TREY FORTMULLER

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EDUCATION

UC Berkeley College of Engineering — **Anticipated Graduation**
Bachelor of Science (BS), Engineering Physics, 3.15 GPA — **May 2019**

WORK EXPERIENCE

Engineering Intern — Faraday Future (Closures and Mechanisms Team) — **May 2017 — Jun 2017**

- Delivered dynamics models for power closures and actuator systems; implemented improved control strategies on a physical test rig
- Developed a camera based algorithm for determining the intensity of incident light using OpenCV in python; tested the algorithm on a physical test rig
- Prototyped and evaluated algorithms for monocular structure from motion to obtain a semi-dense point cloud using OpenMVG in python and C++

Undergraduate Researcher — Robot Learning Lab (UC Berkeley) — **Dec 2015 — Sept 2016**

- Handled mechanical design and fabrication of component mounting systems for a quadcopter under a PhD student applying deep reinforcement learning algorithms for quadcopter control in uncertain environments
- Manipulated flight controller firmware to allow for an onboard companion computer interface with an Nvidia Jetson embedded Linux machine
- Developed control scripts in python utilizing ROS, DroneKit, and a Vicon motion capture system for state estimation

PROJECT EXPERIENCE

President — UAVs@Berkeley — **Aug 2017 — Present**

- Facilitate communication with UC Berkeley administration on drone policy and operations on campus
- Coordinate acquisition of funding for the club from on and off campus sources
- Enact administrative and project management decisions to further the long-term vision of the organization

CALFPV Drone Racing Team — UAVs@Berkeley — **Aug 2015 — Present**

- Design and build acrobatic quadcopters capable of 85+mph utilizing first person view (FPV) analog video transmission
- Conduct research regarding the optimization of flight characteristics, weight, and durability of racing drones
- Competitively race the quadcopters against other collegiate pilots on a national scale

Vision Based 3D Scanner — CalHacks 4.0 — **Oct 2017**

- Built A desktop 3D scanner which utilizes photogrammetry techniques to generate high-fidelity digital meshes of real objects, won the prestigious Fellowship Award at UC Berkeley's hackathon
- Designed and fabricated the stepper driven actuators, coded the automation in C++
- Implemented the photogrammetry algorithm and mesh refinement in python

Custom Electric Longboard — **Jul 2017**

- Designed and cut a longboard deck using Autodesk Fusion 360 CAM tools on a CNC router, designed and 3D printed electronics housings for handheld remote and deck undercarriage
- Analyzed powertrain characteristics to specify motor, speed controller, gear reduction, and wheels requirements
- Implemented a custom receiver/transmitter for wireless control of the board using Arduino microcontrollers

SKILLS

- Python, C++, Matlab, LaTeX, UNIX, ROS, OpenCV, microcontrollers
- 3D CAD, 3D printing, laser cutting, CNC milling, water jetting
- Strategic planning, project management, teaming, research, rapid prototyping