

# Ekaterina Tolstaya

## contact

56 Steeple CT,  
Germantown, MD  
20874 USA

(240) 449 5602

kate.tolstaya@gmail.com

katetolstaya.com

## languages

English fluency  
Russian fluency

## programming

Java, C, R, HTML, CSS,  
Android

## software

Matlab, LabVIEW, JMP,  
Autodesk Inventor,  
Cadence/PSPICE

## coursework

Antennas Laboratory,  
Networks, Controls,  
Computer Vision,  
Signals and Systems

## education

- 2012–2016 **B.Sc.** in Electrical Engineering: 3.95/4.0 University of Maryland  
**B.Sc.** in Computer Science
- Banneker/Key Full Academic Scholarship
  - Research, Instruction, Service and Entrepreneurship Honors Program
  - Electrical and Computer Engineering Departmental Honors Program
  - Flexus Women in Engineering Program

## research experience

- 2013–Now **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 and simulated an inductive-capacitive sensor for real-time biofilm growth monitoring
  - Learned and utilized microfabrication techniques, such as photolithography, in order to construct the sensor
  - Developed a modular experimental setup and demonstrated the high sensitivity of the sensor in static biofilm growth conditions
- Development of testing methods for biotemplate enhanced supercapacitors
- Designed and constructed a modular experimental setup for testing four supercapacitor devices in parallel
  - Developed a LabVIEW interface to monitor test chamber conditions
  - Fabricated supercapacitor devices using self-assembling biotemplates
- 2015–Now **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
- Effectively integrated dead reckoning using sound source localization and beacon following using human body tracking
  - Implemented network algorithms for quickly and effectively transmitting a rich data set from a laptop connected to the Kinect to a computer running the Robot Operating System
- 2013 **National Institutes for Standards and Technology** Dr. Veronika Szalai, CNST  
*Summer Undergraduate Research Fellow*  
 Characterizing a solar fuels catalyst
- Characterized and tested a copper-polypeptide solar fuels catalyst using spectroelectrochemical techniques
  - Designed and constructed cells for cyclic voltammetry, electron paramagnetic resonance, and absorbance spectroelectrochemistry
- 2011–2013 **Institute for Bioscience and Biotechnology Research** Dr. James Culver, University of Maryland  
*Women in Engineering Research Fellow, High School Intern*  
 Characterizing the Tobacco Mosaic Virus as a Biotemplate
- Developed nanoparticles and nanowires for sensing and solar power applications
  - Demonstrated using TEM microscopy the formation of nanowires within a bionanotemplate

## industry experience

- 2015 **Microsoft** Redmond, WA  
*Electrical Engineering Intern*  
New Product Introduction
- Conducted failure analysis on next-generation hardware to improve product quality
  - Performed statistical analysis of the data from the hardware assembly line to support a factory process change and increase the return on investment
  - Characterized components for next generation hardware
- 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
  - Analyzed data from passive and active experiments to support a test process change and reduce factory costs
  - Collaborated effectively with engineers across process integration and product engineering groups

## teaching

- 2015 **Introduction to Electrical and Computer Engineering** University of Maryland  
*Undergraduate Teaching Fellow*
- 2014 **Introduction to Engineering Design** University of Maryland  
*Laboratory Teaching Fellow*

## publications and press

- 2014 *Presenter*  
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, Baltimore, MD, November 9-14, 2014.
- 2014 *Co-author*  
M. Gnerlich, E. Tolstaya, J. N. Culver, D. Ketchum, and R. Ghodssi, "Solid Micro-supercapacitor using Directed Self-Assembly of Tobacco Mosaic Virus and RuO<sub>2</sub>," American Vacuum Society 61st International Symposium, Baltimore, MD, November 9-14, 2014.
- 2015 *Author*  
B. Schlotfeldt, E. Tolstaya, L. Xu, "ALIS: Augmented Language Immersion System," Metamind.io, June 6, 2015.
- Android application utilizing Google Cardboard, Microsoft Translator, and MetaMind API
  - Microsoft Best Hack at Bitcamp 2015

## leadership experience

- 2015–Now **Eta Kappa Nu Honor Society** University of Maryland  
*Professional Development Chair*
- 2014–2015 **Theta Tau Professional Engineering Fraternity** University of Maryland  
*Webmaster*
- 2014–2015 **Institute of Electrical and Electronics Engineers** University of Maryland  
*Webmaster*

## interests

**professional:** sensing, networks, wireless, robotics, human-robot interaction  
**personal:** snowboarding, cycling, dance.