Brian Lui

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Permanent Address
69-06 175th street
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Current Address
108 5th Ave, Apt 302
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EDUCATION

Cornell University, Ithaca, NY — Aug. 2015 – Dec. 2019

- M.Eng in Mechanical Engineering
- B.S. in Mechanical Engineering
- GPA: 3.81
- *Relevant Coursework*: Dynamics, Nonlinear Dynamics, Vibrations, Feedback Control Systems, Mechatronics, Autonomous Mobile Robots, Machine Learning, Embedded Operating Systems, Statics and Mechanics of Engineering Materials

EXPERIENCE

Amazon Prime Air, Seattle, Washington

Hardware Development Engineer — Mar. 2019 – Present

- Conduct material level testing to enable development, qualification, and compliance with requirements and regulations for carbon fiber, adhesives, and core material used in the drone
- Perform trade studies for potting and filling adhesives for composite repair and foam core selection to improve robustness
- Manage a materials database for material properties necessary for ANSYS analysis

Product Design Engineer Intern — Jun. 2019 – Aug. 2019

- Investigated the root cause of carbon fiber porosity on the trailing edge of the wings of the drone
- Improved manufacturing and material selection to solve porosity problem and reduce overall vehicle weight
- Automated data parsing of experimental data from materials testing using Python scripts

Teaching Assistant, Cornell University, NY — Aug. 2018 – Dec. 2019

Mechatronics (Fall '18, Fall '19)

- Led a weekly 30 student lab section that taught students about circuits and the Arduino Uno to build an autonomous robot
- Held office hours and review sessions; answered questions on class message board; graded lab reports and homework

Biorobotics and Locomotion Laboratory, Cornell University, NY — Jun. 2017 – May 2018

Undergraduate Researcher under Professor Ruina

- Designed molds using SolidWorks to create the curved feet and shoes of a biped walking robot
- Manufactured the feet of the biped walking robot using wet carbon fiber, foams, and 3D printed molds
- Created a flexible PCB using Eagle that allowed pressure sensors to fit inside the feet of the robot

Hong Kong Dragon Boat Festival in New York, Whitestone, NY — Jul. 2015 – Aug. 2016

Logistics Coordinator (Summer '15, Summer '16)

- Planned the logistics of an annual festival with over 50,000 attendees
- Maintained positive relationships with over 30 corporate sponsors by providing a smooth experience before, during, and after the festival

PROJECTS

Autonomous Mobile Robots

- Programmed an iRobot Create to handle localization (extended Kalman filter, particle filter) and mapping (log odds) to autonomously traverse to waypoints (using a rapidly-exploring random tree and feedback linearization) on a map

Applied Dynamics

- Solved for periodic trajectories for a particle subject to a central force using trajectory optimization (single shooting, multiple shooting, collocation) through a nonlinear optimization in MATLAB

Embedded Operating Systems

- Analyzed the dynamics of a Furuta pendulum in MATLAB, then designed, machined, and controlled it using a Raspberry Pi 3 and stepper motor in real time in Python

SKILLS

Programming Languages: MATLAB, Python, Java, C
Computer Programs: SolidWorks, Autodesk Fusion 360, ANSYS, Autodesk EAGLE, Linux
Fabrication Skills: Lathes, Mills, 3D Printing, Laser Cutting, Soldering
Foreign Languages: Cantonese (Conversational)**,** Mandarin (Conversational)