Ekaterina**Tolstaya**

contact

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(240) 449 5602

languages

English fluency
Russian fluency

programming

Python, C++, Java

coursework

Machine Learning,
Advanced Robotics,
Learning in Robotics,
Convex Optimization,
Probability Theory

education

2016–	**Ph.D.** in Electrical Engineering	University of Pennsylvania

- Advised by Dr. Alejandro Ribeiro, Dr. Vijay Kumar
- National Science Foundation Graduate Research Fellow

2016–2017	**M.Sc.** in Robotics	University of Pennsylvania
2012–2016	**B.Sc.** in Electrical Engineering, Magna Cum Laude	University of Maryland
	B.Sc. in Computer Science	

industry

2018   **Microsoft Research**   Redmond, WA

Research Intern, *Adaptive Systems and Interaction Group*

- Implemented an inverse optimal control algorithm to learn from real air traffic
- Developed motion planning applications for the AirSim autonomous vehicle simulator and worked to enable Linux support

2016   **Microsoft**   Mountain View, CA

Electrical Engineering Intern, *Hololens Hardware*

- Designed test tools for signal integrity and DC resistance measurements
- Implemented a software-defined power supply, including a DC/DC converter, embedded system design, and C software implementation

2015   **Microsoft**   Redmond, WA

Electrical Engineering Intern, *New Product Introduction*

- Conducted failure analysis on next-generation hardware
- Performed statistical analysis of the data from the hardware assembly line to support the factory process change and increase the return on investment

2014   **Texas Instruments**   Richardson, TX

Semiconductor Engineering Intern, *Process Integration and Parametric Test*

- Developed an online system for notifying engineers about trends in the factory's parametric test results using R
- Analyzed data from passive and active experiments to support a test process change and reduce factory costs

research

2016–   **GRASP Laboratory at the University of Pennsylvania**   Dr. Alejandro Ribeiro, Dr. Vijay Kumar

Research Assistant

Reinforcement learning for aerial robotics using kernel function approximation

- Integrated OpenAI Gym with the ROS, Gazebo and MAVROS-based OpenUAV simulation stack for modular reinforcement learning experiments
- Formulated and implemented using Python state-action value function approximation methods for problems with continuous state and action spaces

2015–2016   **Intelligent Servosystems Laboratory**   Dr. P.S. Krishnaprasad, University of Maryland

Women in Engineering Research Fellow

Mobile robot navigation using sound source localization and human body tracking

- Integrated dead reckoning using sound source localization and beacon following using human body tracking in C#
- Implemented network algorithms for quickly and effectively transmitting a rich data set from a laptop connected to the Kinect to a computer running ROS

2013–2015   **MEMS, Sensors and Actuators Laboratory**   Dr. Reza Ghodssi, University of Maryland

Women in Engineering Research Fellow, RISE Honors Program Fellow

- Real time biofilm sensing using electrochemical methods
- Designed inductive-capacitive sensor for real-time biofilm monitoring

publications

2018   **E. Tolstaya**, E. Stump, A. Koppel, and A. Ribeiro, "Composable Learning with Sparse Kernel Representations,", International Conference on Intelligent Robots and Systems (IROS), Oct. 1-5, 2018.

2018   **E. Tolstaya**, A. Koppel, E. Stump, and A. Ribeiro, "Nonparametric Stochastic Compositional Gradient Descent for Q-Learning in Continuous Markov Decision Problems,", American Control Conference, June 27-29, 2018.

2018   A. Koppel*, **E. Tolstaya***, E. Stump, and A. Ribeiro, "Nonparametric Stochastic Compositional Gradient Descent for Q-Learning in Continuous Markov Decision Problems,", IEEE Trans. Automatic Control (submitted), Mar. 2018.

2017   S. Subramanian, **E. Tolstaya**, T. Winkler, W. E. Bentley, and R. Ghodssi, "An Integrated Microsystem for Real-Time Detection and Threshold-Activated Treatment of Bacterial Biofilms," ACS Appl. Mater. Interfaces, 2017, 9 (37), pp 31362–31371.

2016   S. Subramanian, **E. Tolstaya**, W. E. Bentley, and R. Ghodssi, "Real-time impedimetric sensing of bacterial biofilms in microfluidics," 26th Anniversary World Congress on Biosensors, May 25-27, 2016.

2014   **E. Tolstaya**, Y. Kim, S. Chu, K. Gerasopoulos, W. E. Bentley, and R. Ghodssi, "An Inductive-Capacitive Sensor for Real-time Biofilm Growth Monitoring," American Vacuum Society 61st International Symposium, November 9-14, 2014.

2014   M. Gnerlich, **E. Tolstaya**, J. N. Culver, D. Ketchum, and R. Ghodssi, "Solid Microsupercapacitor using Directed Self-Assembly of Tobacco Mosaic Virus and RuO2," American Vacuum Society 61st International Symposium, November 9-14, 2014.

teaching

2018	**Signal and Information Processing** *Graduate Teaching Assistant*	University of Pennsylvania
2017	**Stochastic Systems Analysis and Simulation** *Graduate Teaching Assistant*	University of Pennsylvania
2016	**Introduction to Electrical and Computer Engineering** *Undergraduate Teaching Fellow*	University of Maryland
2015	**Introduction to Electrical and Computer Engineering** *Undergraduate Teaching Fellow*	University of Maryland
2014	**Introduction to Engineering Design** *Laboratory Teaching Fellow*	University of Maryland

interests

professional: aerial robotics, reinforcement learning, planning, simulation, sensing
personal: weightlifting, snowboarding, travel