

RACHEL HWANG

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EDUCATION

- Wellesley College**, Wellesley, MA **May 2019**
Bachelor of Arts in Applied Physics, Minor in Psychology
- Franklin W. Olin College of Engineering**, Needham, MA **May 2020**
Bachelor of Science in Mechanical Engineering
- University of Edinburgh**, Edinburgh, UK **Spring 2018**
School of Physics and Astronomy

SKILLS

3D Modeling Programs: SolidWorks, Fusion 360, Autodesk Inventor
Machine Shop: Lathe, Mill, Laser Cutting, 3D Printing
Languages: English, Mandarin

EXPERIENCE

Massachusetts Institute of Technology
MIT Media Lab, LEGO Wayfinder – Summer Research Intern, UROP **Summer 2018**

- Engineered working prototypes of underwater rovers, susceptible to high water pressures, focused around LEGO Mindstorms; designed and soldered sensors – pressure (depth), temperature, salinity – fit for underwater use
- Utilized Scratch X to code and program movements of rover
- Helped run workshop held by National Geographic. Eight groups of five students deployed our rovers in Boston Harbor and collected data from sensors and videos attached to rover

Department of Mechanical Engineering, Towing Tank Lab – Summer Research Intern, UROP **Summer 2017**

- Engineered wave absorption beach for the MIT Tow Tank using SolidWorks - designed and applied gradual increase of porosity and a parabolic shape to reduce wave reflection and maximize load force, analyzed existing beach model for further prototyping
- Implemented and improved design of beach provided by Wolfson Unit in UK by using SolidWorks to create and adapt optimal end beach to measured dimensions of Tow Tank
- Performed Finite Element Analysis (FEA) on SolidWorks model of beach to ensure it would reach minimal safety factor for optimal performance and be able to resist forces produced by waves from the wave maker
- Compiled part orders and drawings on SolidWorks for machining; served as a liaison between machining companies and the lab

University of California Berkeley
Department of Mechanical Engineering, Instar Lab – Summer Research Intern **Summer 2016**

- Devised experiments and conducted trials to collect and analyze data for different designs of pedal and braking systems using Fusion 360; optimized best fit to base of vehicle; created adjustable ergonomic pedal system with more foot contact area to accommodate people of different heights
- Independently and proactively refined specifications for easy fabrication prototypes
- Applied lathe skills to fabricate connectors and extenders for brake design; 3D printed prototypes of new pedal

ACTIVITIES AND PROJECTS

Olin Baja: Formula SAE **Fall 2018 - present**

- Aiding in design, building, and testing of Olin College's formula off-road vehicle
- Designing components for the chassis and suspension in SolidWorks – includes front and back e-stop mount, firewall, tabs, jigs
- Applying mill and lathe skills to fabricate suspension components

Mechanical Prototyping: Carp Diem & Looking for Nessie **Spring 2017**

- Designed and manufactured working mechanical structures using SolidWorks and GrabCad to object movements (carp "swimming" up a waterfall and man in search of disappearing Loch Ness monster) by utilizing four bar linkages, crankshaft, cam and cam follower, and gearbox complete with bevel gears, geneva drive, and pulleys
- Fabricated the mechanical structures entirely in the machine shop, including using ShopBot, mill, lathe, 3D printer and laser cutter

Robotics: Tugboat **Fall 2018**

- Implementing sensors, using C++ in Ubuntu and C in Arduino through serial communication, to create a working tugboat with object tracking and following, and decision making
- Sensors include sharp IR, sonar, inertial measurement unit, PixyCam, depth camera, linear actuator, DC brush motor, laser turret

Wellesley College Varsity Field Hockey: Student-Athlete **2015 – 2018**

- Excellent time management skills; easily malleable to team dynamics; demonstrating strong communication skills