor location service in the world to achieve a median location accuracy of within 20 cm and sub-second responsiveness, without infrastructure beyond typical Wi-Fi access points. This will enable the development of handheld route-finding and augmented reality applications not currently possible indoors today. We have prototyped and evaluated on a Wi-Fi radio platform and evaluated in a 50-node indoor wireless testbed situated in a real office working environment. In October 2012, UCL Business filed a US patent based on this work (application no. 61/716,039) and evaluation trials are ongoing with a Fortune 100 IT company. The project was spotlighted in the *Mobile Location Sensing* tutorial given by Microsoft Research Redmond at the ACM MobiSys 2013 Conference in Taipei, Taiwan.

- **Phaser** (2013–2014) There are two important challenges inherent in the design of indoor phased-array systems that must be overcome if they are to be of practical use on commodity hardware. First, phase differences between the radio oscillators behind each antenna can make readings unusable, and so must be corrected. Second, while the number of antennas on commodity access points is usually limited, most array processing increases in fidelity with more antennas.

These issues work in synergistic opposition to array processing: without phase offset correction, no phase-difference array processing is possible, and with fewer antennas, automatic correction of these phase offsets becomes even more challenging. Phaser is a system that solves these intertwined problems to make phased array signal processing truly practical on already-deployed Wi-Fi access points. Phaser was published at the 2014 ACM MobiCom Conference (best presentation award to Jon Gjengset).

Geosphere (2013–2015) is a physical- and link-layer design for multi-cell access point-based MIMO networks that consistently improves network throughput. To send multiple streams of data in a MIMO system, prior designs rely on a technique called zero-forcing, a way of "nulling" the interference between the different spatial streams by inverting the effect of the wireless channel matrix. In many cases, when this channel matrix is well-conditioned, zero-forcing is highly effective, eliminating inter-stream interference. But measurements from our indoor wireless testbed network indicate that many of its links suffer from poorly-conditioned MIMO channel matrices. In these situations, zero-forcing techniques leave performance on the table, so Geosphere uses sphere decoding that can make fewer errors, and therefore can realize more of the MIMO capacity. To overcome the sphere decoder's computational complexity when signaling with dense constellations at a high rate, Geosphere uses novel tree-search techniques that incorporate geometric reasoning about the constellation to reduce computational complexity by up to an order of magnitude. Results from our WARP testbed show that Geosphere achieves average throughput gains of 2× in 4 × 4 MIMO systems and 47% in 2 × 2 MIMO systems, while simultaneously requiring up to nearly an order of magnitude less computation relative to the sphere decoder, bringing its computational demands in line with current systems already realized in ASIC.

ERC Proof-of-Concept Project **SmartTap** (2012–2013). The expected outcome of the SmartTap project is a demonstration of the ArrayTrack system localizing clients in real time that can be shown to potential customers. We will develop a hardware module (the SmartTap) using off-the-shelf components to tap into already-deployed APs, with the goal of one-meter indoor localization accuracy. We are confident that the cost savings, leveraging of existing infrastructure, and lack of need for extensive internal clearance processes will make SmartTap more attractive to potential customers than the status quo. In October 2012, UCLB filed for a US patent based on this work (application no. 61/716,039) and evaluation trials are ongoing with a Fortune 100 IT company.

Sensor Networks

CTP (2005–2009). CTP is a data collection protocol for wireless sensor networks. Collecting information reliably and efficiently from a sensor network is a challenging problem because of the need to adapt quickly to changes in the network while reducing the amount of power the protocol requires. CTP achieves both agility and high efficiency, while at the same time offering record-setting reliability for data delivery in sensor networks. CTP was published and presented at the ACM SenSys conference in 2009. It has since become the *de facto* commercial and academic standard for collection, and has informed the design of the IPv6 *Routing Protocol for Low Power and Lossy Networks* in the *Internet Engineering Task Force* (IETF) *ROLL* working group. CTP has been implemented and tested on 13 different testbeds and seven different hardware platforms, and has become the accepted benchmark by which researchers from USC, Microsoft Research Redmond, Stanford, and elsewhere evaluate new protocols and designs.

Teaching Career Activity

Semester	Class
Spring 2009	COMPM038/COMPGZ06 *Mobile and Adaptive Systems*: One-third teaching responsibilities (Seven lectures given, 16 contact hours, course organizer).
Fall 2009	COMP3035/COMPGZ01 *Networked Systems*: One-half teaching responsibilities (10 lectures given, 27 contact hours, course organizer). Designed and developed a new programming coursework exercise, a functional local DNS server programmed by students in Python.
Spring 2010	COMPM038/COMPGZ06 *Mobile and Adaptive Systems*: One-third teaching responsibilities (Five lectures given, 13.5 contact hours, course organizer). Co-instituted regular "one-page" assignments on readings to promote more continuous assessment and improve classroom discussion.
Fall 2010	COMP3035/COMPGZ01 *Networked Systems*: One-half teaching responsibilities (Nine lectures given, 24.5 contact hours, course organizer).
Spring 2011	COMPM038/COMPGZ06 *Mobile and Cloud Computing*: One-half teaching responsibilities (Seven lectures given, 19.5 contact hours, course organizer). Revised curriculum to include topics in cloud

	computing. COMP6007/COMPGC15 *Communications and Networks*: One-half teaching responsibilities (10 lectures given, 25 contact hours, course organizer).
Summer 2011	Lecturer at EPSRC 2011 Summer School in Communications at the University of Edinburgh (June 15, 2011). Three lecture hours; 30 students in attendance.
Fall 2011	COMP3035/COMPGZ01 *Networked Systems*: One-half teaching responsibilities (Nine lectures given, 24.5 contact hours, course organizer). COMP3005/COMPGA09 *Operating Systems*: One-half teaching responsibilities (Eight lectures given, 22 contact hours, course organizer).
Spring 2012	COMPM038/COMPGZ06 *Mobile and Cloud Computing*: One-half teaching responsibilities (Eight lectures given, 21 contact hours, course organizer).
Fall 2012	COMP3035/COMPGZ01 *Networked Systems*: One-half teaching responsibilities (Nine lectures given, 24.5 contact hours, course organizer).
Spring 2013	COMPM038/COMPGZ06 *Mobile and Cloud Computing*: One-half teaching responsibilities (Eight lectures given, 21 contact hours, course organizer).
Fall 2013	COMP3035/COMPGZ01 *Networked Systems:* One-half teaching responsibilities (Nine lectures given, 24.5 contact hours, course organizer).
Spring 2014	COMPM038/COMPGZ06 *Mobile and Cloud Computing*: One-half teaching responsibilities (Eight lectures given, 21 contact hours, course organizer). Guest lecturer, Berkeley CS 268 *Computer Networks* (Berkeley, California).
Spring 2015	COMPM038/COMPGZ06 *Mobile and Cloud Computing*: Full teaching responsibilities as course instructor.
Fall 2015	COS 518 *Advanced Computer Systems*. Full teaching responsibilities as course instructor.
Fall 2016	COS 418 *Distributed Systems*. Co-developed new undergraduate class on Distributed Computer Systems, including developing new lecture material and supervising the development of new programming coursework material. One-half teaching responsibilities as course co-instructor.
Spring 2017	COS 598A *Wireless Networking and Sensing Systems*. Developed new graduate seminar on wireless data communication networks, wireless network architecture, and wireless sensing systems. Full teaching responsibilities as course instructor.
Fall 2017	COS 418 *Distributed Systems*. Continued co-developing new undergraduate class on Distributed Computer Systems, revising and extending lecture material. One-half teaching responsibilities as course co-instructor.
Spring 2018	COS 463 *Wireless Networks*. Developed new undergraduate class on wireless network design, architecture, and implementation, treating the design of wireless networks from a holistic systems and networking perspective all the way down to the physical layer and the wireless channel. Full teaching responsibilities as course instructor.
Fall 2018	COS IW 07 *Independent Work Seminar on Mobile Computing Design for Assistive Technology*. Developed new undergraduate Independent Work seminar on the use of mobile and augmented reality devices and other new technologies to assist persons with disabilities. COS IW 08 *Independent Work Seminar on Network Measurement, Sensing, and Visualization Across the Princeton Campus*. Developed new undergraduate Independent Work seminar on visualization of the operation of computer networks.
Spring 2019	COS 463 *Wireless Networks*. Developed new undergraduate class on wireless network design, architecture, and implementation, treating the design of wireless networks from a holistic systems and networking perspective all the way down to the physical layer and the wireless channel. Full teaching responsibilities as course instructor.
Fall 2019	COS IW 06 *Independent Work Seminar on Network Measurement, Sensing, and Visualization Across the Princeton Campus*.

Knowledge Transfer/Exchange Activities

- Member of the UCL Academic Centre of Excellence for Cyber Security Research (ACE-CSR)

- Member, *The Network*, a joint industry-academia EPSRC-funded coordination activity in Communications, Mobile Computing, and Computer Networks.

- Member, TinyOS-2 Network Protocols Working Group.

Enabling Activities

- Member of the ACM, IEEE, IET, Young Academy of Europe.
- Co-Organizer (with Prof. Chunyi Peng), NSF COVID-19 "Call to Arms" Workshop (April 2020).
- Associate Editor, IEEE/ACM Transactions on Networking (May 2018–May 2020)
- General Co-Chair (with Prof. Nick Feamster), ACM Workshop on Hot Topics in Networks (HotNets) 2019.
- Co-Organizer (with Prof. Marco Gruteser), NSF Visioning Workshop on Wireless Networking, October 15, 2017, Snowbird, UT.
- Co-Organizer, Schloss Dagstuhl Seminar on *Foundations of Wireless Networking*, July 2-7, 2017.
- Member, UCL Datacenter Efficiency Working Group (chair: Gavin McLachlan, UCL IS).
- Hosted seminar and visit by Dr. Mahesh Marina of Edinburgh University, June 24, 2011: "Broadband Wireless Access for Rural Areas: The Tegola Project Experience."
- Hosted seminar and visit by Dr. Bozidar Radunovic of Microsoft Research Cambridge, May 5, 2011: "Efficiency and Fairness in Distributed Wireless Networks Through Self-interference Cancellation and Scheduling."
- Hosted seminar and visit by Dr. Victor Bahl (Fellow ACM, Fellow IEEE), Principal Researcher and Director of the Mobility and Networking Research group at Microsoft Research Redmond.
- ACM MobiCom Conference 2019 Planning Committee on rolling paper submission deadlines.

Degree Examination Activities

- Internal transfer viva examiner for Mr. Fei Qin at University College London, Department of Electronic and Electrical Engineering (date of defense: May 26, 2010, supervisor: Dr. John Mitchell).
- Internal PhD viva examiner for Ms. Jia Chen at University College London, Department of Electronic and Electrical Engineering (date of defense: April 7, 2010, supervisor: Dr. Kit Wong).
- Internal transfer viva examiner for Mr. João Taveira Araújo at University College London, Department of Electronic and Electrical Engineering (date of defense: July 25, 2012, supervisor: Prof. George Pavlou).
- External PhD viva examiner for Mr. David Cottingham at Cambridge University Computer Laboratory (date of defense: December 5, 2008, supervisor: Prof Andy Hopper).
- External PhD viva examiner for Mr. Valentin Goverdovsky at Imperial College London (date of defense: November 7, 2013; supervisor: Dr. Christos Papavassiliou).
- External PhD examiner for Mr. Thomas Nitsche at Universidad Carlos III de Madrid, Spain (date of defense: September 25, 2015).
- Examiner, general exam for Mohammad Shahrad, Dept. of Electrical Engineering, Princeton Univ. (May 11, 2016).
- Examiner, general exam for Mina Tahmasbi (May 4, 2016), Swati Roy (May 4, 2016), Muhammad Shahbaz (May 11, 2016), Themis Melissaris (May 11, 2016).
- Reader, doctoral committee of Xiaozhou Li (defense date: May 5, 2016, thesis supervisor: Michael J. Freedman).
- Reader, B.S.E. senior thesis for Mr. Andrew Kim, Dept. of Electrical Engineering, Princeton Univ. (thesis submission date: May 2, 2016).
- Reader, doctoral committee of Haoyu Zhang (thesis supervisor: Michael J. Freedman).
- Thesis committee member for Robert Harrison (thesis supervisor: Jennifer Rexford, defense date: May 14, 2019).

Scholarly Review Activities

- Review committee member, NJ Alliance for Clinical and Translational Science Fellows Program (2020).
- Program committee co-chair (with Yingying Chen, Rutgers University), 24th Annual International Conference on Mobile Computing and Networking (MobiCom 2018).

- Program committee co-chair (with Ratul Mahajan, Microsoft Research Redmond), 6th ACM International Workshop on Mobility in the Evolving Internet Architecture (MobiArch 2011).

- Proposal reviewer: Swiss National Science Foundation (SNSF), 2012; UK Engineering and Physical Sciences Research Council (EPSRC, 2012 and 2017); European Research Council (ERC) Starting Grants and ERC Advanced Grants (2012 and 2013); US-Israel Binational Science Foundation (2014 and 2017); Israel Science Foundation (2014 and 2017); Canada NSERC (2019).

- NSF review panel member, division of Computer and Network Systems (2015, 2017, 2019).

- Technical Program Committee (TPC) member, ACM SIGCOMM Conference 2009-2012, 2014, 2015, 2018, 2019.

- TPC member, ACM MobiCom Conference, 2010, 2012, 2013, 2014, 2016, 2018, 2020, 2021.

- TPC member, ACM MobiSys Conference, 2017, 2020.

- TPC member, USENIX NSDI Conference 2014, 2016, 2018, 2020.

- TPC member, ACM HotNets Workshop, 2012, 2013, 2015.

- TPC member, ACM HotWireless Workshop, 2015-2017.

- Publicity co-chair, ACM MobiCom Conference, 2009.

- TPC member, IEEE DySpan Conference, 2012.

- TPC member, ACM Internet Measurement Conference, 2009.

- TPC member, ACM Workshop on Cognitive Radio Networks (CoRoNet) 2009.

- TPC member, International Workshop on Wireless Network Measurements (WiNMee) 2009.

- TPC member, Workshop on Embedded Networked Sensors (EmNets) 2006.

- Reviewer, US National Science Foundation (NSF) Global Environment for Network Innovations (GENI), Solicitation 3 for GENI Experimental Network Testbed Infrastructure, 2010; GENI Solicitation 4, 2013.

- External reviewer for ACM SIGCOMM 2001, 2006; ACM HotNets 2003, 2017; ACM SIGMETRICS 2019; IEEE Infocom 2007; ACM CoNext 2010; ACM IMC 2010; ACM HotNets 2003, 2010; ACM/USENIX MobiSys 2003; ACM SenSys 2003 to 2005, ACM/USENIX NSDI 2004; IEEE/ACM Transactions on Networking 2007, 2009, 2010; IEEE Communications Letters 2008, 2010; IEEE Transactions on Mobile Computing 2005, 2007, 2008, 2009, 2010; ACM Transactions on Sensor Networks 2005, 2006, 2007, 2009, 2010; ACM Transactions on Computers 2010; Proceedings of the IEEE 2009, 2010; IEEE Communications Magazine 2013.

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[i] Paper citation counts from Google Scholar as of 2019.
[ii] January 9, 2014 exchange rate: EUR/USD=1.3609
[iii] January 9, 2014 exchange rate: GBP/USD=1.6460