



# MARIA GORLATOVA

maria.gorlatova.com/bio

## EDUCATION

### COLUMBIA UNIVERSITY, New York, NY

- Ph.D., Electrical Engineering 2008 – 2013
- M.Phil., Electrical Engineering 2011
  - Ph.D. Thesis: Energy Harvesting Networked Nodes: Measurements, Algorithms, and Prototyping
  - Advised by Prof. Gil Zussman
  - GPA: 4.18/4.0

### UNIVERSITY OF OTTAWA, Ottawa, ON, Canada

- M.Sc., Electrical Engineering; Concentration: Computer Networks and System Security 2005 – 2007
  - M.Sc. Thesis: Wormhole Attack Detection in Wireless Ad Hoc Networks
  - Advised by Prof. Peter Mason and Prof. Ramiro Liscano
  - GPA: 98/100

- B.Sc., Electrical Engineering, Concentration: Systems Engineering 2000 – 2004
  - *Summa Cum Laude*; GPA: 92/100; Major GPA: 98/100

## SELECTED AWARDS AND HONORS

- IEEE Communications Society Young Author Best Paper Award** 2016
- Columbia University Jury Award for Outstanding Achievement in Communications 2013
- MIT EECS Rising Star 2013
- Google Inc. Anita Borg USA Fellowship** 2012
- ACM SenSys Best Student Demonstration Award 2011
- IEEE Communications Society Award for Advances in Communications** 2011
- ACM MobiSys Ph.D. Forum Best Speaker Award 2011
- Finalist, Microsoft Research Ph.D. Fellowship 2011
- Columbia University Presidential Fellowship 2008 – 2013
- Alexander Graham Bell Canada Graduate NSERC CGS-D Scholarship, Ph.D. studies 2008 – 2010
- Canada Graduate NSERC CGS-M Scholarship, M.Sc. studies 2005 – 2007
- Ontario Graduate Fellowship (declined) 2005 – 2007
- Xerox Canada Inc. Fellowship 2004

## SELECTED EXPERIENCE

- PRINCETON UNIVERSITY, Princeton, NJ** 2016 – present
- Associate Director*, Princeton EDGE Lab (2017 – present)
- Associate Research Scholar*, Electrical Engineering Department
- Senior member of the EDGE lab led by Prof. Mung Chiang. Defining architectures and algorithms for fog computing, an emerging paradigm in which computing is placed at multiple locations between the endpoint Internet of Things devices and the cloud.
  - Developed new techniques for fog-specific computing program restructuring and new approaches to service placements in distributed fog architectures. Designed and carried out a first quantitative study of service architecture primitives in distributed heterogeneous fog computing platforms with server-based and serverless execution options of multiple quality levels.
  - Designed and led the development of a fog computing testbed for algorithm evaluation, spanning both local hardware and cloud computing elements (Raspberry Pis, Sense HATs, AWS Lambda, DynamoDB, EC2). Demonstrated the testbed at 3 conferences. Designing a Microsoft Hololens-based testbed for experimenting with fog computing-aided augmented reality applications.
  - Secured new research funding from Microsoft (Principal Investigator) and the Defense Advanced Research Projects Agency (DARPA) (Senior Personnel). Managed ongoing funding engagements with Comcast Corporation, BAE Systems, and LGS Innovations.

## MARIA GORLATOVA: CURRICULUM VITAE

- Transferred research to industry via active involvement in the OpenFog Consortium that has over 50 industry-leading members including Intel, CISCO, Microsoft, ARM, Dell, Hitachi, and Foxconn. Co-chaired the Communications Working Group of the Consortium (elected position). Contributed to the OpenFog Reference Architecture that has been fast-tracked for adoption as an IEEE standard. Led the development of OpenFog communications and networking APIs. Co-led the development of a framework outlining fog computing support for autonomous driving.

### **D. E. SHAW RESEARCH**, New York, NY

2014 – 2016

*Engineering Program Manager*, reporting to company's top engineering executive.

Led a \$20mln+ custom Anton supercomputer design and development program. Managed activities of a cross-functional team of 40+ research scientists and hardware and software engineers (technical areas: ASICs, advanced PCBs, network architecture, software). Recognized as an outstanding contributor (top 10%) in all performance appraisals.

- Developed an ambitious but realistic 5+ year product development plan by balancing design, manufacturing, and datacenter operations tradeoffs. Successfully executed 1.5 year design specification and partner selection phases of the plan.
- Drove product definition, vendor selection, and build/buy/partner decisions. Defined multi-year program roadmaps, created and managed schedules and program KPIs, managed program risks.
- Defined, promoted, and executed organizational changes required for achieving program goals. Recruited, trained, mentored, and supervised 2 associate project managers.

### **IBM**, Armonk, NY

2014

*Senior Strategy Consultant*, Corporate Headquarters, IBM Chief Economist's Office.

Applied advanced data analytics techniques to the most pressing challenges faced by the company. Focused on both the development of analytics tools and on changing the associated corporate practices.

- Led a \$500,000+ identity management data analytics project with IBM C-suite visibility. Directed a team of 5 business analysts and software developers from internal and external teams.
- Designed and developed SPSS-based sales fraud detection toolset data quality KPI tracking modules. Presented regular KPI updates to senior executives from IT, Legal, Software Sales, and Hardware Sales teams.
- Carried out a high-priority cross-functional sales fraud detection toolset design and development project. Launched market-tailored toolsets in several growth markets including Turkey, Russia, and South Africa. Developed and led toolset training sessions for offshore sales support teams.

### **COLUMBIA UNIVERSITY**, New York, NY

2008 – 2013

*Research Assistant and Presidential Fellow*, Electrical Engineering Department

Founding member of an ambitious Energy Harvesting Active Networked Tags project (EnHANTs, [enhants.ee.columbia.edu](http://enhants.ee.columbia.edu)) dedicated to enabling digital networking of commonplace objects – the Internet of Things.

- Led student effort in designing and developing a prototype and a first-of-its-kind prototype testbed for the Energy Harvesting Active Networked Tags project that involves 5 faculty members and over 50 students in the Electrical Engineering and Computer Science departments. Mentored and supervised more than 25 students from high school, undergraduate and M.S. Electrical Engineering and Computer Science programs.
- Designed, developed, and evaluated resource allocation and networking algorithms for networks of low-power wireless energy harvesting nodes.
- Designed and orchestrated a first-of-its-kind 1.5-year-long indoor light energy study using a custom-designed sensor system. Designed and orchestrated an innovative measurement-based study of object and human motion energy. Examined statistical properties of the energy based on acceleration traces for 9 motions of 40+ participants. Shared the obtained datasets with the community via CRAWDAD.

### **TELCORDIA TECHNOLOGIES** (Fortune 500 telecom R&D company), Piscataway, NJ

2007 – 2008

*Research Scientist*, Telcordia Applied Research

Examined network performance and security topics for US Department of Defense clients.

- Led one of 7 in-house R&D teams jointly designing and developing a secure wireless ad hoc system architecture for a multi-million dollar DARPA project.

- Designed, developed and integrated CSMA-based, TDMA-based, and hybrid MAC modules for a comprehensive in-house-developed network design tool. Provided in-depth analysis on applicability of tools and technologies (OPNET, NS-2, MAC and networking protocols) to the needs of the US Department of Defense clients.

**DEFENSE R&D CANADA** (Scientific agency of the Department of National Defense), Ottawa, ON 2004 – 2007  
*Research Scientist (2006 – 2007), Research Assistant (2004 – 2005)*, Network Information Operations  
 Examined a range of network layer and medium access layer wireless network security topics (ad hoc network routing attacks, encryption, stealthy localization).

- Designed and developed new cross-layer network analysis techniques for attack detection in wireless networks.
- Designed, developed, tested, and integrated network simulation and network traffic analysis modules using MATLAB, NS-2, C, and Perl.

## SELECTED PROFESSIONAL ACTIVITIES

**Track chair**, Internet of Things track, ABI Grace Hopper Celebration of Women in Computing 2016 – 2018  
**General chair**, ACM MobiSys Ph.D. Forum 2012

**Co-chair**, Communications Working Group, OpenFog Consortium (**elected position**) 2016 – 2017

**Fellowship awards co-chair, board member**, N<sup>2</sup> Women 2016 – 2017

**Technical Program Committee (TPC) member:**

IEEE Conference on Computer Communications (IEEE INFOCOM)	2016 – 2019
IFIP Performance	2018
ACM/SIGBED Embedded Wireless Systems and Networks (EWSN)	2018
IEEE Symposium on Local and Metropolitan Area Networks (IEEE LANMAN)	2018
IEEE International Conference on Fog and Edge Computing	2018
IEEE Fog World Congress	2017
IEEE/IFIP Wireless On-demand Network Systems and Services (WONS)	2017, 2018
IEEE Vehicular Technology Conference (IEEE VTC), M2M/Sensor Networks Track	2016, 2017
IEEE Conference on Sensing, Communication and Networking (IEEE SECON)	2016, 2018
IEEE WiMAN, co-located with IEEE ICCCN	2014, 2016 – 2018
ACM ENSSys, co-located with ACM SenSys	2014
IEEE EnHaNSS, co-located with IEEE INSS	2012

**National grant agency service:**

US National Science Foundation (NSF): panelist, communications and networking	2015, 2017
US National Science Foundation (NSF): panelist, algorithms and systems	2016, 2017
Israel Science Foundation (ISF): external reviewer	2016, 2017

**Judge, industry recognitions:**

Consumer Electronics Show (CES) Innovation Awards	2016 – 2018
Consumer Electronics Show (CES) Asia Innovation Awards	2017

**Technical adviser:**

All Inspire Health (an Internet of Things startup)	2016 – 2017
Fit A.I. (an Internet of Things startup)	2016 – 2017

**Editor**, Wiley Transactions on Emerging Telecommunication Technologies Special Issue on Big Data in Future Internet Architectures, 2018

**External reviewer, journals:** IEEE Transactions on Wireless Communications 2018, 2017, 2010 – 2015, IEEE Transactions on Mobile Computing 2017, 2011, IEEE Communications Magazine 2016, IEEE Transactions on Power Electronics 2016, IEEE Network Magazine 2015, 2016, IEEE Journal on Selected Areas in Communications 2015,

IEEE Sensors 2013, IEEE/ACM Transactions on Networking 2009 – 2012, ACM Transactions on Sensor Networks 2012, IEEE Transactions on Parallel and Distributed Systems 2009 – 2010.

## SELECTED STUDENT MENTORSHIP

### Ph.D. students:

Robert Margolies, Columbia University 2011 – 2013

### M.Sc. students:

Litian Liu, Princeton University 2016 – 2017  
Edward Chang, National Chiao Tung University, visiting student at Princeton University 2017  
Gerald Stanje, University of Klagenfurt, visiting student at Columbia University 2011 – 2013  
Haodan Huang, Columbia University 2011 – 2012  
Zainab Noorbhaiwala, Columbia University 2010 – 2011  
Sonal Shetkar, Columbia University 2010 – 2011  
Tarun Sharma, Columbia University 2009 – 2010  
Enlin Xu, Columbia University 2009 – 2010  
Shashang Melkote, Columbia University 2009  
Aimee Paung, Columbia University 2009  
Ellen Shlossberg, Columbia University 2009  
Dan Lynch, Royal Military College of Canada, visiting student at Defense R&D Canada 2006 – 2007

### B.Sc. students:

Surin Ahn, Princeton University. **Stanford University Graduate Fellowship** 2017 – present  
Chege Gitau, Princeton University 2016 – 2017  
Christian Bernstein, Berlin School of Economics and Law, IBM co-op term 2014  
Ishaan Sayal, PEC University of Technology, visiting student at Columbia University 2013  
Kangwan Kim, Cooper Union, visiting student at Columbia University 2012 – 2013  
Luis Pena, Columbia University 2012 – 2013  
Mina Cong, Columbia University. **Electrical Engineering Department Research Award** 2011 – 2013  
Albert Maldonado, University of Puerto Rico, visiting REU student at Columbia University 2012  
Michael Zapas, Columbia University 2010 – 2011  
Hari Subedi, University of Arizona, visiting REU student at Columbia University 2010  
Mark Kelly, University of Ottawa, Defense R&D Canada co-op term 2006

### High school students:

Chang Sun 2011 – 2012  
Shakhul Hai 2009

### Programs for involving high school and undergraduate students in research:

NSF Center for Integrated Access Networks REU Site 2010, 2012  
Harlem Children Society 2009, 2011 – 2012

**B.Sc. independent project reader, Princeton University:** Surin Ahn, 2018, Akash Levy, 2018

## RESEARCH GRANTS

### Current:

**[AZURE17]** *Principal Investigator*, Microsoft Azure Research Award, Internet of Things: Optimizing Fog-based IoT Systems. Equivalent of \$20,000 in Microsoft Azure computing credits. Co-PIs Liang Zhang, Mung Chiang. 2017 – 2018.

## MARIA GORLATOVA: CURRICULUM VITAE

[**Google17**] *Principal Investigator*, Google Women Techmakers Scholars Program: Connecting Women in Fog Computing. \$1,000 to support two events to connect New York City area women in academia and industry who work in fog and edge computing. 2018.

[**DARPA17BAE**] *Senior Personnel*, Defense Advanced Research Projects Agency (DARPA) Dispersed Computing (DCOMP) Network Back-haul Layered Architecture (NEBULA) \$9.7 mln award led by BAE Systems with subcontractors from Princeton University, MIT, NYU, and LGS Innovations. 2017 – 2019.

[**DARPA17LGS**] *Senior Personnel*, Defense Advanced Research Projects Agency (DARPA) Dispersed Computing (DCOMP) Dispersed Computing via Successive Refinement and Pricing with Resilience and Scale (DSPRS) \$7.6 mln award led by LGS Innovations with subcontractors from Princeton University and BAE Systems. 2017 – 2019.

*Under review:*

[**NSF18**] *Co-Principal Investigator*, "ECDI: Design and Management Foundations for Shared Edge Computing Infrastructure". A collaborative Duke University proposal submission. \$3mln total, \$600,000 co-PI.

[**NSF17**] *Co-Principal Investigator*, "CSR: Small: Collaborative Research: Multi-tier Service Architecture in IoT-Edge-Cloud-Paradigms". A collaborative Yale University (PI Wenjun Hu) and Princeton University (co-PI Maria Gorlatova) proposal submission. \$500,000 total, \$38,000 Princeton University. Submitted Nov. 2017.

*Past:*

**Travel grants:** IEEE INFOCOM 2013, ACM SIGCOMM 2012, IEEE PerCom 2012, ABI Grace Hopper 2012, ACM SenSys 2011, ACM MobiSys 2011, ACM MobiCom 2010, IEEE SECON 2010, ACM MobiCom 2009.

## PATENTS

[**Patent14**] S. Mangold, R. Aiello, **M. Gorlatova**, System and Method for Managing Location Services in Wireless Networks, Disney Research Zurich, Patent # US 2014/032,3150.

## CONTRIBUTIONS TO INDUSTRY STANDARDS

[**OpenFog17**] OpenFog Consortium Reference Architecture, Feb. 2017.

**Fast-tracked for adoption as an IEEE standard by April 2018** via IEEE SWG P1934 on Fog Computing and Networking Architecture Framework.

## PUBLICATIONS

### Book Chapters

[**PressFogonomics18**] Y. Ruan, L. Zheng, **M. Gorlatova**, M. Chiang, C. Joe-Wong, The Economics of Fog Computing: Pricing Tradeoffs for Distributed Data Analytics, *Fognet and Fogonomics*, Wiley, in print, 2018. (invited book chapter).

### Journal Publications

[**SubmIOT18**] H. Inaltekin, **M. Gorlatova**, M. Chiang, Virtualized Control over Fog: Interplay between Reliability and Latency, submitted to *IEEE Internet of Things Journal*, Feb. 2018. ArXiv:1712.00100, Nov. 2017.

[**TOSN15**] R. Margolies, **M. Gorlatova**, J. Sarik, G. Stanje, J. Zhu, P. Miller, M. Szczodrak, B. Vignham, L. Carloni, P. Kinget, I. Kymissis, G. Zussman, Energy Harvesting Active Networked Tags (EnHANTs): Prototyping and Experimentation, *ACM Transactions on Sensor Networks*, Vol. 11, No. 4, Nov. 2015.

[**JSAC15**] **M. Gorlatova**, J. Sarik, G. Grebla, M. Cong, I. Kymissis, G. Zussman, Movers and Shakers: Kinetic Energy Harvesting for the Internet of Things, *IEEE Journal on Selected Areas in Communications*, Vol. 33, No. 9, 2015.

[**TMC13**] **M. Gorlatova**, A. Wallwater, G. Zussman, Networking Rechargeable Low-Power Devices: Measurements and Algorithms, *IEEE Transactions on Mobile Computing*, Vol. 12, No. 9, Sept. 2013.

**2016 IEEE Communications Society Young Author Best Paper Award.**

[WirComm10] M. Gorlatova, P. Kinget, I. Kymissis, D. Rubenstein, X. Wang, G. Zussman, Energy Harvesting Active Networked Tags for Ubiquitous Object Networking, *IEEE Wireless Communications Magazine*, Vol. 17, No 6, pp. 18-25, Dec. 2010.

**2011 IEEE Communications Society Award for Advances in Communications.**

**Selected media coverage:** IEEE Comm. Technology News Editor-in-Chief's **top 3 pick for 2014.**

**Conference Proceedings**

[SubmICNP18] X. Zhang, Y. Im, Y. Sun, M. Gorlatova, S. Ha, M. Chiang, C. Joe-Wong, submitted to IEEE Conference on Network Protocols (*IEEE ICNP'18*), May 2018.

[SubmCDC18] P. Naghizadeh, M. Gorlatova, A. S. Lan, M. Chiang, submitted to IEEE Conference on Decision and Control (*IEEE CDC'18*), Mar. 2018.

[URTC17] S. Ahn, M. Gorlatova, M. Chiang, Leveraging Fog and Cloud Computing for Efficient Computational Offloading, in Proc. 3<sup>rd</sup> IEEE MIT Undergraduate Research Technology Conference (*IEEE URTC'17*), Cambridge, MA, Nov. 2017.

[Sigmetrics14] M. Gorlatova, J. Sarik, G. Grebla, M. Cong, I. Kymissis, G. Zussman, Movers and Shakers: Kinetic Energy Harvesting for the Internet of Things, in Proc. 41<sup>st</sup> ACM SIGMETRICS'14, Austin, TX, July 2014 (**~17% acceptance rate**). **Selected media coverage: MIT Technology Review 2014, New Yorker Magazine 2017.**

[ITiCSE13] M. Gorlatova, J. Sarik, P. Kinget, I. Kymissis, G. Zussman, Project-Based Learning within a Large-Scale Interdisciplinary Research Effort, in Proc. 18<sup>th</sup> ACM Conference on Innovation and Technology in Computer Science Education (*ACM ITiCSE'13*), Canterbury, UK, July 2013.

[Infocom13] M. Gorlatova, R. Margolies, J. Sarik, G. Stanje, J. Zhu, B. Vignraham, M. Szczodrak, L. Carloni, P. Kinget, I. Kymissis, G. Zussman, Prototyping Energy Harvesting Active Networked Tags (EnHANTs), in Proc. 32<sup>nd</sup> IEEE Conference on Computer Communications (*IEEE INFOCOM'13*), Turin, Italy, Apr. 2013.

[WiOpt11] M. Gorlatova, A. Bernstein, G. Zussman, Performance Evaluation of Resource Allocation Policies for Energy Harvesting Devices, in Proc. 9<sup>th</sup> IEEE Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (*IEEE WiOpt'11*), Princeton, NJ, May 2011.

[Infocom11] M. Gorlatova, A. Wallwater, G. Zussman, Networking Rechargeable Low-Power Devices: Measurements and Algorithms, in Proc. 30<sup>th</sup> IEEE Conference on Computer Communications (*IEEE INFOCOM'11*), Shanghai, China, Apr. 2011 (**~16% acceptance rate**).

[Milcom11] M. Gorlatova, R. Aiello, S. Mangold, Managing Base Station Location Privacy, in Proc. 30<sup>th</sup> IEEE Military Communications Conference (*IEEE MILCOM'11*), Baltimore, MD, Nov. 2011.

[MobiCom09] M. Gorlatova, P. Kinget, I. Kymissis, D. Rubenstein, X. Wang, G. Zussman, Challenge: Ultra-Low-Power Energy Harvesting Active Networked Tags, in Proc. 15<sup>th</sup> ACM Conference on Mobile Computing and Networking (*ACM MobiCom'09*), Beijing, China, Sept. 2009 (**~10% acceptance rate**).

[ASC08] D. Lynch, S. Knight, M. Gorlatova, Y. Lacharite, L. Lamont, R. Liscano, P. Mason, Providing Effective Security in Mobile Ad Hoc Networks without Affecting Bandwidth or Interoperability, in Proc. 25<sup>th</sup> Army Science Conference (*ASC'08*), Orlando, FL, Dec. 2008.

[Milcom08] L. Kant, K. Chang, A. McAuley, K. Manousakis, O. Younis, M. Gorlatova, K. Young, C. Graff, NEDAT: A Toolset to Design and Analyze Future Force Networks, in Proc. 27<sup>th</sup> IEEE Military Communications Conference (*IEEE MILCOM'08*), San Diego, CA, Nov. 2008.

[SecureComm07] M. Gorlatova, M. Kelly, R. Liscano, P. Mason, Enhancing Frequency-Based Wormhole Attack Detection with Novel Jitter Waveforms, in Proc. 5<sup>th</sup> ICST Conference on Security and Privacy in Communication Networks (*ICST SecureComm'07*), Nice, France, Sept. 2007.

[**Milcom06**] M. Gorlatova, P. Mason, M. Wang, L. Lamont, R. Liscano, Detecting Wormhole Attacks in Mobile Ad Hoc Networks through Protocol Breaking and Packet Timing Analysis, in Proc. 25<sup>th</sup> IEEE Military Communications Conference (*IEEE MILCOM'06*), Washington, DC, Oct. 2006.

### Workshop Proceedings

[**ARVR18**] S. Ahn, M. Gorlatova, P. Naghizadeh, M. Chiang, P. Mittal, Adaptive Fog-based Output Security for Augmented Reality, to appear in Proc. *ACM SIGCOMM VR/AR Networking Workshop*, Budapest, Hungary, Aug. 2018.

[**IoFC11**] M. Gorlatova, R. Aiello, S. Mangold, Managing Location Privacy in Cellular Networks with Femtocell Deployments, in Proc. 3<sup>rd</sup> IEEE Workshop on Indoor and Outdoor Femtocells (*IEEE IOFC'11*), Princeton, NJ, May 2011 (co-located with *IEEE WiOpt'11*).

[**NPsec05**] M. Wang, L. Lamont, P. Mason, M. Gorlatova, An Effective Intrusion Detection Approach for the Optimized Link State Routing (OLSR) Mobile Ad hoc Networking Protocol, in Proc. 1<sup>st</sup> IEEE Workshop on Secure Network Protocols (*IEEE NPsec'05*), Boston, MA, Nov. 2005 (co-located with *IEEE ICNP'05*).

### Conference Demonstrations

[**SenSys17**] T. Chang, L. Zheng, M. Gorlatova, C. Gitau, C. Huang, M. Chiang, Demo: Decomposing Data Analytics in Fog Networks, in Proc. 15<sup>th</sup> ACM Conference on Embedded Networked Sensor Systems (*ACM SenSys'17*), Nov. 2017, Delft, Netherlands. Video of the demo: [https://youtu.be/nz\\_s5gSvMBo](https://youtu.be/nz_s5gSvMBo)

[**FWC17**] L. Zheng, M. Gorlatova, A. Lan, C. Gitau, M. Chiang, Demo: Decomposing Complex Data Analytics in Fog Computing, *IEEE Fog World Congress*, Santa Clara, CA, Oct. 2017 (**invited demonstration**).

[**NYCMediaLab17**] L. Zheng, M. Gorlatova, C. Gitau, M. Chiang, Demo: Decomposing Complex Data Analytics in Fog Computing, *NYC Media Lab Summit*, New York City, NY, Sept. 2017.

[**Infocom13**] R. Margolies, L. Pena, K. Kim, Y. Kim, M. Wang, M. Gorlatova, J. Sarik, J. Zhu, P. Kinget, I. Kymissis, and G. Zussman, Demo: An Adaptive Testbed of Energy Harvesting Active Networked Tag Prototypes, in Proc. 32<sup>nd</sup> IEEE Conference on Computer Communication (*IEEE INFOCOM'13*), Turin, Italy, Apr. 2013.

[**IDTechEx12**] J. Sarik, L. Pena, M. Wang, K. Kim, H. Wang, F. Duque, G. Burrow, R. Margolies, M. Gorlatova, B. Vignham, P. Kinget, I. Kymissis, and G. Zussman, Demo: Energy Harvesting Active Network Tag Prototypes and Prototype Testbed, *IDTechEx Energy Harvesting and Storage USA Conference and Trade Show*, Washington, DC, Nov. 2012 (**invited demonstration**).

[**SenSys11**] G. Stanje, P. Miller, J. Zhu, A. Smith, O. Winn, R. Margolies, M. Gorlatova, J. Sarik, M. Szczodrak, B. Vignham, L. Carloni, P. Kinget, I. Kymissis, and G. Zussman, Demo: Organic Solar Cell-Equipped Energy Harvesting Active Networked Tag Prototypes, in Proc. 9<sup>th</sup> ACM Conference on Embedded Networked Sensor Systems (*ACM SenSys'11*), Seattle, WA, Nov. 2011. Video of the demo: <https://www.youtube.com/watch?v=QFCf62IBATI>  
**ACM SenSys'11 Best Student Demonstration Award.**

[**MobiSys11**] J. Zhu, G. Stanje, R. Margolies, M. Gorlatova, J. Sarik, Z. Noorbhaiwala, P. Miller, M. Szczodrak, B. Vignham, L. Carloni, P. Kinget, I. Kymissis, G. Zussman, Demo: Prototyping UWB-Enabled Energy Harvesting Active Networked Tags, in Proc. 9<sup>th</sup> ACM Conference on Mobile Systems, Applications, and Services (*ACM MobiSys'11*), Washington, DC, June 2011.

[**MobiCom10**] M. Gorlatova, J. Chen, M. Szczodrak, E. Xu, A. Skolnik, A. Schwartz, Z. Noorbhaiwala, M. Zapas, L. Carloni, P. Kinget, I. Kymissis, D. Rubenstein, G. Zussman, Demo: Prototyping Energy Harvesting Active Networked Tags: Phase II MICA Mote-Based Devices, 16<sup>th</sup> ACM Conference on Mobile Computing and Networking (*ACM MobiCom'10*), Chicago, IL, Sept. 2010.

[**Seccon10**] M. Gorlatova, T. Sharma, D. Shrestha, E. Xu, J. Chen, A. Skolnik, D. Piao, P. Kinget, I. Kymissis, D. Rubenstein, G. Zussman, Demo: Prototyping Energy Harvesting Active Networked Tags with MICA2 Motes, in Proc. 7<sup>th</sup> IEEE Conference on Sensing, Communication, and Networking (*IEEE SECON'10*), Boston, MA, June 2010.

### Selected Poster Presentations

- [PrincetonRD17] S. Ahn, **M. Gorlatova**, M. Chiang, Leveraging Fog and Cloud Computing for Efficient Computational Offloading, Princeton Research Day, Princeton, NJ, May 2017.
- [Columbia14] G. Grebla, **M. Gorlatova**, J. Sarik, M. Cong, I. Kymissis, G. Zussman, Movers and Shakers: Kinetic Energy Harvesting for the Internet of Things, Columbia University Postdoc Research and Career Symposium, Aug. 2014. **Top 10 poster award.**
- [GlobalSIP13] J. Sarik, K. Kim, **M. Gorlatova**, I. Kymissis, G. Zussman, More than Meets the Eye – a Portable Measurement Unit for Characterizing Light Energy Availability, in Proc. 1<sup>st</sup> IEEE Global Conference on Signal and Information Processing (*IEEE GlobalSIP'13*) Symposium on Energy Harvesting and Green Wireless Communications, Austin, TX, Dec. 2013 (**invited paper**).
- [Google12] **M. Gorlatova**, P. Kinget, I. Kymissis, D. Rubenstein, X. Wang, G. Zussman, Energy Harvesting Active Networked Tags for Ubiquitous Object Networking: Challenges and Solutions, Google Scholars Retreat, July 2012.
- [Photovoltaic12] Y. Afsar, J. Sarik, **M. Gorlatova**, G. Zussman, I. Kymissis, Poster: Evaluating Photovoltaic Performance Indoors, in Proc. 38<sup>th</sup> IEEE Photovoltaic Specialist Conference (*IEEE PVSC'12*), Austin, TX, June 2012.
- [Infocom11] S. Schmid, **M. Gorlatova**, D. Giustiniano, V. Vukadinovic, S. Mangold, Poster: Networking Smart Toys with ToyTalk and ToyBridge, in Proc. 30<sup>th</sup> IEEE Conference on Computer Communications (*IEEE INFOCOM'11*), Shanghai, China, Apr. 2011.

### Datasets

- [Crawdad14] M. Cong, K. Kim, **M. Gorlatova**, J. Sarik, I. Kymissis, G. Zussman, Human Motion for the Internet of Things Kinetic Energy Dataset, Community Resource for Archiving Wireless Data At Dartmouth (CRAWDAD), May 2014.
- [Crawdad11] **M. Gorlatova**, M. Zapas, E. Xu, M. Bahlke, I. Kymissis, G. Zussman, Indoor Light Energy Measurements Dataset, Community Resource for Archiving Wireless Data At Dartmouth (CRAWDAD), Apr. 2011.

### Selected Technical Reports and Proprietary Publications

#### *ArXiv:*

- [ArXiv17] H. Inaltekin, **M. Gorlatova**, M. Chiang, Virtualized Control over Fog: Interplay between Reliability and Latency, arXiv:1712.00100, Nov. 2017.
- [ArXiv14] R. Margolies, **M. Gorlatova**, J. Sarik, P. Kinget, I. Kymissis, G. Zussman, Project-Based Learning within a Large-Scale Interdisciplinary Research Effort, arXiv: 1410.6935, Oct. 2014.
- [ArXiv13] **M. Gorlatova**, J. Sarik, M. Cong, I. Kymissis, G. Zussman, Movers and Shakers: Kinetic Energy Harvesting for the Internet of Things, arXiv:1307.0044, July 2013. **Selected media coverage: MIT Technology Review 2013.**

#### *Industry whitepapers:*

- [OFC17] H. Moustafa, **M. Gorlatova**, C. Byers, E. Schooler, K. Walcott, J. Acharya, A. Mosenia, B. Murthy, C. Vasters, S. Kambhatla, OpenFog Consortium Fog Use Case Scenarios: Autonomous Driving, Oct. 2017.

#### *Other:*

*Columbia University Department of Electrical Engineering:* 3 technical reports (first author).

*Telcordia Technologies:* 3 technical reports submitted to the US Department of Defense clients (coauthor).

*Defense R&D Canada:* 7 technical reports (4 first author, 3 coauthor).

## SELECTED INVITED TALKS

### Conferences and Workshops



- [**Sarnoff18**] Towards Intelligence on the Edge: Restructuring Computing to Enable the Next Generation of the IoT, *IEEE Sarnoff Symposium*, Newark, NJ, Sept. 2018.
- [**ENSsys17**] Light, Motion, Fog: Networking Commonplace Objects with Energy Harvesting and Fog Computing, **Keynote speaker**, ACM Workshop on Energy Harvesting and Energy Neutral Systems (*ACM ENSsys*), co-located with *ACM SenSys'17*, Delft, Netherlands, Nov. 2017.
- [**GHC17**] Fog Computing: Challenges and Solutions, *ABI Grace Hopper Celebration of Women in Computing*, Orlando, FL, Oct. 2017.
- [**Pisa17**] The OpenFog Reference Architecture: Unified Framework and a Roadmap, *Through the Fog Workshop*, University of Pisa, Pisa, Italy, Feb. 2017.
- [**WMF12**] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking: Challenges and Solutions, *Wireless Energy Transfer and Scavenging Techniques Workshop*, IEEE Microwave Symposium (*IEEE IMS'12*), Montreal, QC, Canada, June 2012.
- [**MobiSysPhDF11**] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking, ACM Conference on Mobile Systems, Applications, and Services (*ACM MobiSys'11*) Ph.D. Forum, Bethesda, MD, June 2011.
- [**IdTechEx10**] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking, *IDTechEx Energy Harvesting and Storage USA '10 Conference*, Boston, MA, Nov. 2010.

#### Academic and Industrial Seminars

- [**Toronto18ECE**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *University of Toronto Department of Electrical and Computer Engineering*, Apr. 2018.
- [**Toronto18CS**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *University of Toronto Department of Computer Science*, Apr. 2018.
- [**UVA18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *University of Virginia School of Engineering and Applied Science*, Mar. 2018.
- [**UMN18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *University of Minnesota Twin Cities Department of Computer Science and Engineering*, Mar. 2018.
- [**Cornell18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *Cornell University Department of Electrical and Computer Engineering*, Mar. 2018.
- [**CornellTech18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *Cornell Tech*, Mar. 2018.
- [**Northeastern18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *Northeastern University Department of Electrical and Computer Engineering*, Mar. 2018.
- [**UPenn18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *University of Pennsylvania Department of Electrical and Systems Engineering*, Mar. 2018.
- [**UVic18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *University of Victoria Department of Computer Science*, Mar. 2018.
- [**Yale18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *Yale University Departments of Electrical Engineering and Computer Science*, Mar. 2018.
- [**UWM18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *University of Wisconsin at Madison, Electrical and Computer Engineering Department*, Feb. 2018.
- [**Duke18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *Duke University Pratt School of Engineering*, Durham, NC, Feb. 2018.
- [**UTA18**] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *University of Texas at Arlington Department of Computer Science and Engineering*, Arlington, TX, Feb. 2018.

- [GWU18] Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing, *George Washington University Department of Electrical Engineering*, Washington, DC, Feb. 2018.
- [BAE17] The Most Interesting Part of Cloud Computing: Fog Computing Enabling the Next Generation of the Internet of Things, *BAE Systems Tech Talk*, Burlington, MA, Sept. 2017.
- [Princeton17] In and Out of the Fog: Working with Industry to Define New Computing Architectures, *Princeton University Postdoctoral Council Seminar Series*, Princeton, NJ, June 2017.
- [UCSB17] Towards Networking Commonplace Objects, *UC Santa Barbara Department of Electrical and Computer Engineering*, Santa Barbara, CA, Mar. 2017.
- [Princeton16] Towards Networking Commonplace Objects, *Princeton University Department of Electrical Engineering EDGE Lab*, Princeton, NJ, June 2016.
- [CMU16] Towards Networking Commonplace Objects, *Carnegie Mellon University Department of Electrical and Computer Engineering*, Pittsburgh, PA, June 2016.
- [Fujitsu16] Towards Networking Commonplace Objects, *Fujitsu Laboratories of America*, Sunnyvale, CA, May 2016.
- [ICL13] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking, *Imperial College London Department of Electrical Engineering*, London, United Kingdom, July 2013.
- [MSR13] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking: Challenges and Solutions, *Microsoft Research*, Seattle, WA, Mar. 2013.  
Talk video available at <http://research.microsoft.com/apps/video/default.aspx?id=188869>
- [Qualcomm13] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking: Challenges and Solutions, *Qualcomm Systems Engineering Group Seminar Series*, San Diego, CA, Feb. 2013.
- [ATT13] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking: Challenges and Solutions, *AT&T Technology Security Group Seminar Series*, New York, NY, Jan. 2013.
- [IEEEOttawa12] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking, *IEEE Ottawa Signal Processing Society Seminar Series*, Ottawa, ON, Canada, Nov. 2012.
- [DRZ12] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking, *Walt Disney Research Zurich*, Zurich, Switzerland, Mar. 2012.
- [DRDC11] Energy Harvesting Active Networked Tags for Ubiquitous Object Networking, *Defense R&D Canada Network Information Operations Group Seminar Series*, Ottawa, ON, Canada, May 2011.
- [Telcordia10] Energy Harvesting Active Networked Tags, *Telcordia Technologies Applied Research Seminar Series*, Piscataway, NJ, Dec. 2010.
- [UBC07] Wormhole Attack Detection in Wireless Ad Hoc Networks, *University of British Columbia Department of Electrical Engineering Seminar Series*, Vancouver, BC, Canada, Feb. 2007.

#### Panel Presentations

- [FWC17a] Fog to the Rescue: Restructuring Computing to Take Advantage of Fog, IEEE Fog World Congress (*IEEE FWC'17*), Santa Clara, CA, Nov. 2017.
- [FWC17b] Elements of an Open, Interoperable Architecture in Fog, IEEE Fog World Congress (*IEEE FWC'17*), Santa Clara, CA, Oct. 2017.  
Panel video available at: <https://ieeetv.ieee.org/conference-highlights/elements-of-an-open-interoperable-architecture-for-fog-fog-world-congress-2017>
- [NYCMeetup17] Fog Computing and the Internet of Things, *IoT Central NYC Meetup*, New York City, NY, Apr. 2017.  
Talk video available at: <https://youtu.be/f8wBfOkfa6M?t=24m6s>

#### Invited Lectures

[Columbia13] Characterizing New Environmental Energy Sources for the Internet of Things, *Columbia University Undergraduate Computer Science and Statistics STATW100 Seminar*, New York, NY, Nov. 2013.

#### Miscellaneous

[Embedded17] When Toasters Attack, Embedded.fm podcast, Dec. 2017.

Podcast audio available at: <http://embedded.fm/episodes/225>

### SELECTED ADDITIONAL EXPERIENCE

**WALT DISNEY RESEARCH**, *Research Assistant* (Ph.D. Intern), Zurich, Switzerland Spring 2011  
Examined feasibility of providing proprietary wireless location services in Walt Disney parks. Patented the proposed base station identity management techniques.

**SIRIUS SATELLITE RADIO**, *Back-end Software Developer*, New York, NY Summer 2007  
Enhanced functionality of a business-critical subscriber management system. Participated in all stages of software development lifecycle.

**NORTEL NETWORKS**, *Web Software Developer* (B.Sc. Intern), Ottawa, ON Fall 2003  
Developed Intranet web applications using Perl, MySQL, ODBC/JDBC, Java, HTML, and shell scripting.

**CANADIAN PATENT OFFICE**, *Assistant Patent Examiner* (B.Sc. Intern), Hull, QC Spring 2003  
Examined patent applications in the areas of software, electrical, and computer engineering.

### SELECTED ADDITIONAL TRAINING

Project Management (New York University 2015), Proposal Writing (Princeton University 2016), Product Management (New York General Assembly 2014), Micro-MBA (IBM 2014).

Certifications: Project Management Professional PMI PMP, 2016 – 2019.

### SELECTED ADDITIONAL PROFESSIONAL ACTIVITIES

**Organizer:** Academic Panel, OpenFog Consortium Member Meeting, 2017, N<sup>2</sup> Women Meeting, IEEE SECON 2010, EE/CS Networking Seminar Series, Columbia University, 2010, N<sup>2</sup> Women Meeting, ACM MobiCom 2009, EnHANTs Summer Students Workshop, Columbia University, 2009.

**Session chair:**

IoT, Cloud, and Weather Session, ABI Grace Hopper Celebration of Women in Computing 2016

**Scholarship committee member**, ABI Grace Hopper Celebration of Women in Computing 2015, 2016

**External reviewer, conferences:** IEEE INFOCOM 2009 – 2014, ACM SIGMETRICS 2011 – 2013, IEEE DCOSS 2012, IEEE GLOBECOM 2011, IEEE/IFIP WONS 2011, IEEE WiOpt 2009, IEEE MILCOM 2008.

**Judge**, ACM Student Poster Competition, ABI Grace Hopper Celebration of Women in Computing 2016

**Panelist, technology:**

Panel moderator: Fog and Edge from the Practitioners' Point of View, IEEE Fog World Congress 2017

Academic panel, OpenFog Consortium Seattle Member Meeting 2017

IEEE Women in Engineering International Leadership Conference (IEEE WIE ILC) 2017

Expert panel, OpenFog Consortium Fog Forum Denver 2017

Expert panel, OpenFog Consortium Fog Forum Atlanta 2017

Expert panel, Wireless Energy Transfer and Scavenging Techniques Workshop 2012

**Panelist, student and career guidance:**

## MARIA GORLATOVA: CURRICULUM VITAE

Undergraduate Women in Computer Science Summit, D. E. Shaw Research	2015
Industry careers panel, Columbia University Office of Postdoctoral Affairs	2015
Career speaker series, Columbia University Graduate Society of Women Engineers	2015
Panel for women in engineering, Columbia University School of Engineering	2012, 2013
Graduate student panel, Department of Electrical Engineering, Columbia University	2011

### Invited participant:

Microsoft Research Faculty Summit: Systems	2018
Massachusetts Institute of Technology (MIT) <b>Rising Stars in EECS</b> Career Workshop	2013
Google Inc. Scholars Retreat	2012
ACM MobiSys'11 Ph.D. Forum. <b>Best Speaker Award</b>	2011
Google Inc. Graduate Researchers in Academia of Diverse Backgrounds CS Forum	2010
Illinois Wireless Summer School, University of Illinois at Urbana-Champaign (UIUC)	2009

## SELECTED MEDIA COVERAGE

[**NewYorker17**] If Donald Trump Were Actually a Battery, *New Yorker Magazine*, May 2017  
[www.newyorker.com/tech/elements/if-donald-trump-were-actually-a-battery](http://www.newyorker.com/tech/elements/if-donald-trump-were-actually-a-battery)

[**ECD17**] OpenFog Reference Architecture: Baseline for Interoperability in the Industrial IoT Cloud-to-Things Continuum, *Embedded Computing Design*, March 2017  
[www.embedded-computing.com/embedded-computing-design/the-openfog-reference-architecture-a-baseline-for-interoperability-in-the-iiot-cloud-to-things-continuum](http://www.embedded-computing.com/embedded-computing-design/the-openfog-reference-architecture-a-baseline-for-interoperability-in-the-iiot-cloud-to-things-continuum)

[**MITTech14**] The Internet of You, *MIT Technology Review Business Report*, May 2014  
[www.technologyreview.com/news/527386/the-internet-of-you/](http://www.technologyreview.com/news/527386/the-internet-of-you/)

[**MITTech13**] Human Motions Will Power the Internet of Things, Say Energy Harvesting Engineers, *MIT Technology Review Physics ArXiv Blog*, July 2013  
[www.technologyreview.com/view/516816/human-motion-will-power-the-internet-of-things-say-energy-harvesting-engineers/](http://www.technologyreview.com/view/516816/human-motion-will-power-the-internet-of-things-say-energy-harvesting-engineers/)