Mitchell Fogelson

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Education

- **University of Pennsylvania** — Philadelphia, PA
  Master of Science in Robotics; GPA: 3.81 — *Aug. 2017 – May. 2018*
- **University of Pennsylvania - *Magna Cum Laude*** — Philadelphia, PA
  Bachelor of Engineering in Mechanical Engineering & Minor in Mathematics; GPA: 3.76 — *Aug. 2013 – May. 2017*

Experience

- **Rakuten Institute of Technology (RIT)** — Tokyo, JP
  Research Scientist; Robotics Team — *Sept. 2018 - Present*
  - **Role**: I am a robotics researcher investigating classical and novel approaches to design robots that create future value and opportunities for the Rakuten businesses.
  - **Robot Intent**: Leading a project with researchers in RIT Reality Domain and RIT Intelligence Domain, who focus on UX and speech recognition research respectively, to develop a novel concierge robot. We are investigating a combination of human-aware navigation, 3D projected animation and natural conversation to improve current robot platforms.
  - **Last Mile Delivery**: Led team of 4 engineers demonstrating navigation and manipulation in partially-known indoor and outdoor environments in an effort to retrieve and deliver a package. The robot consisted of a diff-drive mobile base and 5 axis robotic arm.
  - **Robotic Arm**: Created ROS, Gazebo, & MoveIt interface for 5 Axis Robotic Arm. Designed 0 DoF end effectors to interact in human environments (ex: Elevators and Doors).
  - **Mentorship**: Co-coordinated the RIT Power Domain internship program. Created project descriptions, led talent outreach and recruitment process. Mentored two of the summer interns, both who investigated implemented different model-based approach for generalized human-aware navigation in an office building.
- **Kod*Lab (Subsidiary of GRASP Lab)** — Philadelphia, PA
  Research Assistant — *Spring 2014 - Summer 2018*
  - **VIO for Legged Robots**: Investigated and integrated state of the art vision systems and VIO software to improve robot state estimation.
  - **Monopedal Hopping Robot**: Developed 3DoF [x, z, pitch] mono-pedal hopping robot, Planar Hopper. Built dynamic simulations to verify design robustness. Implemented and tuned hopping, fore-aft and pitch controllers.
  - **Robot Design and Manufacturing**: Designed molds for composite parts of XRhex robot. Fabricated composites using wet and dry layups. Manufactured 20+ distinct components for Planar Hopper using CNC mill, laser cutter and 3D printer.
  - **Lab Outreach**: Led tours, demonstrations and outreach for the lab.
  - **Undergraduate Coordination**: Supported recruitment and training for new undergraduate researchers.
- **University of Pennsylvania** — Philadelphia, PA
  Teaching Assistant ENGR105: Introduction to Scientific Computing and Matlab — *Spring 2018*
  - **Homework Design**: Designed new problem sets for the class.
  - **Lectures**: Presented two lectures on Basic Python programming and Matlab variable types.
- **iRobot** — Bedford, MA
  Robotics Engineering Intern; Tech Org — *Summer 2016 - Summer 2017*
  - **Robot Handling Research**: Designed proprietary new feature for Cleaning Development Team to reduces COGS, increases IEC benchmark performance, and improve consumer experience.
  - **Testing Framework Design**: Designed control panel for testing fixture, enhancing research efficiency. Increased accuracy of pressure tests by improving on sensor setup. Integrated and tuned new PID speed controller to improve testing framework.
- **COSY Robotics** — Philadelphia, PA
  Consultant — *Fall 2016 - Spring 2017*
  - **Mechanical Design and Manufacturing**: Designed shell and camera fixture for COSY robots.

Skills

- **Languages**: Python, C++, Matlab, Mathematica, Swift, Java
- **Robotics**: ROS, Gazebo, MoveIt, URDF, SDF
- **CAD Software**: Creo, Inventor, Solidworks
- **Manufacturing**: GD&T, 3D Printing, Laser cutting, Lathe, CNC & Manual Mill, Drill Press, Composite Fabrication
- **Electrical**: Soldering, Crimping, EAGLE, Circuit Design

Projects **Links to full reports embedded*

- **Planar Hopper**: [*Independent Study*] Developed a 3Dof [x, y, pitch] single legged hopping robot to test the stability of controllers implemented in isolation.
- **Stabilize**: [*Senior Design*] A 4Dof active camera stabilizer designed to improve vision systems for legged robots.
- **Acoustic SLAM**: [*Final Project*] Investigated low-cost SLAM implementation using an array of speakers.
- **VIO for robots**: [*Independent Study*] Investigated and integrated state of the art vision systems and VIO software for improving robot state estimation.
- **Magic Mirror**: [*Personal Project*] Designed frame and UI for smart mirror project expanding on open-source software.

Awards

- **Service Award**: Won the University of Pennsylvania Graduate School of Engineering Service Award for my support of undergraduate students, outside tutoring for Philadelphia high schoolers and tours for perspective students.
- **Magna Cum Laude**: Was awarded Magna Cum Laude for my BSE in Mechanical Engineering at the University of Pennsylvania.
- **Deans List**: I was awarded Deans list every year during my undergraduate studies at the University of Pennsylvania.