# MICHAEL J. DANIELCZUK

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## EDUCATION

**University of California, Berkeley** 2017-present
*Ph.D. Student, Electrical Engineering* GPA: 3.96

**Princeton University** 2012-2016
*BSE, Electrical Engineering,* GPA: 3.88
*Magna Cum Laude*
Certificates in Robotics and Intelligent Systems, Computer Science, and Italian Language

## ACHIEVEMENTS

**Peter Mark Prize** 2016
Awarded annually to one graduate with an outstanding record in electronic materials and devices

**Phi Beta Kappa** 2016
Elected to academic honor society Phi Beta Kappa, representing the top 10% of Princeton's graduating class

**Society of Sigma Xi** 2016
Elected as an Associate Member

**Gamma Kappa Alpha** 2016
Elected to the National Italian Honor Society

**Tau Beta Pi** 2014
Elected to engineering honor society Tau Beta Pi as a junior, representing the top eighth of engineering class

**Dorothea van Dyke McLane Prize** 2013
One of six to receive the Dorothea van Dyke McLane Prize, which recognizes outstanding freshmen in Italian

**Eagle Scout (Boy Scouts of America)** 2012

## LEADERSHIP

**Bay Area Scientists in Schools** 2017-present
Robotics Mentor to elementary school students

**Princeton University** 2012-2016
Leader Trainer & Instructor, Outdoor Action
Tutor, McGraw Center
Captain & Treasurer, Running Club

**FIRST LEGO League** 2011-2012
Robotics Mentor to faculty children

## SKILLS

**Programming Languages:**
C, C++, Python, Matlab, Java, JavaScript

**Software/Frameworks:**
Altium Designer, Cadence, ROS, QT, Bullet

**Languages:**
Italian, Latin, Etruscan

## PROFESSIONAL EXPERIENCE

**VirtualAPT** | New York, NY 2016-2017
*Head of Electrical Engineering*
- Designed hardware and software for robots that map and autonomously navigate retail, commercial, and residential spaces for filming virtual reality video
- Built a lens and camera system to capture and wirelessly stream 360 x 180° video

**MIT Lincoln Laboratory** | Lexington, MA 2015
*Intern, Group 87, Advanced Imager Technology*
- Worked in the Advanced Imager Technology group to characterize charge-coupled devices (CCDs) under development
- Implemented optical test setups, collected and analyzed data, and presented to the group

**Nufern** | Granby, CT 2014
*Intern, R&D Laser, Electrical Engineering*
- Designed and assembled printed circuit boards (PCBs) to test lasers under development
- Tested lasers being produced and developed documentation for future testing

**Northeast Utilities** | Berlin, CT 2013
*Student Technician, Transmission Protection and Controls Engineering*
- Analyzed faults on transmission power lines and reported on system performance
- Corrected schematic diagrams to ensure substations operated correctly during faults

## RESEARCH & PUBLICATIONS

**Research Groups:**

*Automation Sciences Lab, Professor Ken Goldberg, UC Berkeley* 2017-present
- Develop a control policy for a robot that extracts specific objects for robust manipulation
- Analyze linear pushing policies for a robot to improve grasping of objects in a bin
- Develop computer vision algorithm to segment arbitrary objects by training on synthetic depth images

*Sturm Lab, Professor James Sturm, Princeton University* 2015-2016
- Researched and wrote a senior thesis which focused on creating an array of microphones from thin film piezoelectric materials that could perform simultaneous source separation
- Analyzed performance of several piezoelectric and electroferret materials and successfully built a working microphone array

**Publications:**

- Xu, J., **Danielczuk, M.**, Ichnowski, J., Mahler, J., Steinbach, E., Goldberg, K. (2019). Minimal Work: A Grasp Quality Metric for Deformable Hollow Objects. *arXiv preprint arXiv:*1909.11226.
- **Danielczuk, M.**, Xu, J., Mahler, J., Matl, M., Chentanez, N., Goldberg, K. (2019). REACH: Reducing False Negatives in Robot Grasp Planning with a Robust Efficient Area Contact Hypothesis Model. *International Symposium of Robotics Research (ISRR).*
- Correa, C., Mahler, J., **Danielczuk, M.**, Goldberg, K. (2019). Robust Toppling for Vacuum Suction Grasping. *IEEE Int. Conf. on Automation Science and Engineering (CASE).*
- Wang, D., Tseng, D., Li, P., Jiang, Y., Guo, M., **Danielczuk, M.**, Mahler, J., Ichnowski, J., Goldberg, K. (2019). Adversarial Grasp Objects. *IEEE Int. Conf. on Automation Science and Engineering (CASE).*
- Dong, Z., Krishnan, S., Dolasia, S., Balakrishna, A., **Danielczuk, M.**, Goldberg, K. (2019). Automating Planar Object Singulation by Linear Pushing with Single-point and Multi-point Contacts. *IEEE Int. Conf. on Automation Science and Engineering (CASE).*
- Mahler, J., Matl, M., Satish, V., **Danielczuk, M.**, DeRose, B., McKinley, S., Goldberg, K. (2019). Learning Ambidextrous Robot Grasping Policies. *Science Robotics*, 4(26), eeau4984.
- **Danielczuk, M.**, Matl, M., Gupta, S., Li, A., Lee, A., Mahler, J., & Goldberg, K. (2019). Segmenting Unknown 3D Objects from Real Depth Images using Mask R-CNN Trained on Synthetic Point Clouds. *IEEE Int. Conf. on Robotics and Automation (ICRA).*
- **Danielczuk, M.***, Kurenkov, A.*, Balakrishna, A., Matl, M., Martín-Martín, R., Garg, A., Savarese, S., & Goldberg, K. (2019). Mechanical Search: Multi-Step Retrieval of a Target Object from Clutter. *IEEE Int. Conf. on Robotics and Automation (ICRA).*
- **Danielczuk, M.**, Mahler, J., Correa, C., Goldberg, K. (2018). Linear Push Policies to Increase Grasp Access for Robot Bin Picking. *IEEE Int. Conf. on Automation Science and Engineering (CASE).*