

**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**

ACM/IEEE IPSN Best Research Artifact Runner-up Award 2024  
 DARPA Young Faculty Award 2023  
 CISCO Research Award 2023  
 ACM ImmerCom Best Paper Award 2023  
 ACM UbiComp Best Poster Award 2022  
 NSF CAREER Award 2021  
 Meta Research Award 2021  
 IBM Faculty Award 2020, 2023  
 Duke University Pratt School of Engineering Nortel Networks Professorship 2020 – present  
 ACM/IEEE IPSN Best Research Artifact Award 2020  
 National Academy of Engineering’s US Frontiers of Engineering (US FOE) Symposium Invitation 2020  
 N<sup>2</sup> Women Rising Star in Networking and Communications 2019  
 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**

**DUKE UNIVERSITY**, Durham, NC 2018 – present  
*Nortel Networks Assistant Professor*, Pratt School of Engineering, 2020 – present  
*Assistant Professor*, Electrical and Computer Engineering and Computer Science Departments  
 Leading the Intelligent Interactive Internet of Things (I<sup>3</sup>T) Lab at Duke University Department of Electrical and Computer Engineering.

## MARIA GORLATOVA: CURRICULUM VITAE

- PRINCETON UNIVERSITY**, Princeton, NJ 2016 – 2018  
*Associate Director*, Princeton EDGE Lab (2017 – 2018)  
*Associate Research Scholar*, Electrical Engineering Department  
Senior member of the Princeton EDGE lab led by Prof. Mung Chiang.
- 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).
- 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.
- 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.
- 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.
- 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).
- 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 TEACHING EXPERIENCE

- ECE 654 / COMPSI 564**, *Edge Computing* Spring 2020 – 2024, Fall 2018
- Graduate seminar designed and developed. First 4 installments taught as ECE/CS 590: Special Topics course.
    - Spring 2024: enrollment: 14.
    - Spring 2023: enrollment: 14. Student ratings: course 4.4/5, instructor 4.2/5
    - Spring 2022: enrollment: 18. Student ratings: course 4.67/5, instructor 4.67/5
    - Spring 2021: enrollment: 16. Student ratings: course 4.0/5, instructor 5.0/5
    - Spring 2020: enrollment: 21. Student ratings: course 4.5/5, instructor 4.5/5
    - Fall 2018: enrollment: 11. Student ratings: course 4.4/5, instructor 4.7/5

This seminar-format class explores opportunities and challenges associated with edge computing, the diffusion of centralized cloud computing functionality to include resource-constrained systems in physical proximity to the users, such as cloudlets, mobile phones, and smart gateways. The course surveys recent advances in edge computing and its role in enabling the next generation of the Internet of Things and the smart cities of the future. Students learn the strengths and the limitations of edge computing systems and explore a range of algorithm and system adaptation techniques for developing edge-specific platforms, algorithms, and applications. Students complete an individual or a team-based research project, theory-oriented or applied.

**ECE 356 / COMPSCI 356, *Computer Network Architectures*** Fall 2021, Fall 2019

- Undergraduate computer network fundamentals course.

Fall 2021: enrollment: 43. Student ratings: course 3.4/5, instructor 3.8/5

Fall 2019: enrollment: 39. Student ratings: course 4.1/5, instructor 4.2/5

This course introduces students to the fundamentals of computer networks. The layered architecture of the network protocol stack is the focus of discussion. A variety of case studies will be drawn from the Internet, combined with practical programming exercises. At the end of the semester, students will understand core networking concepts, including the Internet architecture, HTTP, DNS, Sockets, TCP/IP, routing protocols, and multimedia and wireless and mobile networking. The students will be able to answer questions such as how to achieve reliable communications over unreliable channels, how to find a good path through a network, how to share network resources among competing entities, how to find an object in the network, and how to build network applications.

## SELECTED PROFESSIONAL ACTIVITIES

**Steering committee member:**

ACM/IEEE IPSN

2023 – present

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

ACM/IEEE IPSN

2023

IEEE Sarnoff Symposium

2019

**Track chair:**

Social Networks, Extended Reality, and Metaverse track, IEEE ICCCN

2025

Edge Computing track, IEEE ICDCS

2021

Internet of Things track, ABI Grace Hopper Celebration of Women in Computing

2016 – 2018

**General chair:**

ACM Workshop on Emerging Multimedia Systems, co-located with ACM SIGCOMM

2023

ACM MobiSys PhD Forum

2012

**Best paper award committee member:**

ACM MobiHoc

2023

ACM Symposium on Edge Computing (SEC)

2023

**Workshop chair:**

ACM MobiCom

2024

**Demo and Poster chair:**

ACM SenSys

2022

**Associate editor**, ACM Transactions on Sensor Networks (impact factor: 4.1)

2024 – present

**Area chair**, Elsevier Computer Networks (impact factor: 4.47)

2019 – 2022

**Guest editor, special issue:**

ACM Transactions on Sensor Networks: Computing, Sensing, and Networking for Immersive Systems

2024

IEEE Network: Networking Challenges and Opportunities for Multi-user XR and the Metaverse

2023

## MARIA GORLATOVA: CURRICULUM VITAE

IEEE Internet of Things Journal: Emerging Trends and Challenges in Fog Computing for the IoT	2019
IEEE Access: Sustainable Infrastructures, Protocols, and Research Challenges for Fog Computing	2019
<b>Co-chair</b> , Communications Working Group, OpenFog Consortium ( <b>elected position</b> )	2016 – 2017
<b>Fellowship awards co-chair, board member</b> , N <sup>2</sup> Women	2016 – 2017
<b>Session chair:</b>	
ACM MobiCom	2023
ACM/IEEE IPSN	2022
CPS-IoT Week IEEE Workshop on Fog Computing and the IoT	2019
ABI Grace Hopper Celebration of Women in Computing	2016
<b>Scholarship committee member</b> , ABI Grace Hopper Celebration of Women in Computing	2015, 2016
<b>External search committee member</b> , University of Copenhagen, Department of Computer Science	2024
<b>TPC member, recent:</b>	
ACM MobiCom	2023, 2024, 2025
ACM SenSys	2020 – 2024
ACM HotMobile	2023, 2024 2025
ACM/IEEE IPSN	2021, 2022, 2024
ACM SIGCOMM	2023, 2024
ACM ImmerCom, co-located with ACM MobiCom	2024
ACM AgeTech, co-located with ACM MobiCom	2024
IEEE SafeThings, co-located with IEEE S&P or ACM/IEEE CPS-IoT week	2021 – 2024
IEEE Workshop on Security and Privacy in Augmented, Virtual, and Extended Realities	2024
ACM EdgeSys	2024
IEEE INFOCOM	2016 – 2021, 2024
ACM Symposium on Edge Computing (SEC)	2023, 2024
ACM MobiHoc	2019, 2021 – 2023
<b>TPC member, previous since joining Duke:</b>	
ABI Grace Hopper, Extended Reality track 2023, IEEE MetaCom, Metaverse Architectures and Applications track 2023, IEEE ICDCS 2020, 2022, ACM SmartWear, co-located with ACM MobiCom 2022, ACM EMDL, co-located with ACM MobiSys 2022, IEEE MetaSys, co-located with IEEE ISMAR 2022, IEEE ICNP 2019 – 2021, ACM ENSSys (co-located with ACM SenSys) 2014, 2019 – 2021, IEEE/ACM Workshop on Cyber-Physical-Human System Design, co-located with CPS-IoT week 2021, ACM LP-IoT, co-located with ACM MobiCom 2021, IEEE FogML'21 (co-located with IEEE INFOCOM) 2021, ACM SOSR 2020, IEEE HDR-Nets (co-located with IEEE ICNP) 2020, IEEE SECON 2016, 2018, 2019, ACM/IEEE ICCPS 2019, IEEE International Conference on Fog Computing 2019, IEEE GLOBECOM SAC - Internet of Things 2019, ACM CoNext Student Workshop 2019, IFIP Performance 2018, ACM/SIGBED EWSN 2018, IEEE LANMAN 2018, IEEE International Conference on Fog and Edge Computing 2018.	
<b>National funding agency service:</b>	
US National Science Foundation (NSF): panelist, future of work at the human-technology frontier	2023
US National Science Foundation (NSF): panelist, communications and networking	2015, 2017, 2021
US National Science Foundation (NSF): panelist, human-computer interactions	2021, 2022, 2024
US National Science Foundation (NSF): panelist, algorithms and systems	2016, 2017
Canada NSERC Discovery Grant: reviewer	2021, 2022, 2024
Dutch Research Council NWA-ORC: reviewer	2021
UK National Institute for Health Research (NIHR): reviewer	2019
Israel Science Foundation (ISF): reviewer	2016, 2017, 2019

### PhD Forum panelist:

## MARIA GORLATOVA: CURRICULUM VITAE

ACM/IEEE IPSN	2021
<b>Judge, industry recognitions:</b>	
Consumer Electronics Show (CES) Innovation Awards	2016 – 2019
Consumer Electronics Show (CES) Asia Innovation Awards	2017
<b>Advisory board member:</b>	
EU H2020 ENLIGHT'EM European Training Network in Low-Energy Visible Light IoT Systems	2019 – 2022
All Inspire Health (an Internet of Things startup)	2016 – 2017
Fit A.I. (an Internet of Things startup)	2016 – 2017
<b>Reviewer, journals:</b> ACM IMWUT 2024, IEEE MultiMedia 2022, ACM IMWUT 2022, IEEE Transactions on Wireless Communications 2020, 2018, 2017, 2010 – 2015, IEEE Journal on Selected Areas in Communications 2019, 2015, IEEE/ACM Transactions on Networking 2019, 2009 – 2012, IEEE Transactions on Sustainable Computing 2018, IEEE Transactions on Mobile Computing 2017, 2011, IEEE Communications Magazine 2016, IEEE Transactions on Power Electronics 2016, IEEE Network Magazine 2015, 2016, IEEE Sensors 2013, ACM Transactions on Sensor Networks 2012, IEEE Transactions on Parallel and Distributed Systems 2009, 2010.	
<b>External reviewer, conferences:</b> IEEE ISMAR 2024, IEEE VR 2024, ACM VRST 2023, 2024, IEEE ISMAR 2021 – 2023, ACM CHI 2022, IEEE INFOCOM 2009 – 2014, ACM SIGMETRICS 2011 – 2013, IEEE DCOSS 2012, IEEE GLOBECOM 2011, IEEE/IFIP WONS 2011, IEEE WiOpt 2009, IEEE MILCOM 2008.	
<b>Reviewer, other:</b> Springer book proposal reviewer 2019.	
<b>Organizer:</b> 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.	
<b>Mentor,</b> ACM MobiHoc N2Women Workshop	2021
<b>Judge,</b> ACM Student Poster Competition, ABI Grace Hopper Celebration of Women in Computing	2016
<b>Panelist, technology:</b>	
Practical deployment advice for edge computing, IoT Solutions World Congress Digital Summit	2021
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
<b>Panelist, student and career guidance:</b>	
Future Faculty Forum, IEEE VR	2024
Academic Job Search: Behind the Scenes with the Search Committee, Duke University	2023
PhD student orientation faculty panel, Duke University Pratt School of Engineering	2021
Academic Job Search: Finding the Opportunities and Applying, Duke University	2020
Academic Job Search: The Interview Process, Duke University	2019
Challenges and Solutions to Address the Gender Gap in STEM, Duke University	2019
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
<b>Invited participant:</b>	
Meta AR/VR/XR Optics Academic Forum at FiO+LS	2024

## MARIA GORLATOVA: CURRICULUM VITAE

Discover US Vision Workshop on Distributed Computing and Swarm Intelligence	2024
UIUC Center for Immersive Computing Summit	2024
Google Networking Research Summit	2023
<b>DARPA ISAT Workshop: Wearable Supportive Personalized self-Regulation (WSPR)</b>	2022
National Academy of Engineering's <b>US Frontiers of Engineering (NAE US FOE) Symposium</b>	2021
University of Washington Industry-academia Summit on Mixed Reality Security, Privacy, and Safety	2019
XR Access Symposium on Accessibility in Augmented and Virtual Reality	2019
Facebook Connectivity Lab Research Workshop	2018
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

## RESEARCH GRANTS

*Total since joining Duke University: \$4.99mln*

*Current research grants:*

**[NSF24REU]** *Principal Investigator*, REU supplement for NSF CNS-2312760, “CSR: Medium: Adaptive Environmental Awareness for Collaborative Augmented Reality,” \$18,000, 2024 – 2027.

**[DARPAYFA23]** *Principal Investigator*, DARPA Young Faculty Award (YFA) HR0011-24-1-0001, “Runtime Identification of Detrimental Augmented Reality (AR) Experiences through AR-specific Quality of Experience (QoE) Modeling and Monitoring,” \$500,000 over 2023 – 2025 plus an option of 3<sup>rd</sup> year \$500,000 extension via a Director’s Fellowship recommendation.

**[NSF23HCC]** *Principal Investigator*, NSF IIS-2231975, “HCC: Small: Robust Object Detection for Mobile Augmented Reality in the Wild,” \$600,000. 2023 – 2026.

**[NSF23CSR]** *Principal Investigator*, NSF CNS-2312760, “CSR: Medium: Adaptive Environmental Awareness for Collaborative Augmented Reality,” \$1,200,000. 2023 – 2027. Joint with Co-PIs Carlee Joe-Wong (Carnegie Mellon University) and Jiasi Chen (University of Michigan).

**[NSF23ExpandAI]** *Senior Personnel*, NSF IIS-2332744, “PARTNER: Neuro-Inspired AI for the Edge at UTSA (NAIAD)”. PI Dhireesha Kudithipudi (UTSA). Gorlatova’s portion \$240,000. 2023 – 2027.

**[Army23COE]** *Co-Principal Investigator*, “DoD Center of Excellence in Advanced Computing and Software (CiARE),” DoD Center of Excellence led by PI Jonathan Shihao Ji (Georgia State University). PI Gorlatova’s portion \$600,000. 2023 – 2028.

**[NSF23REU]** *Principal Investigator*, REU supplement for NSF IIS-2046072, “CAREER: Foundations of IoT-Supported Mobile Augmented Reality.” \$8,000, 2023 – 2026.

**[NSF21CAREER]** *Principal Investigator*, NSF IIS-2046072, “CAREER: Foundations of IoT-Supported Mobile Augmented Reality.” \$550,000. 2021 – 2026.

**[NSF21AI]** *Senior Investigator*, NSF CNS-2112562, “AI Institute: Athena: AI-Driven Next-generation Networks at the Edge.” Duke University-led center (PI Yiran Chen). Total \$20,000,000. 2021 – 2026. Gorlatova’s portion ~ \$550,000.

*Faculty awards:*

**[CISCO23]** CISCO Research Center Award, “Enabling Multi-user Markerless Augmented Reality via Reinforcement Learning on Mobile Devices and the Edge,” Joint with Co-PI Carlee Joe Wong (Carnegie Mellon University). \$100,000. 2023.

**[Facebook21]** Facebook Faculty Award, “Provably Robust 3D Point Cloud Classification for Mobile Augmented Reality.” Joint with co-PI Neil Gong (Duke University). \$75,000. 2021.

MARIA GORLATOVA: CURRICULUM VITAE

**[IBM20202023]** IBM Faculty Award, “Robust Collaborative Inference in Multi-Tier Device-to-Cloud Internet of Things Architectures.” \$20,000. 2020, 2023.

*Previous since joining Duke:*

**[NASA22STTR]** *Co-Principal Investigator*, NASA STTR “Demonstration of Space-Qualified Environmental Evaluation Drones with Wireless Intelligent Networked Data Processing (SPEEDWINDs),” collaboration between Nanohmics (PI John Sarik) and Duke University (Co-PI Maria Gorlatova). PI Gorlatova’s portion \$50,000. Aug. 2022 – Aug. 2023.

**[LordEducInnov22]** *Principal Investigator*, Thomas Lord Educational Innovation Grant Program, “User Context-Aware Augmented Reality (AR) for Medical and Human-Robot Collaboration Applications,” \$15,600, July 2022 – July 2023.

**[NSF19CNS]** *Principal Investigator*, NSF CNS-1908051, “Small: Collaborative Research: Towards Intelligent Multi-User Augmented Reality with Edge Computing.” A collaborative Carnegie Mellon University (PI Carlee Joe-Wong) and Duke University (PI Maria Gorlatova) proposal. PI Gorlatova’s portion \$250,000. 2019 – 2023.

**[NSF19CC\*]** *Co-Principal Investigator*, NSF CC\*-1925550, “Integration: Archipelago: Linking Researchers On-Campuses and in the Cloud through SDN-Enabled Microsegmentation,” Duke University submission jointly with Tracy Futhey (PI), Richard Biever (Co-PI), and William Brockelsby (Co-PI). \$1,000,000 total. PI Gorlatova’s portion \$63,277. 2019 – 2022.

**[NSF19REU]** *Principal Investigator*, REU supplement for NSF CSR-1903136, “Small: Collaborative Research: Multi-tier Service Architecture in IoT-Edge-Cloud-Paradigms,” \$16,000, 2019 – 2021.

**[NSF18CSR]** *Principal Investigator*, NSF CSR-1903136, “Small: Collaborative Research: Multi-tier Service Architecture in IoT-Edge-Cloud-Paradigms,” 2018 – 2021. A collaborative Yale University (PI Wenjun Hu) and Duke University (PI Maria Gorlatova) proposal. Duke University portion \$38,872.

**[LordFoundation19]** *Principal Investigator*, “Towards Pervasive Multi-User Augmented Reality: Undergraduate Research and Course Development.” \$12,260. 2019 – 2020.

**[NCWIT19]** *Principal Investigator*, National Center for Women, and Information Technology (NCWIT) Academic Alliance Seed Fund Award, Microsoft Research Faculty Summit Track, “Towards Engaging Women in Systems and Networking Research with Code+R&D project across ECE, CS, and OIT departments”. Co-PIs Tracy Futhey, John Board. \$10,000 total. 2019 – 2020.

**[DARPA18BAE]** *Senior Personnel*, Defense Advanced Research Projects Agency (DARPA) Dispersed Computing (DCOMP) Network Back-haul Layered Architecture (NEBULA) program. A \$36,520 subcontract under the NEBULA program led by BAE Systems. 2018 – 2019.

**[AWS18]** *Principal Investigator*, Amazon Web Services Cloud Credits for Research, “Optimizing Fog-based IoT Systems”. Equivalent of \$4,800 in Amazon Web Services Cloud computing credits. Co-PI Liang Zhang. 2018 – 2019.

*Prior to joining Duke:*

**[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.

**[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, CMU, and LGS Innovations. 2017 – 2018.

**[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, University of Colorado Boulder, and BAE Systems. 2017 – 2018.

**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.

*Other:*

[REUSITEDUKE] *Faculty Mentor*, NSF REU Site: Research Experience for Undergraduates for Meeting the Grand Challenges in Engineering, Duke University Pratt School of Engineering, 2017 – 2025.

## PUBLICATIONS

Names of students, postdocs, and research associates I advised are underlined. Undergraduate contributors I advised are marked with a ‘\*’.

### Book Chapters

[Springer23] T. Scargill, S. Eom, Y. Chen, **M. Gorlatova**, Ambient Intelligence for Next-generation Augmented Reality, *Springer Handbook of the Metaverse*, Springer, to appear. Submitted to the publisher and released pre-print via ArXiv Mar. 2023 (**invited book chapter**).

[Wiley20] Y. Ruan, L. Zheng, **M. Gorlatova**, M. Chiang, C. Joe-Wong, Pricing Tradeoffs for Data Analytics in Fog-Cloud Scenarios, *Fognet and Fogonomics: Challenges and Practices of Fog Computing, Communication, Networking, Strategy, and Economics*, Wiley & Sons, March 2020 (**invited book chapter**).

### Journal Publications

[SubmittedTVST24] S. Eom, T. Ma, M. Pajic, **M. Gorlatova**, M. Hadziahmetovic. Augmented Reality Guidance using Digital Twin-based Virtual Simulator for Retinal Laser Therapy, submitted to *Translational Vision Science & Technology (TVST)*, 2024.

[ToAppearTMC24] Y. Chen, S. Omoma\*, H. Kwon\*, H. Inaltekin, **M. Gorlatova**, Quantifying and Exploiting VR Frame Correlations: An Application of a Statistical Model for Viewport Pose, to appear in *IEEE Transactions on Mobile Computing*, 2024. Preliminary version appeared in Proc. *IEEE INFOCOM’22*.

[ToAppearTVCG24] S. Eom, S. Kim\*, J. Jackson, D. Sykes, S. Rahimpour, **M. Gorlatova**, Augmented Reality-based Contextual Guidance through Surgical Tool Tracking in Neurosurgery, to appear in *IEEE Transactions on Visualization and Computer Graphics*, 2024.

[NeurosurgicalFocus24] S. Eom, T. Ma\*, N. Vutakuri\*, T. Hu, A. P. Haskell-Mendoza, D. W. Sykes, **M. Gorlatova**, J. Jackson. Mixed Reality-guided Twist-drill Craniostomy Improves the Accuracy of External Ventricular Drain Placement. *Neurosurgical Focus*, special issue on Mixed Reality in Neurosurgery. Vol. 56, No. 1, Jan. 2024.

[TMC23] X. Zhang, S. Chen, Y. Zhang\*, Y. Im, **M. Gorlatova**, S. Ha, C. Joe-Wong, Optimal Network Protocol Selection for Competing Flows via Online Learning, *IEEE Transactions on Mobile Computing*, Vol. 22, No. 8, Aug. 2023.

[TNSM23] S. Wang, S. Hosseinalipour, **M. Gorlatova**, C. Brinton, M. Chiang, UAV-assisted Online Machine Learning over Multi-Tiered Networks: A Hierarchical Nested Personalized Federated Learning Approach, *IEEE Transactions on Network and Service Management*, Vol. 20, No. 2, June 2023.

[IoTJ22b] Y. Han, Y. Chen, R. Wang, J. Wu, **M. Gorlatova**, Intelli-AR Preloading: A Learning Approach to Proactive Hologram Transmissions in Mobile AR, *IEEE Internet of Things Journal*, Vol. 9, No. 18, Sept. 2022.

[IoTJ22a] J. Manjarres, G. Lan, **M. Gorlatova**, M. Hassan, M. Padro, Deep Learning for Detecting Human Activities from Kinetic Energy Signals, *IEEE Internet of Things Journal*, Special Issue on Sustainable Solutions for the IoT, Vol. 9, No. 10, May 2022.

[TOSN22] G. Lan, Z. Liu, Y. Zhang\*, T. Scargill, J. Stojkovic\*, C. Joe-Wong, **M. Gorlatova**, Edge-assisted Collaborative Image Recognition for Mobile Augmented Reality, *ACM Transactions on Sensor Networks*, Vol. 18, No 1, Feb. 2022.

[IoTJ21a] G. Lan, M. F. Imani, Z. Liu, J. Manjarres, W. Hu, A. Lan, D. R. Smith, **M. Gorlatova**, MetaSense: Boosting RF Sensing Accuracy using Dynamic Metasurface Antenna, *IEEE Internet of Things Journal*, Vol. 8, No. 18, Sept. 2021.

[IOTJ20] C. Yu, K. Kam, Y. Xu, Z. Cui, D. Steingart, **M. Gorlatova**, P. Culligan, I. Kymissis, Plant Spike: A Low Cost, BLE Beacon with On-Board Sensors for Smart City Soil Health Monitoring, *IEEE Internet of Things Journal*, Vol. 7, No. 9, June 2020.



- [CNets20] **M. Gorlatova**, H. Inaltekin, M. Chiang, Characterizing Task Completion Latencies in Multi-point Multi-quality Fog Computing Systems, *Elsevier Computer Networks*, Vol. 181, Nov. 2020.
- [CommunMag20] G. Lan, M. F. Imani, P. Del Hougne, W. Hu, D. Smith, **M. Gorlatova**, Wireless Sensing Using Dynamic Metasurface Antennas: Challenges and Opportunities, *IEEE Communications Magazine*, Vol. 58, No. 6, June 2020.
- [IOTJ18] H. Inaltekin, **M. Gorlatova**, M. Chiang, Virtualized Control over Fog: Interplay between Reliability and Latency, *IEEE Internet of Things Journal*, Vol. 5, No. 6, 2018.
- [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

- [ToAppearISMAR24] Z. Qu, R. Byrne, and **M. Gorlatova**. "Looking" into Attention Patterns in Extended Reality: An Eye Tracking-based Study. To appear in Proc. *IEEE ISMAR*, Oct. 2024.
- [ToAppearIMWUT24] T. Scargill, R. Janamsetty\*, C. Fronk, S. Eom, and **M. Gorlatova**, Environment Texture Optimization for Mobile Augmented Reality. To appear in Proc. *ACM IMWUT*, 2024.
- [IPSN24] L. Duan, Y. Chen, Z. Qu, M. McGrath, E. Ehmke, **M. Gorlatova**, BiGuide: A Bi-Level Data Acquisition Guidance for Object Detection on Mobile Devices, in Proc. *ACM/IEEE IPSN*, Hong Kong, China, May 2024. (**21.5% acceptance rate**). 2023 NSF AI for Edge Computing Leveraging Next Generation Networks (ATHENA) Institute Annual Review **Best Poster Runner-up Award. ACM/IEEE IPSN 2024 Best Research Artifact Runner-up Award.**
- [ICRA24] L. Duan, Y. Chen, T. Scargill, **M. Gorlatova**, 3D Object Detection with VI-SLAM Point Clouds: The Impact of Object and Environment Characteristics on Model Performance, in Proc. *IEEE ICRA*, Yokohama, Japan, May 2024.
- [ISMAR23] T. Scargill, Y. Chen, T. Hu, **M. Gorlatova**, SiTAR: Situated Trajectory Analysis for In-the-Wild Pose Error Estimation, in Proc. *IEEE ISMAR*, Sydney, Australia, Oct. 2023.
- [INFOCOM23] Y. Chen, H. Inaltekin, **M. Gorlatova**, AdaptSLAM: Edge-assisted Adaptive SLAM with Resource Constraints via Uncertainty Minimization, in Proc. *IEEE INFOCOM*, Hoboken, NJ, May 2023 (**19.2% acceptance rate**).
- [SenSys22] J. Sun, A. Li, L. Duan, S. Alam, X. Deng, X. Guo, H. Wang, **M. Gorlatova**, M. Zhang, H. Li, Y. Chen, FedSEA: A Semi-Asynchronous Federated Learning Framework for Extremely Heterogeneous Devices, in Proc. *ACM SenSys*, Boston, MA, Nov. 2022.
- [ISMAR22a] S. Eom, D. Sykes, S. Rahimpour, **M. Gorlatova**, NeuroLens: Augmented Reality-based Contextual Guidance through Surgical Tool Tracking in Neurosurgery, in Proc. *IEEE ISMAR*, Singapore, Oct. 2022 (**21% acceptance rate**). **Demonstrated to members of US legislature** as part of the September 2023 National AI Research Institutes Congressional Showcase. Demonstration **highlighted in NSF Director's weekly newsletter and NSF CISE monthly newsletter.**
- [ISMAR22b] T. Scargill, Y. Chen, N. Marzen, **M. Gorlatova**, Integrated Design of Augmented Reality Spaces Using Virtual Environments, in Proc. *IEEE ISMAR*, Singapore, Oct. 2022 (**21% acceptance rate**).

- [IMWUT22] Y. Zhang\*, T. Scargill, A. Vaishnav, G. Premsankar, M. Di Francesco, **M. Gorlatova**, InDepth: Real-time Depth Inpainting for Mobile Augmented Reality, in Proc. *ACM IMWUT*, Cambridge, UK, Sept. 2022.
- [IPSN22] G. Lan, T. Scargill, **M. Gorlatova**, EyeSyn: Psychology-inspired Eye Movement Synthesis for Gaze-based Activity Recognition, in Proc. *ACM/IEEE IPSN*, virtual, May 2022. **Selected media coverage: vice.com, hackster.io. Highlighted in the university-wide Duke Daily and in the NSF-wide Discoveries newsletters.**
- [INFOCOM22] Y. Chen, H. Kwon\*, H. Inaltekin, **M. Gorlatova**, VR Viewport Pose Model for Quantifying and Exploiting Frame Correlations, in Proc. *IEEE INFOCOM*, virtual, May 2022 (**19.9% acceptance rate**).
- [HotChips21] P.J. Adams, B. Batson, A. Bell, J. Bhatt, J.A. Butts, T. Correia, B. Edwards, P. Feldmann, CH Fenton, A. Forte, J. Gagliardo, G. Gill, **M. Gorlatova**, B. Greskamp, JP Grossman, J. Hunt, B. Jackson, M. Kirk, J. Kuskin, RJ Mader, R. McGowen, A. McLaughlin, M. Moraes, M. Nasr, L. Nociolo, L. O'Donnell, A. Parker, J. Peticolas, T. Quan, TC Schwink, K.-S. Shim, N. Siddique, J. Spengler, M. Theobald, B. Towles, W. Vick, SC Wang, M. Wazlowski, M. Weingarten, JM Williams, D.E. Shaw, The AnTON 3 ASIC: A Fire-breathing Monster for Molecular Dynamics Simulations, in Proc. *IEEE HotChips*, virtual, Aug. 2021.
- [CoNext20] X. Ran, C. Slocum, Y.-Z. Tsai, K. Apicharttrisorn, **M. Gorlatova**, J. Chen, Multi-User Augmented Reality with Communication Efficient and Spatially Consistent Virtual Objects, in Proc. *ACM CoNEXT*, virtual, Dec. 2020.
- [SenSys20] G. Lan, B. Heit\*, T. Scargill, **M. Gorlatova**, GazeGraph: Graph-based Few-Shot Cognitive Context Sensing from Human Visual Behavior, in Proc. *ACM SenSys*, virtual, Nov. 2020 (**20.6% acceptance rate**).
- [IPSN20] Z. Liu, G. Lan, J. Stojkovic\*, Y. Zhang\*, C. Joe-Wong, **M. Gorlatova**, CollabAR: Edge-assisted Collaborative Image Recognition for Mobile Augmented Reality, in Proc. *ACM/IEEE IPSN*, virtual, Apr. 2020 (**21.7% acceptance rate**). **ACM/IEEE IPSN Best Research Artifact Award.**
- [ICCAD19] M. Ibrahim, **M. Gorlatova**, K. Chakrabarty, The Internet of Microfluidic Things: Perspectives on System Architecture and Design Challenges, in Proc. *IEEE/ACM ICCAD*, Westminster, CO, Nov. 2019.
- [ICNP19] X. Zhang, S. Chen, Y. Im, **M. Gorlatova**, S. Ha, C. Joe-Wong, Towards Automated Network Management: Learning the Optimal Protocol Selection for Network Flows, in Proc. *IEEE ICNP*, Chicago, IL, Oct. 2019 (short paper; **19.3% acceptance rate**).
- [INFOCOM19] P. Naghizadeh, **M. Gorlatova**, A. Lan, M. Chiang, Hurts to be Too Early: Benefits and Drawbacks of Communication in Multi-Agent Learning, in Proc. *IEEE INFOCOM*, Paris, France, May 2019 (**19.7% acceptance rate**).
- [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. *ACM SIGMETRICS*, Austin, TX, July 2014 (**17% acceptance rate**). **Selected media coverage: MIT Technology Review 2014, The New Yorker Magazine 2017.**
- [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. *IEEE GlobalSIP Symposium on Energy Harvesting and Green Wireless Communications*, Austin, TX, Dec. 2013 (**invited paper**).
- [ITiCSE13] **M. Gorlatova**, J. Sarik, P. Kinget, I. Kymissis, G. Zussman, Project-based Learning within a Large-Scale Interdisciplinary Research Effort, in Proc. *ACM Conference on Innovation and Technology in Computer Science Education (ACM ITiCSE)*, Canterbury, UK, July 2013.
- [INFOCOM13] **M. Gorlatova**, R. Margolies, J. Sarik, G. Stanje, J. Zhu, B. Vignham, M. Szczodrak, L. Carloni, P. Kinget, I. Kymissis, G. Zussman, Prototyping Energy Harvesting Active Networked Tags (EnHANTs), in Proc. *IEEE INFOCOM*, Turin, Italy, Apr. 2013.
- [WiOpt11] **M. Gorlatova**, A. Bernstein, G. Zussman, Performance Evaluation of Resource Allocation Policies for Energy Harvesting Devices, in Proc. *IEEE WiOpt*, Princeton, NJ, May 2011.
- [Infocom11] **M. Gorlatova**, A. Wallwater, G. Zussman, Networking Rechargeable Low-Power Devices: Measurements and Algorithms, in Proc. *IEEE INFOCOM*, Shanghai, China, Apr. 2011 (**~16% acceptance rate**).
- [Milcom11] **M. Gorlatova**, R. Aiello, S. Mangold, Managing Base Station Location Privacy, in Proc. *IEEE MILCOM*, 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. *ACM MobiCom*, 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. Army Science Conference (*ASC*), 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. *IEEE MILCOM*, 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. *ICST SecureComm*, 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. *IEEE MILCOM*, Washington, DC, Oct. 2006.

### Workshop Proceedings

- [**ToAppearImmerCom24**] T. Hu, F. Yang, T. Scargill, **M. Gorlatova**, Apple v.s. Meta: A Comparative Study on Spatial Tracking in SOTA XR Headsets. To appear in Proc. *ACM ImmerCom* (co-located with *ACM MobiCom*), Washington, DC, Oct. 2024.
- [**TrainingXR24**] S. Eom, T. Ma\*, T. Hu, N. Vutakuri\*, J. Jackson, **M. Gorlatova**, Did I Do Well? Personalized Assessment of Trainees' Performance in Augmented Reality-assisted Neurosurgical Training, in Proc. *IEEE Workshop on 3D Content Creation for Simulated Training in eXtended Reality* (co-located with *IEEE VR*), Orlando, FL, Mar. 2024.
- [**ImmerCom23**] T. Scargill, M. Hadziahmetovic, **M. Gorlatova**, Invisible Textures: Comparing Machine and Human Perception of Environment Texture for Augmented Reality, in Proc. *ACM ImmerCom* (co-located with *ACM MobiCom*), Madrid, Spain, Oct. 2023. **Best Paper Award**.
- [**XRHealth23**] S. Eom, S. Kim\*, Y. Jiang, R. Chen, A. Roghanizad, M. Z. Rosenthal, J. Dunn, **M. Gorlatova**, Investigation of Thermal Perception and Emotional Response in Augmented Reality using Digital Biomarkers: A Pilot Study, in Proc. *IEEE XR for Healthcare and Wellbeing Workshop* (co-located with *IEEE VR*), Shanghai, China, Mar. 2023.
- [**DigiBiom22**] Y. Jiang, W. Wang, T. Scargill, M. Rothman, **M. Gorlatova**, J. Dunn, Digital Biomarkers Reflect Stress Reduction after Augmented Reality-guided Meditation: A Feasibility Study, in Proc. *ACM Workshop on Emerging Devices for Digital Biomarkers* (co-located with *ACM MobiSys*), Portland, OR, July 2022.
- [**CPHSS22**] T. Scargill, G. Premsankar, J. Chen, **M. Gorlatova**, Here to Stay: A Quantitative Comparison of Virtual Object Stability in Markerless Mobile AR, in Proc. *IEEE/ACM Workshop on Cyber-Physical-Human System Design and Implementation* (co-located with *CPS-IoT Week*), virtual, May 2022.
- [**XRMetaBuild22**] T. Scargill, Y. Chen, S. Eom, J. Dunn, **M. Gorlatova**, Environmental, User, and Social Context-Aware Augmented Reality for Supporting Personal Development and Change, in Proc. *IEEE Workshop for Building the Foundations of the Metaverse* (co-located with *IEEE VR*), virtual, Mar. 2022.
- [**XRHealth22**] S. Eom, S. Kim\*, S. Rahimpour, **M. Gorlatova**, AR-assisted Surgical Guidance System for Ventriculostomy, in Proc. *IEEE XR for Healthcare and Wellbeing Workshop* (co-located with *IEEE VR*), virtual, Mar. 2022.
- [**SmartEdge20**] M. Glushakov\*, Y. Zhang\*, Y. Han, T. Scargill, G. Lan, **M. Gorlatova**, Edge-based Provisioning of Holographic Content for Contextual and Personalized Augmented Reality, in Proc. *IEEE Workshop on Smart Edge Computing and Networking* (co-located with *IEEE PerCom*), virtual, Mar. 2020. **Invited paper**.
- [**HotNets19**] X. Ran, C. Slocum, **M. Gorlatova**, J. Chen, ShareAR: Communication-efficient Multi-User Mobile Augmented Reality, in Proc. *ACM HotNets'19*, Princeton, NJ, Nov. 2019 (**20.4% acceptance rate**).
- [**MLSystemsISCA19**] X. Zhang, S. Chen, Y. Im, **M. Gorlatova**, S. Ha, C. Joe-Wong, Optimal Learning-based Network Protocol Selection, in Proc. *ML for Systems Workshop* (co-located with *ISCA*), Phoenix, AZ, June 2019.

- [**InfocomWshop19**] V. Balasubramanian, F. Zaman, M. Aloqaily, S. Alrabae, **M. Gorlatova**, M. Reisslein, Reinforcing the Edge: Autonomous Energy Management for Mobile Device Clouds, in Proc. *IEEE Workshop on Intelligent Cloud Computing and Networking* (co-located with *IEEE INFOCOM*), May 2019.
- [**CPSweekWshop19**] S. Ahn, **M. Gorlatova**, P. Naghizadeh, M. Chiang, Personalized Augmented Reality via Fog-based Imitation Learning, in Proc. *IEEE Workshop on Fog Computing and the IoT* (co-located with *IEEE CPS-IoT Week*), Montreal, QC, Canada, Apr. 2019.
- [**ARVR18**] S. Ahn\*, **M. Gorlatova**, P. Naghizadeh, M. Chiang, P. Mittal, Adaptive Fog-based Output Security for Augmented Reality, in Proc. *ACM SIGCOMM VR/AR Network Workshop* (co-located with *ACM SIGCOMM*), Budapest, Hungary, Aug. 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*), Cambridge, MA, Nov. 2017.
- [**Infoc11**] **M. Gorlatova**, R. Aiello, S. Mangold, Managing Location Privacy in Cellular Networks with Femtocell Deployments, in Proc. *IEEE Workshop on Indoor and Outdoor Femtocells* (co-located with *IEEE WiOpt*), Princeton, NJ, May 2011.
- [**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. *IEEE Workshop on Secure Network Protocols* (co-located with *IEEE ICNP*), Boston, MA, Nov. 2005.

#### Conference Demonstrations

- [**VR24**] S. Eom, T. Ma\*, N. Vutakuri\*, A. Du\*, Z. Qu, J. Jackson, **M. Gorlatova**, Demo: Did You Do Well? Real-Time Personalized Feedback on Catheter Placement in Augmented Reality-assisted Neurosurgical Training, in Proc. *IEEE VR*, Orlando, FL, Mar. 2024.
- [**MobiCom23**] T. Hu, T. Scargill, Y. Chen, G. Lan, **M. Gorlatova**, Demo: DNN-based SLAM Tracking Error Online Estimation, in Proc. *ACM MobiCom*, Madrid, Spain, Oct. 2023.
- [**INFOCOM23**] Y. Chen, H. Inaltekin, J. Sarik, **M. Gorlatova**, Demo: Demonstrating Resource-Efficient SLAM in Virtual Spacecraft Environments, in Proc. *IEEE INFOCOM*, Hoboken, NJ, May 2023.
- [**IPSN23a**] S. Eom, R. Janamsetty\*, M. Hadziahmetovic, M. Pajic, **M. Gorlatova**, Demo: Edge-based Augmented Reality Guidance System for Retinal Laser Therapy via Feature Matching, in Proc. *ACM/IEEE IPSN*, San Antonio, TX, May 2023.
- [**IPSN23b**] L. Duan, Y. Chen, **M. Gorlatova**, Demo: BiGuide: A Bi-Level Data Acquisition Guidance for Object Detection on Mobile Devices, in Proc. *ACM/IEEE IPSN*, San Antonio, TX, May 2023.
- [**SenSys22**] S. Eom, M. Hadziahmetovic, M. Pajic, **M. Gorlatova**, Demo: Through an AR Lens: Augmented Reality Magnification through Feature Detection and Matching, in Proc. *ACM SenSys*, Boston, MA, Nov. 2022.
- [**INFOCOM22**] Y. Chen, H. Inaltekin, **M. Gorlatova**, Demo: Pixel Similarity-based Content Reuse in Edge-assisted Virtual Reality, in Proc. *IEEE INFOCOM*, virtual, May 2022.
- [**IPSN22**] T. Scargill, G. Lan, **M. Gorlatova**, Demo: Catch My Eye: Gaze-based Activity Recognition in an Augmented Reality Art Gallery, in Proc. *IEEE IPSN*, virtual, May 2022.
- [**HotMobile21**] T. Scargill, S. Hurli\*, J. Chen, **M. Gorlatova**, Demo: Will it Move? Indoor Scene Characterization for Hologram Stability in Mobile AR, in Proc. *ACM HotMobile*, virtual, Feb. 2021.
- [**SenSys19a**] J. Stojkovic\*, Z. Liu, G. Lan, C. Joe-Wong, **M. Gorlatova**, Demo: Edge-assisted Collaborative Image Recognition for Augmented Reality, in Proc. *ACM SenSys*, New York City, NY, Nov. 2019.
- [**SenSys19b**] J. DeChicchis\*, S. Ahn\*, **M. Gorlatova**, Demo: Adaptive Augmented Reality Visual Output Security using Reinforcement Learning Trained Policies, in Proc. *ACM SenSys*, New York City, NY, Nov. 2019.
- [**SenSys17**] T. Chang, L. Zheng, **M. Gorlatova**, C. Gitau\*, C. Huang, M. Chiang, Demo: Decomposing Data Analytics in Fog Networks, in Proc. *ACM SenSys*, Delft, Netherlands, Nov. 2017.

- [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. *IEEE INFOCOM*, 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. *ACM SenSys*, Seattle, WA, Nov. 2011. **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. *ACM MobiSys*, 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, *ACM MobiCom*, Chicago, IL, Sept. 2010.
- [Secon10] **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. *IEEE SECON*, Boston, MA, June 2010.

### Selected Poster Presentations

- [ToAppearISMAR24] Y. Xiu, T. Scargill, **M. Gorlatova**, Poster: LOBSTAR: Language Model-based Obstruction Detection for Augmented Reality, to appear in Proc. *IEEE ISMAR*, Seattle, WA, Oct. 2024.
- [ARVO24] S. Eom, M. Pajic, **M. Gorlatova**, M. Hadziahmetovic. Improving Laser Targeting Accuracy with Augmented Reality in Retinal Laser Therapy, to appear in *Investigative Ophthalmology & Visual Science*, 2024. Presented at the annual meeting of the *Association for Research in Vision and Ophthalmology (ARVO)*, Seattle, WA, May 2024.
- [VR24] R. Byrne, Z. Qu, C. Fronk, S. Eom, T. Scargill, **M. Gorlatova**, Poster: AR Simulations in VR: The Case for Environmental Awareness, in Proc. *IEEE VR*, Orlando, FL, Mar. 2024.
- [ARVO23] S. Eom, M. Pajic, **M. Gorlatova**, M. Hadziahmetovic. Augmented Reality for Retinal Laser Therapy. *Investigative Ophthalmology & Visual Science*, 2023. Presented at the annual meeting of the *Association for Research in Vision and Ophthalmology (ARVO)*, New Orleans, LA, Apr. 2023.
- [UbiComp22] T. Scargill, A. Dabrowski\*, A. Xu\*, **M. Gorlatova**, IoT-Enabled Environment Illuminance Optimization for Augmented Reality, in Proc. *ACM UbiComp*, Cambridge, UK, Sept. 2022. **ACM UbiComp Best Poster Award**.
- [NAEFOE21] **M. Gorlatova**, Edge Computing-Supported Mobile Augmented Reality, National Academy of Engineering's US Frontiers of Engineering (NAE US FOE) Symposium, Feb. 2021 (**invited participant**).
- [NSFPIMeeting19] **M. Gorlatova**, Intelligent Augmented Reality with Edge Computing, NSF CSR/NeTS 2019 Joint PI Meeting, Arlington, VA, Nov. 2019.
- [HouseOfRepresentatives19] **M. Gorlatova**, M. Glushakov\*, M. Wilkinson\*, J. DeChicchis\*, P. Naghizadeh, M. Chiang, Intelligent Augmented Reality with Edge Computing, 2<sup>nd</sup> Coalition for National Security Research's (CNSR) Science, Technology, and Innovation Exchange (STIx) on the Hill Briefing, Washington, DC, May. 2019.

- [**Facebook18**] **M. Gorlatova**, C. Joe-Wong, P. Naghizadeh, R. Younes, J. Chen, M. Chiang, Intelligent Augmented Reality with Edge Computing, 1<sup>st</sup> Facebook Connectivity Lab Research Workshop, Dec. 2018 (**invited participant**).
- [**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**.
- [**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 (**invited participant**).
- [**Photovoltaic12**] Y. Afsar, J. Sarik, **M. Gorlatova**, G. Zussman, I. Kymissis, Poster: Evaluating Photovoltaic Performance Indoors, in Proc. IEEE Photovoltaic Specialist Conference (*IEEE PVSC*), 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. *IEEE INFOCOM*, Shanghai, China, Apr. 2011.

### Code and Datasets

- [**GitHub24a**] L. Duan, Y. Chen, Z. Qu, **M. Gorlatova**, BiGuide: Data Acquisition Guidance for Object Detection. GitHub, Apr. 2024. Available at <https://github.com/BiGuideCollection/BiGuide>. Accompanies ACM/IEEE IPSN'24 paper BiGuide: A Bi-Level Data Acquisition Guidance for Object Detection on Mobile Devices. **ACM/IEEE IPSN 2024 Best Research Artifact Runner-up Award**.
- [**GitHub24b**] L. Duan, Y. Chen, T. Scargill, **M. Gorlatova**, VI-SLAM point cloud datasets VIP500 and VIP500-D. GitHub, Apr. 2024. Available at <https://github.com/timscargill/VIP-Datasets>. Accompanies IEEE ICRA 2024 paper 3D Object Detection with VI-SLAM Point Clouds: The Impact of Object and Environment Characteristics on Model Performance.
- [**GitHub23a**] T. Scargill, Y. Chen, T. Hu, **M. Gorlatova**, SiTAR (Situating Trajectory Analysis for AR), GitHub, Aug. 2023. Available at <https://github.com/timscargill/SiTAR>. Accompanies IEEE ISMAR'23 paper SiTAR: Situated Trajectory Analysis for In-the-Wild Pose Error Estimation.
- [**GitHub23b**] T. Scargill, **M. Gorlatova**, Invisible Textures, GitHub, Oct. 2023. Available at <https://github.com/timscargill/Invisible-Textures/> Accompanies ACM ImmerCom'23 paper Invisible Textures: Comparing Machine and Human Perception of Environment Texture for Augmented Reality.
- [**GitHub23c**] Y. Chen, H. Inaltekin, **M. Gorlatova**, AdaptSLAM, GitHub, Feb. 2023. Available at <https://github.com/i3tyc/AdaptSLAM>. Accompanies IEEE INFOCOM'23 paper AdaptSLAM: Edge-Assisted Adaptive SLAM with Resource Constraints via Uncertainty Minimization.
- [**GitHub22a**] T. Scargill, **M. Gorlatova**, Virtual-Inertial-SLAM: A Solution for VI-SLAM Performance Evaluations in Virtual Environments with Real Inertial Data, GitHub, Jul. 2022. Available at <https://github.com/timscargill/Virtual-Inertial-SLAM>. Accompanies IEEE ISMAR'22 paper Integrated Design of Augmented Reality Spaces Using Virtual Environments.
- [**GitHub22b**] G. Lan, T. Scargill, **M. Gorlatova**, EyeSyn: Eye Movement Dataset and Emulator Implementation. Available at <https://github.com/EyeSyn/EyeSynResource>. Accompanies ACM/IEEE IPSN'22 paper EyeSyn: Psychology-inspired Eye Movement Synthesis for Gaze-based Activity Recognition.
- [**GitHub22c**] Y. Zhang\*, T. Scargill, A. Vaishnav, G. Prensankar, M. Di Francesco, **M. Gorlatova**, InDepth, GitHub, July 2022. Available at <https://github.com/InDepthOpensource/Code/>. Accompanies ACM IMWUT'22 paper InDepth: Real-time Depth inpainting for Mobile Augmented Reality.
- [**GitHub21a**] T. Scargill, S. Hurli\*, **M. Gorlatova**, ARStats: AR Session Measurement Application, GitHub, Apr. 2021. Available at <https://github.com/timscargill/ARStats>. Accompanies IEEE/ACM CPHS'22 paper Here to Stay: A Quantitative Comparison of Virtual Object Stability in Markerless Mobile AR.
- [**GitHub21b**] Y. Chen, H. Kwon\*, H. Inaltekin, **M. Gorlatova**, VR Viewport Pose Dataset, Dec. 2021. Available at <https://github.com/VRViewportPose/VRViewportPose>. Accompanies IEEE INFOCOM'22 paper VR Viewport Pose Model for Quantifying and Exploiting Frame Correlations.

- [**GitHub20a**] G. Lan, **M. Gorlatova**, DesktopActivity Eye Tracking Dataset, GitHub, Nov. 2020. Available at <https://github.com/GazeGraphResource/GazeGraph/>. Accompanies ACM SenSys'20 paper GazeGraph: Graph-based Few-Shot Cognitive Context Sensing from Human Visual Behavior.
- [**GitHub20b**] Z. Liu, J. Blanco, G. Lan, **M. Gorlatova**, Collaborative Augmented Reality: Multi-view Multi-distortion Image Dataset (MVMDD) and CollabAR Codebase, GitHub, Feb. 2020. Available at <https://github.com/CollabAR-Source/>. Accompanies ACM/IEEE IPSN'20 paper CollabAR: Edge-assisted Collaborative Image Recognition for Mobile Augmented Reality. **ACM/IEEE IPSN 2020 Best Research Artifact Award**.
- [**GitHub20c**] M. Glushakov\*, Y. Zhang\*, **M. Gorlatova**, Google ARCore and Magic Leap One hologram provisioning frameworks, GitHub, Feb. 2020. Available at <https://github.com/michaelglu/SmartEdgePaper> and <https://github.com/YunfanZhang42/SmartEdgeMagicLeap>. Accompanies IEEE SmartEdge'20 paper Edge-based Provisioning of Holographic Content for Contextual and Personalized Augmented Reality.
- [**Crowdad14**] 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.
- [**Crowdad11**] **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:*

- [**ArXiv23b**] T. Scargill, S. Eom, Y. Chen, **M. Gorlatova**, Ambient Intelligence for Next-generation Augmented Reality, arXiv:2303.12968, Mar. 2023. Preprint of the invited book chapter of the *Springer Handbook of the Metaverse*.
- [**ArXiv23a**] Y. Chen, H. Inaltekin, **M. Gorlatova**, AdaptSLAM: Edge-Assisted Adaptive SLAM with Resource Constraints via Uncertainty Minimization, arXiv:2301.04620, Jan. 2023.
- [**ArXiv22**] Y. Chen, H. Kwon\*, H. Inaltekin, **M. Gorlatova**, VR Viewport Pose Model for Quantifying and Exploiting Frame Correlations, arXiv:2201.04060, Jan. 2022.
- [**ArXiv21b**] T. Scargill, J. Chen, **M. Gorlatova**, Here to Stay: Measuring Hologram Stability in Markerless Smartphone Augmented Reality. arXiv: 2109.14757, Sept. 2021.
- [**ArXiv21a**] S. Wang, S. Hosseinalipour, **M. Gorlatova**, C. Brinton, M. Chiang, UAV-assisted Online Machine Learning over Multi-Tiered Networks: A Hierarchical Nested Personalized Federated Learning Approach. arXiv:2106.15734, June 2021.
- [**ArXiv18**] **M. Gorlatova**, H. Inaltekin, M. Chiang, Characterizing Task Completion Latencies in Fog Computing. arXiv:1811.02638, Nov. 2018.
- [**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).

## PATENTS & INVENTION DISCLOSURES

- [**Disclosure24**] L. Duan, Y. Chen, Z. Qu, **M. Gorlatova**, Methods for Guiding Users on Collecting Domain-specific Training Data. Duke University invention disclosure form filed Apr. 2024.
- [**Disclosure23**] S. Eom, M. Pajic, M. Hadziahmetovic, **M. Gorlatova**, Methods for Assisting Clinicians during Retinal Laser Therapy through Augmented Reality. Duke University invention disclosure form filed Apr. 2023.
- [**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. Adopted as the **IEEE 1934 standard**, June 2018.

## SELECTED MENTORSHIP

### Postdoctoral associates:

- Timothy James Scargill 2024  
Guohao Lan. **First subsequent position: Assistant Professor at TU Delft** 2018 – 2021

### Ph.D. students:

- Tianyuan Du Fall 2024 – present  
Sihun Baek Fall 2024 – present  
Alexandu Cantor Fall 2024 – present  
Yanming Xiu 2024 – present  
Christian Fronk 2023 – present  
Zhehan Qu 2023 – present  
Tianyi Hu 2022 – present  
Lin Duan 2022 – present  
Sarah Sangjun Eom 2021 – present  
Ying Chen. **2023 EECS Rising Star, 2023 Cyber-Physical Systems (CPS) Rising Star** 2019 – 2024  
Timothy James Scargill 2019 – 2024  
Yuqi Han, Tongji University, China (PhD advisor Jun Wu) 2019 – 2020  
Joined **Dalian University of Technology as an Assistant Professor** in January 2024  
Jose Manjarres, Universidad del Norte, Colombia (PhD advisor Mauricio Pardo Gonzalez) 2019 – 2020  
Gopika Premsankar, Aalto University (PhD advisor Mario Di Francesco) Summer 2019  
Joined **Aalto University as an Assistant Professor** in January 2024  
Jun Li, KTH, visiting student at Princeton University (PhD advisor Jiajia Chen) 2018 – 2019  
Robert Margolies, Columbia University 2011 – 2013

### M.S. students:

- Yang Li, Duke University Fall 2024 – present  
Ashley A. Frith, Georgia Tech, summer research associate at Duke University Summer 2024  
Fan Yang, Duke University 2024  
Kaijian Huang, Duke University Spring 2024  
Susy Su, Duke University Fall 2023  
Siwen Dong, Duke University Summer 2023  
Xichu Xiao, Duke University Summer 2023  
Owen Gibson, Duke University 2022  
Achilles Dabrowski, Duke University 2022  
Lucas Liu, Duke University 2021  
Zida Liu, Duke University 2019 – 2020



## MARIA GORLATOVA: CURRICULUM VITAE

Tianrui (Felix) Zhang, Duke University	2020
Nisarg Dabhi, Duke University	2018 – 2019
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

### Post-bacc. associates:

Ryleigh Byrne	Fall 2023 – Spring 2024
---------------	-------------------------

### B.S. students:

Ryan Chen, Duke University	2023 - present
Kendall Powe, Tuskegee University, visiting REU student at Duke University	Summer 2024
Fareeda Akewusola, UNC Chapel Hill, visiting REU student at Duke University	Summer 2024
Muchang Bahng, Duke University	2023
Tiffany Ma, Duke University	2022 – 2024
Tahsin Rahman, Duke University	2024
Alice Hu, Duke University	2023 – 2024
Alex Meng, Duke University	2023 – 2024
Ritvik Janamsetty, Duke University	2022 – 2024
Alexander Du, Duke University	2023 – 2024
Jingcheng Ni, Duke University	2023
Lukas Dannull, Duke University	2023
Ashish Murthy, IIT Putna, visiting REU student at Duke University	Summer 2023
Shivani Karanth, NC State University, visiting REU student at Duke University	Summer 2023
Neha Vutakuri, Duke University	2022 – 2023
Seijung Kim, Duke University <b>Howard G. Clark Award for Excellence in Undergraduate Research</b>	2021 – 2023
Darius Huang, Duke University	2022
Liuren Yin, Duke University	2022
Jeremy Suh, University of Virginia, visiting REU student at Duke University	Summer 2022
Sasamon Omoma, Duke University	2021 – 2022
Vineet Alaparathi, Duke University	2021 – 2022
Alex Xu, Duke University. <b>Spring 2022 Best ECE Independent Study Poster Award</b>	2021 – 2022
Jason Dong, Duke University	2022
Mary Jiang, Duke University	2021
Achilles Dabrowski, Duke University	2021
Aining Liu, Duke University	2021
Rohit Raguram, Duke University	2021
Ashley Kwon, Duke University	2020 – 2021
Emily Eisele, Widener University, visiting REU student at Duke University	Summer 2021
Maria Christenbury, Clemson University, visiting REU student at Duke University	Summer 2021
Megan Mott, UNC Chapel Hill, visiting REU student at Duke University	Summer 2021
Yunfan Zhang, Duke University	2019 – 2021
Mohammad Khatami, Duke University	2021
Brianna Butler, Duke University	2020 – 2021

## MARIA GORLATOVA: CURRICULUM VITAE

Priya Rathinavelu, Duke University	2020 – 2021
Shreya Hurli, Duke University	2020 – 2021
Michael Glushakov, Duke University	2018 – 2020
Steven Li, Duke University	2020
Achintya Kumar, Duke University	2020
Hunter Gregory, Duke University	2020
Orion Hsu, Duke University	2020
Davis Booth, Duke University	2019 – 2020
Grace Patel, Duke University	Spring 2020
Daisy Ferleger, Duke University	Spring 2020
Bailey Heit, Duke University	Spring 2020
Bogyung Kim, Duke University	Spring 2020
Cyan DeVeaux, Duke University. <b>Stanford University Graduate and EDGE Fellowships</b>	2019 – 2020
Jason Zhou, Duke University	2019 – 2020
Joseph DeChicchis, Duke University	2019 – 2020
Camden Vassallo, Duke University	Fall 2019
Michael Zhang, Duke University	Fall 2019
Jovan Stojkovic, University of Belgrade, visiting REU student at Duke University	Summer 2019
Courtney Johnson, North Carolina A&T State University, visiting REU student at Duke University	Summer 2019
Charles Papandreou, Duke University	2019
Madeline Wilkinson, Duke University	Spring 2019
Kunaal Sharma, Duke University	Spring 2019
Surin Ahn, Princeton University. <b>Stanford University Graduate Fellowship</b>	2017 – 2018
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
Kanghwan Kim, Cooper Union, visiting student at Columbia University	2012 – 2013
Luis Pena, Columbia University	2012 – 2013
Mina Cong, Columbia University. <b>Electrical Engineering Department Research Award</b>	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

### **B.S. Honors and Graduation with Distinction projects:**

Advisor: Duke University: Tiffany Ma 2024; Ritvik Janamsetty 2024; Seijung Kim 2023; Neha Vutakuri 2023; Ashley Kwon 2021; Joseph DeChicchis 2020.

Reader: Duke University: Cyan DeVeaux, 2020. Princeton University: Surin Ahn, 2018, Akash Levy, 2018.

### **High school students:**

Junfeng Lin, Duke University / North Carolina School of Science and Mathematics	Summer 2024 - present
Tristan LoGuidice, Duke University / North Carolina School of Science and Mathematics	Summer 2024 - present
Vanessa Tang, Duke University / North Carolina School of Science and Mathematics	2023 – 2024
Jonathan Zeng, Duke University / North Carolina School of Science and Mathematics	2023 – 2024
Juan Blanco, Duke University. <b>DukeRep Outstanding Trainee Award</b>	Summer 2019
Kyle Ready, Princeton University	Summer 2018
Chang Sun, Columbia University	2011 – 2012
Shakhul Hai, Columbia University	Summer 2009

### **Programs for involving undergraduate students in research:**

NSF REU Site for Meeting Grand Challenges of Engineering for the 21 <sup>st</sup> Century, Duke University	2019 – present
NSF Center for Integrated Access Networks REU Site, Columbia University	2010, 2012

### **Programs for involving high school students in research:**

## MARIA GORLATOVA: CURRICULUM VITAE

North Carolina School of Science and Mathematics Mentorship Program	2023 – present
Duke Research in Engineering Program for high school students (DukeREP)	2019
Harlem Children Society High School Program	2009, 2011 – 2012

### Other:

<b>Mentoring:</b> Duke University Code+ team, Augmented Reality for Duke Lemur Center project	2020
---	------

## UNIVERSITY SERVICE

### Departmental committees:

PoP Reappointment Committee, Electrical and Computer Engineering Dept., Duke University	2023
Computer Engineering Faculty Candidates Zoom Screening, ECE Dept., Duke University	2023
Faculty Search Committee, Mechanical Eng. and Material Science Dept., Duke University	2021 – 2022
Faculty Search Committee, Electrical and Computer Engineering Dept., Duke University	2021 – 2022
Graduate Studies Committee, Electrical and Computer Engineering Dept., Duke University	2021 – 2022
Academic Dishonesty Panel: Software. Electrical and Computer Engineering Dept., Duke University	Fall 2021
Undergraduate Studies Committee, Electrical and Computer Engineering Dept., Duke University	2019 – 2021
Faculty Search Committee, Computer Science Dept., Duke University	2018 – 2019

### PhD thesis committees, Electrical and Computer Engineering Department, Duke University:

Pingcheng Jian, Apr. 2024 – present. Preliminary exam May 2024. Adviser B. Chen.  
Jingwei Sun, Apr. 2022 - present. Preliminary exam May 2024. Adviser Y. Chen.  
Bhavna Gopal, 2024 – present. Adviser Y. Chen. Preliminary exam Jan. 2024.  
Hongbin Liu, 2023 – present. Adviser N. Gong.  
Tunhou Zhang, 2023 – present. Adviser Y. Chen. Preliminary exam Apr. 2023.  
Suya Wu, 2022 – 2023. Adviser V. Tarokh. Preliminary exam Aug. 2022. Defense March 2023.  
Jinyuan Jia, 2021 – 2022. Adviser N. Gong. Preliminary exam Oct. 2021. Defense July 2022.  
Ang Li, 2019 – 2022. Adviser Y. Chen. Preliminary exam Apr. 2021. Defense May 2022.  
Haibei Zhu, 2021. Adviser M. Cummings. Defense June 2021.  
Dan Sun, 2019 – 2021. Adviser B. Lee. Preliminary exam Apr. 2021.  
Lucy Chikwetu, 2019 – 2023. Advisers J. Dunn, R. Younes. Preliminary exam Apr. 2021. Defense Nov. 2023.  
Enmao Diao, 2021 – 2023. Adviser V. Tarokh. Preliminary exam Apr. 2021. Defense July 2023.  
Jiachen Mao, 2018 – 2020. Adviser Y. Chen. Preliminary exam Feb. 2020. Defense July 2020.  
Rana Elnaggar, 2018 – 2020. Adviser K. Chakrabarty. Preliminary exam Jan. 2019. Defense Aug. 2020.  
Kent Nixon, 2018 – 2019. Adviser Y. Chen. Preliminary exam Mar. 2019. Defense: Dec. 2019.  
Yuhao Li, 2019. Adviser B. Lee. Preliminary exam May 2019.  
Fan Chen, 2018 – 2019. Adviser Y. Chen. Preliminary exam Nov. 2019.

### PhD thesis committees, Computer Science Department, Duke University:

Xiao Zhang, 2019 – 2023. Advisers B. Maggs, X. Yang. Preliminary exam May 2021. Defense June 2023.  
Shengbao Zheng, 2018 – 2020. Adviser X. Yang. Preliminary exam Dec. 2018. Defense Mar. 2020.  
Nisarg Raval, 2018 – 2019. Adviser A. Machanavajhala. Defense Mar. 2019.

### PhD thesis committees, Civil and Environmental Engineering Department, Duke University:

Aaron Appelle, 2022 – present. Adviser J. Lynch. Preliminary exam Dec. 2022

### PhD thesis committees, Biomechanical Engineering Department, Duke University:

Yihang Jiang, 2022 – present. Adviser J. Dunn. Preliminary exam Jan. 2023

### PhD thesis committees, Department of Mechanical Engineering and Material Science, Duke University:

Kavinayan Sivakumar, 2023. Adviser M. Zavlanos. Thesis defense July 2023.

### Qualifying exams, Electrical and Computer Engineering Department, Duke University:

Zhihui Gao, Apr. 2023. Advisers T. Chen and Y. Chen

## MARIA GORLATOVA: CURRICULUM VITAE

David Hunt, Dec. 2022. Adviser M. Pajic  
Yuhao Wu, Apr. 2022. Adviser Y. Chen  
Chen-Chia Chang, Apr. 2022. Adviser H. Li  
Zhenzhou (Tom) Qi, Apr. 2022. Adviser T. Chen  
Pingcheng Jian, Apr. 2022. Adviser M. Zavlanos  
Shiyi Jiang, Apr. 2021. Adviser K. Chakrabarty  
Tunhou Zhang, Apr. 2021. Adviser Y. Chen  
Anne French, Apr. 2021. Adviser M. Cummings  
Shiyu Li, Apr. 2020. Adviser Y. Chen  
Ang Li, Oct. 2019. Adviser Y. Chen  
Dan Sun, Apr. 2019. Adviser B. Lee  
Lucy Chikwetu, Feb. 2019. Adviser D. Sorin  
Fan Chen, Oct. 2018. Adviser Y. Chen  
Jiachen Mao, Oct. 2018. Adviser Y. Chen

### Qualifying exams, Computer Science Department, Duke University:

Yuege Chen, May 2019. Adviser X. Yang  
Xiao Zhang, May 2019. Adviser B. Maggs

### MS thesis committees, Electrical and Computer Engineering Department, Duke University:

Afsana Chowdhury, 2022. Adviser M. Pajic. MS Thesis defense Nov. 2022.

### Other, Electrical and Computer Engineering Department, Duke University:

M.S. final exam poster session committee	2023
Faculty retreat panel speaker	2021
B.S. independent study poster competition judge	2018 – 2020
M.S. final exam poster session committee	2018

### Other:

Duke Bass Connections proposals reviewer	2021
GEM middle school girls' Summer Workshop faculty speaker	2019

## 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 INVITED TALKS

### Conferences and Workshops

#### Runtime Identification of Task-Detrimental Augmented Reality Experiences:

- Approaching AR Design & Development with a Security, Privacy, & Safety Mindset (*IEEE SafeAR*) Workshop, co-located with *IEEE ISMAR '24*, Seattle, WA, Oct. 2024.

#### Intelligent Mobile Augmented Reality: Promise, Challenges, and Solutions:

- Keynote speaker**, ACM Workshop on Embedded and Mobile Deep Learning (*ACM EMDL*), co-located with *ACM MobiSys'22*, Portland, OR, July 2022.

#### Towards Internet of Things-Supported Mobile Augmented Reality:

- AWE USA*, Santa Clara, CA, Nov. 2021. **Top AR/VR industry conference.**

#### Towards Edge Computing-Supported Mobile Augmented Reality:

## MARIA GORLATOVA: CURRICULUM VITAE

- *ABI Grace Hopper Celebration of Women in Computing*, Oct. 2020.
- *Princeton Edge Lab 10<sup>th</sup> Year Celebration*, Princeton, NJ, May 2019.
- *BioIT World Conference*, Boston, MA, Apr. 2019.

### Towards Intelligence on the Edge: Restructuring Computing to Enable the Next Generation of the IoT:

- *IBM Back to School Seminar Series*, Durham, NC, June 2019.
- *Industrial Internet Consortium (IIC) Technology Working Group* meeting, Raleigh, NC, Feb. 2019.
- *IEEE Fog World Congress*, San Francisco, CA, Oct. 2018.
- *IEEE Sarnoff Symposium*, Newark, NJ, Sept. 2018.

### Light, Motion, Fog: Networking Commonplace Objects with Energy Harvesting and Fog Computing:

- **Keynote speaker**, ACM Workshop on Energy Harvesting and Energy Neutral Systems (*ACM ENSys*), co-located with *ACM SenSys'17*, Delft, Netherlands, Nov. 2017.

### Fog Computing: Challenges and Solutions:

- *ABI Grace Hopper Celebration of Women in Computing*, Orlando, FL, Oct. 2017.

### The OpenFog Reference Architecture: Unified Framework and a Roadmap:

- *Through the Fog Workshop*, University of Pisa, Pisa, Italy, Feb. 2017.

### 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.
- Ph.D. Forum, ACM Conference on Mobile Systems, Applications, and Services (*ACM MobiSys'11*), Bethesda, MD, June 2011.
- *IDTechEx Energy Harvesting and Storage USA'10 Conference*, Boston, MA, Nov. 2010.

### **Selected Academic and Industrial Seminars**

### Runtime Identification of Task-Detrimental Augmented Reality Experiences:

- DARPA Intrinsic Cognitive Security (ICS) Program Kick-off Meeting, July 2024.

### Edge and IoT-supported Intelligent Augmented Reality: Promise, Challenges, and Solutions:

- Duke University-hosted U.S. Patent and Trademark Office Site Education Experience Program, May 2024.
- *University of Michigan Department of Electrical and Computer Engineering*, Communications and Signal Processing Seminar Series, Apr. 2024.
- *University of Texas at San Antonio, UTSA Matrix AI Consortium*, Mar. 2024.
- *University of Southern California Department of Electrical and Computer Engineering*, Cyber-physical Systems Seminar Series, Nov. 2023.
- *Arizona State University Department of Electrical and Computer Engineering*, Nov. 2023.
- *Carnegie Mellon University Department of Electrical and Computer Engineering*, Nov. 2023.
- NSF Computer Systems Research (CSR) PI meeting, *Duke University*, Oct. 2023.
- GVVU Brow Bag Seminar Series, *Georgia Tech*, Sept. 2023.
- *University of North Carolina at Chapel Hill Department of Computer Science*, Sept. 2023.
- Duke Computational Medicine Seminar Series, *Pratt School of Engineering, Duke University*, Sept. 2023.  
**Inaugural speaker.**

### Intelligent Mobile Augmented Reality: Promise, Challenges, and Solutions:

- Distinguished Researcher Speaker Series, *Accenture Labs*, May 2023.
- *Rice University, Department of Computer Science*, Oct. 2022.
- *NSF AI Athena Institute*, Durham, NC, June 2022.

### Distributed Mobile Augmented Reality Architectures:

## MARIA GORLATOVA: CURRICULUM VITAE

- *Augmented Reality for Enterprise Alliance (AREA)*, Feb. 2022. AREA is a global non-profit organization dedicated to widespread adoption of interoperable AR-enabled enterprise systems. AREA members include Boeing, Lenovo, Magic Leap, Medtronic, NIST, Qualcomm, and Siemens.

### Edge Computing-Supported Mobile Augmented Reality:

- *Missouri S&T University, Department of Computer Science*, Nov. 2020.

### Towards Intelligence on the Edge: Restructuring Computing to Enable the Next Generation of the IoT:

- *Duke University Pratt School of Engineering TEER Talk*, Mar. 2019.

### Life on the Edge: Connecting Everyday Objects with Energy Harvesting and Fog Computing:

- *University of Toronto Department of Electrical and Computer Engineering*, Apr. 2018.
- *University of Toronto Department of Computer Science*, Apr. 2018.
- *University of Virginia School of Engineering and Applied Science*, Mar. 2018.
- *University of Minnesota Twin Cities Department of Computer Science and Engineering*, Mar. 2018.
- *Cornell University Department of Electrical and Computer Engineering*, Mar. 2018.
- *Cornell Tech*, Mar. 2018.
- *Northeastern University Department of Electrical and Computer Engineering*, Mar. 2018.
- *University of Pennsylvania Department of Electrical and Systems Engineering*, Mar. 2018.
- *University of Victoria Department of Computer Science*, Mar. 2018.
- *Yale University Departments of Electrical Engineering and Computer Science*, Mar. 2018.
- *University of Wisconsin at Madison, Electrical and Computer Engineering Department*, Feb. 2018.
- *Duke University Pratt School of Engineering*, Feb. 2018.
- *George Washington University Department of Electrical Engineering*, Feb. 2018.

### 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.

### In and Out of the Fog: Working with Industry to Define New Computing Architectures:

- *Princeton University Postdoctoral Council Seminar Series*, June 2017.

### Towards Networking Commonplace Objects:

- *UC Santa Barbara Department of Electrical and Computer Engineering*, Mar. 2017.
- *Princeton University Department of Electrical Engineering EDGE Lab*, June 2016.
- *Carnegie Mellon University Department of Electrical and Computer Engineering*, June 2016.
- *Fujitsu Laboratories of America*, Sunnyvale, CA, May 2016.

### Energy Harvesting Active Networked Tags for Ubiquitous Object Networking:

- *Imperial College London Department of Electrical Engineering*, July 2013.
- *Microsoft Research*, Seattle, WA, Mar. 2013.
- *Qualcomm*, Systems Engineering Group Seminar Series, San Diego, CA, Feb. 2013.
- *AT&T*, Technology Security Group, New York, NY, Jan. 2013.
- *IEEE Ottawa Signal Processing Society*, Ottawa, ON, Canada, Nov. 2012.
- *Walt Disney Research Zurich*, Zurich, Switzerland, Mar. 2012.
- *Defense R&D Canada*, Network Information Operations Group Seminar Series, Ottawa, ON, Canada, May 2011.
- *Telcordia Technologies Applied Research*, Piscataway, NJ, Dec. 2010.

### Wormhole Attack Detection in Wireless Ad Hoc Networks:

- *University of British Columbia Department of Electrical Engineering*, Feb. 2007.

### **Panel Presentations & Lightning Talks**

[IMM24] Edge and IoT-supported Augmented Reality, UIUC IMMERSE Seminar, Urbana, IL, Feb. 2024.

[**FLI23**] Duke Alumni Lifelong Learning: Big Questions – What is Real? Creating Alternative Realities at Duke University I<sup>3</sup>T Lab, virtual, May 2023.

[**WoWMoM20**] AR/VR/XR over Wireless Networks: Challenges and Opportunities, IEEE WoWMoM, virtual, Sept. 2020.

[**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.

[**NYCMeetup17**] Fog Computing and the Internet of Things, *IoT Central NYC Meetup*, New York City, NY, Apr. 2017.

#### Invited Lectures

[**Duke19**] Edge Computing: New Frontier in Distributed Systems and Networking, Duke University CS514 Computer Networks/Distributed Systems, Nov. 2019.

[**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.

#### Podcasts

[**SERadio18**] On Edge Computing, *Software Engineering Radio Podcast*, Aug. 2018

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

## SELECTED MEDIA COVERAGE

#### External:

[**NSF22**] Simulated Human Eye Movement Aims to Train Metaverse Platforms, *NSF Discoveries*, March 2022, <https://beta.nsf.gov/news/simulated-human-eye-movement-aims-train-metaverse>

[**MITHorizon21b**] Edge Computing and Other Technologies: An Overview of Edge Computing's Impact on Other Technology Fields, *MIT Horizon*, Edge Computing Series, Dec. 2021

[**MITHorizon21a**] The Advantages and Opportunities of Edge Computing, *MIT Horizon*, Edge Computing Series, Nov. 2021

[**NetworkWorld18**] Augmented Reality, Fog, and Vision: Duke Professor Outlines the Importance of Smart Architectures, *Network World*, Oct. 2018  
<https://www.networkworld.com/article/966430/augmented-reality-fog-and-vision-duke-professor-outlines-importance-of-smart-architectures.html>

[**NewYorker17**] If Donald Trump Were Actually a Battery, *The New Yorker*, 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  
<https://www.technologyreview.com/2014/05/20/172797/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  
<https://www.technologyreview.com/2013/07/11/177399/human-motion-will-power-the-internet-of-things-say-energy-harvesting-engineers/>

MARIA GORLATOVA: CURRICULUM VITAE

*Duke University publications:*

**[DukeEyeCenter23]** AR-assisted Guidance System for Retinal Laser Therapy, *Duke Eye Center VISION Magazine*, July 2023.

**[DukeECE22]** The Dawning of the Age of the Metaverse, *Duke ECE Magazine*, Oct. 2022, <https://magazine.pratt.duke.edu/2022/the-dawning-of-the-age-of-the-metaverse> **Duke ECE Magazine Cover Story**

**[DukePratt20]** Students Code Alternate Realities, *Duke Pratt School of Engineering*, Aug. 2020  
<https://pratt.duke.edu/about/news/students-code-alternate-realities>