

# Bereket Abraham

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## EDUCATION

### Carnegie Mellon University

*Master of Science, Mechanical Engineering*, GPA 3.9/4.0  
Concentration: Robotics

Pittsburgh, PA

May 2017

### Princeton University

*Bachelor of Science in Engineering, Mechanical and Aerospace Engineering*, GPA 3.1/4.0  
Certificates in Applied and Computational Mathematics, Applications in Computing, and Robotics

Princeton, NJ

June 2013

## PROJECT EXPERIENCE

### RoboBuggy, Robotics Club, CMU

Fall 2016

- Leading the autonomous software sub-team for the RoboBuggy project, a self-driving downhill racer.
- Simulated and redesigned the Kalman filter based localizer and the trajectory planning routine. Tested monocular vision based SLAM algorithms for local path planning and obstacle avoidance.

### Monocular Visual-Inertial State Estimation, Fields Robotics Center, CMU

Fall 2016

- Optimizing an experimental ROS software package in order to run in real-time on a quadrotor.

### Window Washer Robot, Mechatronic Design, CMU

Spring 2016

- Designed and fabricated a robot that could traverse vertical glass surfaces, as part of a team of five.
- Managed the control software, simulation, web development and joint design to enable horizontal motion.

## WORK EXPERIENCE

### NASA Goddard Space Flight Center

*Mechanical Engineer Intern*, Systems Engineering Team

Greenbelt, MD

May 2016 – August 2016

- Analyzed requirement verification reports in order to assess readiness to launch for the GOES-R weather satellite program.

### AppNexus, Inc.

*Software Engineer*, Web Services

New York, NY

January 2015 – January 2016

- Implemented reporting features using C in core real-time web application to enhance ad buying product.
- Built out multiple web based API services in Java and PHP to decouple integration between systems.
- Built and maintained third party integrations with partner ad exchanges to unlock client spend.

### Associate Technical Consultant, Global Services

July 2013 – December 2014

- Administered databases and servers, supported legacy code, developed best practices, integrated with third-party systems, and gathered requirements for the Services department.
- Advised clients on the AppNexus data warehouse, reviewed different technologies for data storage, and wrote ETL scripts to help export certain datasets.

### Florida State University

*Research Intern*, Computational Fluids Laboratory

Tallahassee, FL

June 2012 – March 2013

- Utilized CFD Fortran code in order to simulate low speed, unsteady flow around a cylinder, which has applications in small-scale flight, such as the bio-inspired flow of birds and fish.

## OTHER

**Programming Languages:** C, C++, Java, MATLAB, Python, JavaScript, PHP, HTML, MySQL, Bash

**Past Projects:** neural network based object detection, Internet enabled LED table, orbital simulation web app

**Organizations:** NSBE, CMU Robotics Club, Toastmasters, Engineers Without Borders

### Presentations:

Abraham, B. & Fleury, L. (August 2016). *Rocket Powered Descent in  $R^3$* . Paper presented at the NSBE Aerospace Systems Conference, Arlington, VA. Received the **Technical Paper Award** for best written paper.

Abraham, B., Taira, K. & Shih, C. (February 2013). *Low Reynolds number simulation of accelerating flow around 2D circular cylinders*. Poster session presented at the Emerging Researchers National Conference, Washington, DC.