

Projects by Izzy Brand

Here's a smattering of things I've made. For every project listed below it was either an individual project, or I was the leader of the team. There is so much more than I could include in this portfolio.

LED Music Visualizer, 2018

Raspberry Pi music visualizer written in python. Uses an ADC to sample the audio stream at 3.6kHz. FFT for responding to frequency. Flask webserver allows users to switch between visualization modes.



[github](#)

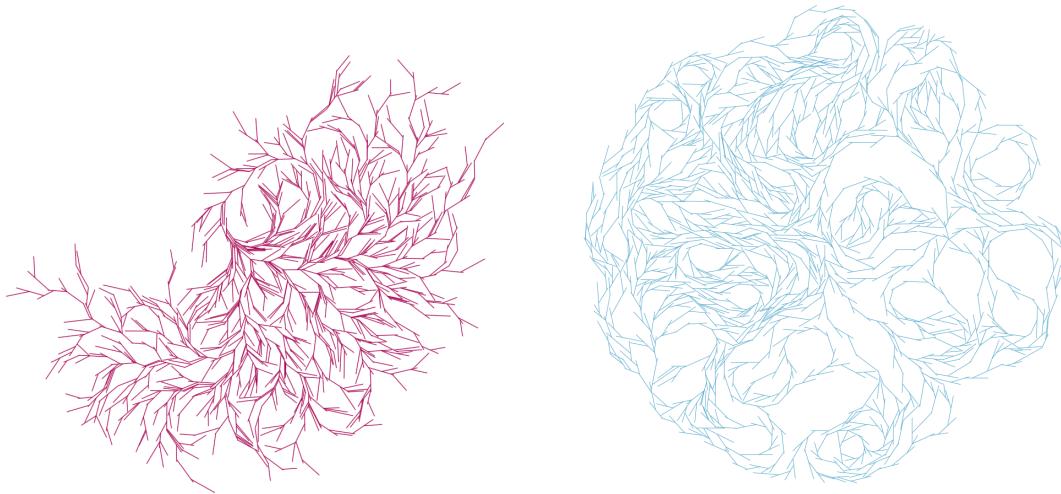
PiDrone and Robotics Course, 2017-2018

I developed a Raspberry Pi based drone. The drone uses a downward facing camera to localize. The entire flight controller stack is implemented in python using ROS. I TAed an introductory robotics course at Brown University in Fall 2017 in which every student built and programmed a drone. The course is running again this Fall, 2018.



Generated tree designs, 2018

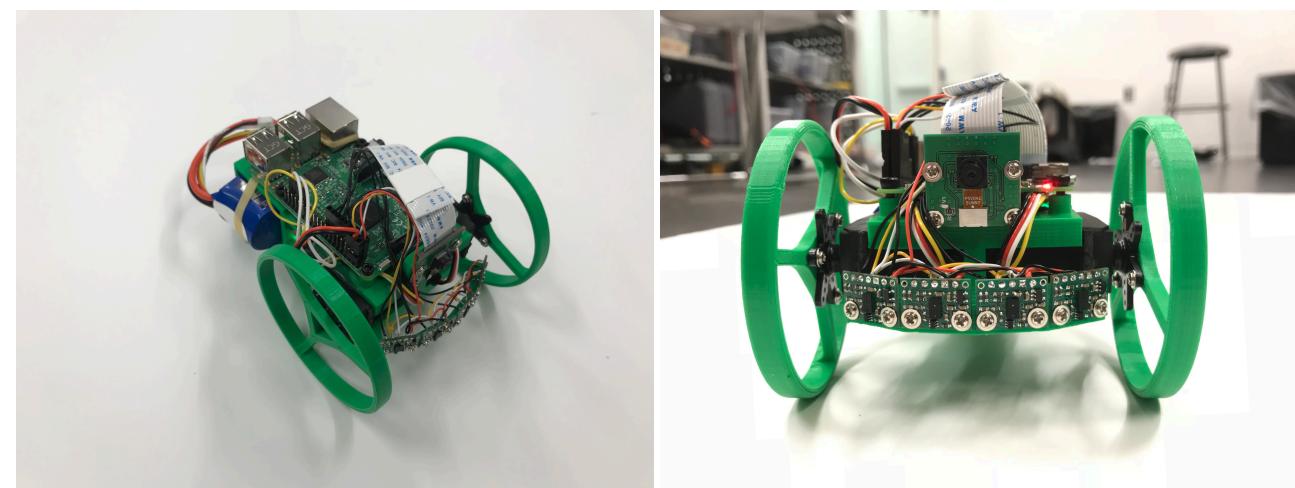
SVG line-art generated with python. I want to laser engrave these on wood.



[github](#)

Deep Q-Network Experiment, 2018

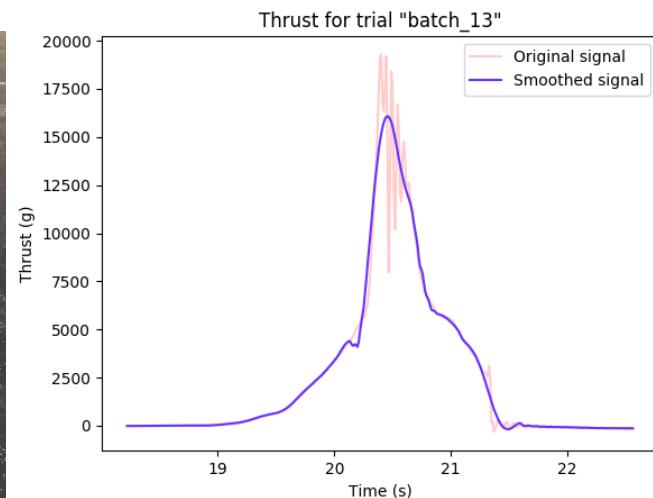
This little 3D-printed robot was an experiment in deep RL. I implemented a DQN with experience replay, and trained this robot to avoid obstacles without any simulation. Backprop handled on offboard GPU, forward pass on the onboard raspberry pi. After about 16 hours the robot was consistently able to avoid obstacles.



[github](#) | [Training progress video](#)

WiFi-Enabled Thrust Test Stand, 2017

A thrust test stand for evaluating rocket motors. An onboard Raspberry Pi hosts a WiFi access point and webserver. The user can access a local webpage to trigger the rocket. The pi triggers a relay to heat a nicrome igniter, and then samples a 40kg load cell at 80hz. Thrust data is stored locally, displayed on the local webpage, and automatically synced to github when the pi regains internet access.



[github](#)

Lunadrop Autonomous Drone Delivery, 2017

lunadrop is a comprehensive drone delivery system. Users visit our web app to place an order and select one of our designated delivery locations. A drone flies autonomously from the hub to the selected location, descends to deliver the package, and returns to the hub. In addition to the aircraft and LTE-equipped onboard computer, we built a server and implemented user and internal web apps for ordering and deploying the fleet.





[github](#) | [Demo video](#)

Assistive Rangefinder, 2017

After my grandfather blinded himself, I built this device to act like a cane. It used an ultrasonic distance sensor and would make a subtle noise to indicate how close he was to obstacles.



Lots and lots of rocket motors, 2016-2018

I prepared 100s of pounds of solid rocket fuel and tested hundred of rockets motors. We were perfecting our recipe, preparation procedure, and nozzle and chamber geometry.



[Thrust test data](#) | [Video of 42.2lb thrust test](#) | [Video of catastrophic chamber failure](#)

Voronoi Lamps, 2017

3D printed LED lamps



PonderBot, 2016

Twitter bot that makes frequent cryptic posts wondering about the universe and making contact with *them*. Sometimes *they* respond.



ponderbot

@ponderthem

Joined October 2016

9 Following 95 Followers

Tweets

Tweets & replies

Media

Likes



ponderbot @ponderthem · 1h

If only I knew.



Twitter

Electric Longboard, 2016-2018

I built an electric longboard to commute to work and school. Top speed is ~20mph, range ~10mi. The deck is CNCed. The board is controlled via a linear potentiometer in a 3D printed grip. I've been riding this board for 3 years and roughly 300 miles.



Heavy Lift X8, 2015

I designed and built a large X8 multirotor for Above Summit LLC. It was specced to lift a 15 pound gimbal payload for 25 minutes.



[Maiden flight video](#)

Panda Flying Wing, 2014

Homemade flying wing equipped with APM2.5 autopilot. Flight time 35+ minutes.



[Slow Motion Launch Video | Autonomous Flight to 1km](#)

Title, 2018

caption



github
