

Investigating the Biological Impacts of Radio Spectrum

The bee project group



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Website Link: <https://www.orbit-lab.org/wiki/Other/Summer/2020/Bees>

Objectives & Current Phase

- Bees use Earth's magnetic field for navigation and orientation.
- Explore if RF(Radio Frequencies) has any impact on the behaviors of the bees.

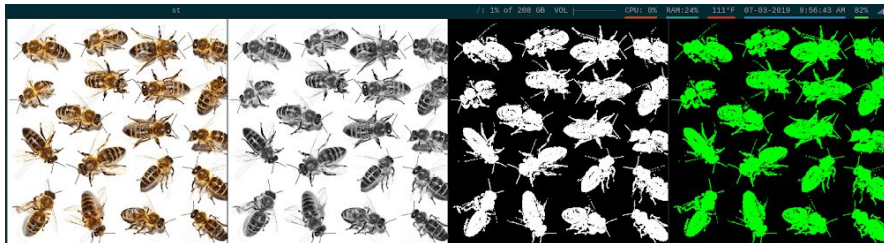


What we have done so far:

- A Method to conduct the experiment.
- A prototype for magnetic field sensing (using a magnetometer)
- Basic equipment design: camera, feeder pump

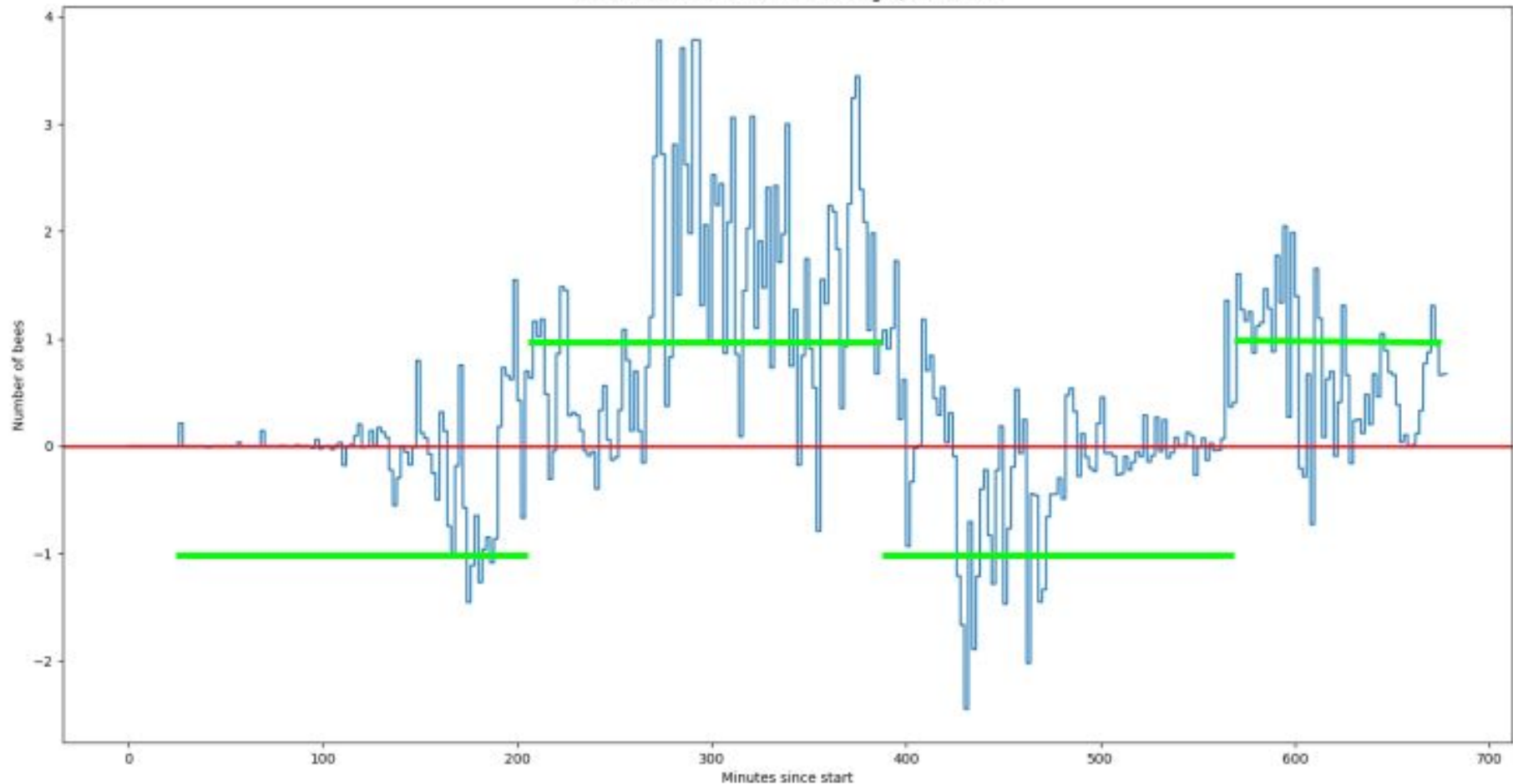
Recap of Image Processing Software

- V1 (Early July '19): Color Isolation
 - White balance, differing colors, etc



- V2 (Late July '19 - September '19): Dynamic Pixel Tracking
 - Shadows
 - <https://drive.google.com/file/d/12GdMmiRExjGG1vemcU4NxdCipRIQtK6L/view?usp=sharing>
 - Youtube Alternative: <https://youtu.be/y12ZpkWhowc>
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Smooth 120sec: Positive = More Right, Vice Versa



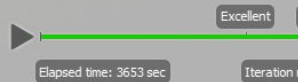
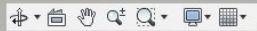
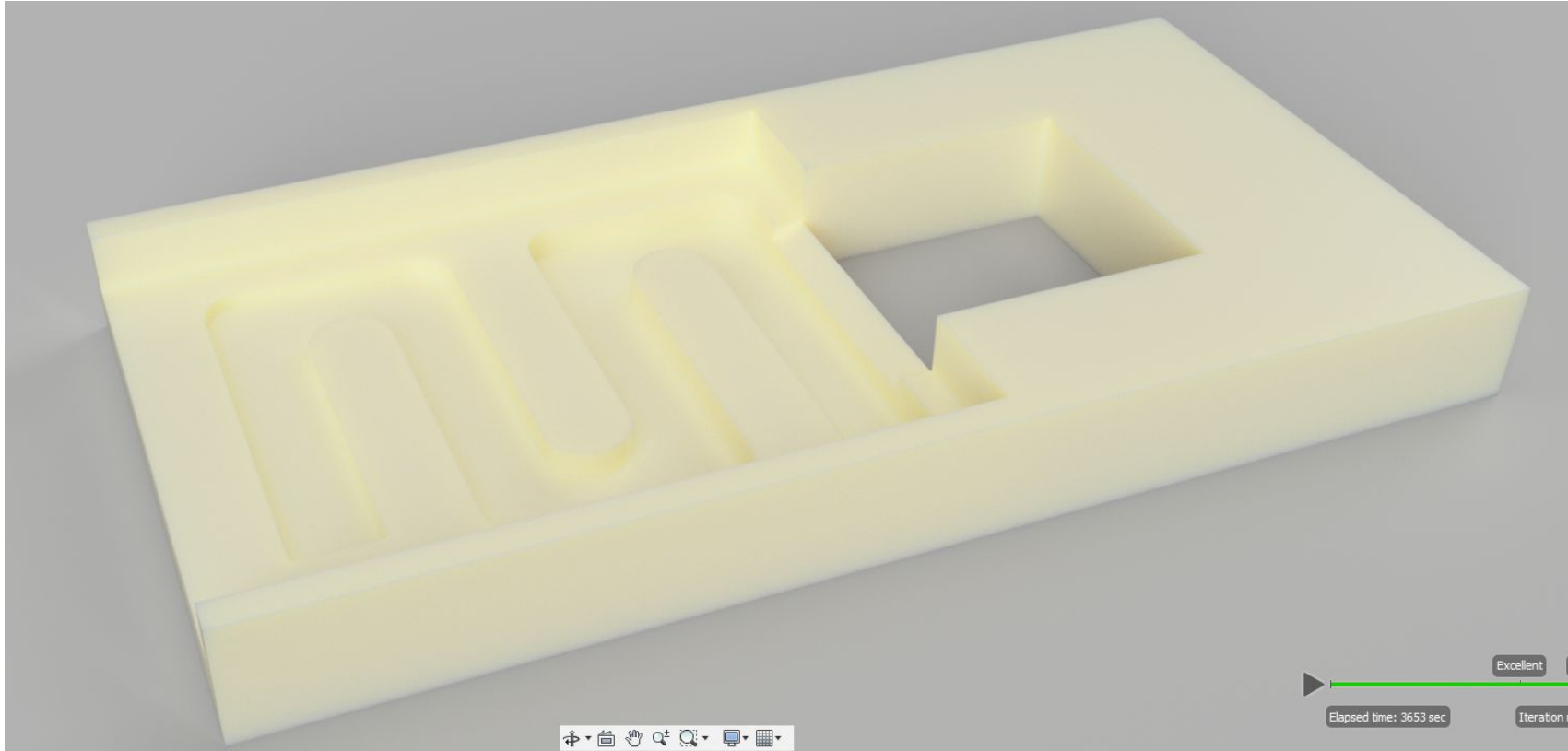
Tasks completed/on-going this week

- Deployed actual feeder rig
 - Debug signal from MSP430 to Raspberry Pi 3A+.
- Transfer training object detection model



Tasks completed/on-going this week

3D printing feeder
design



Tasks completed/on-going this week

- An updated version of PCB schematic. Figure 1.
- A relay connection design. Figure 2.

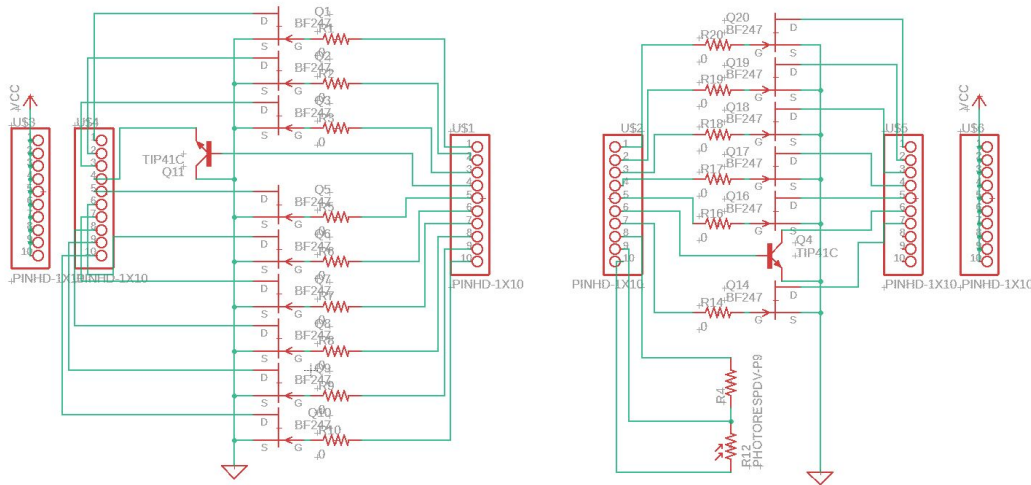


Figure 1

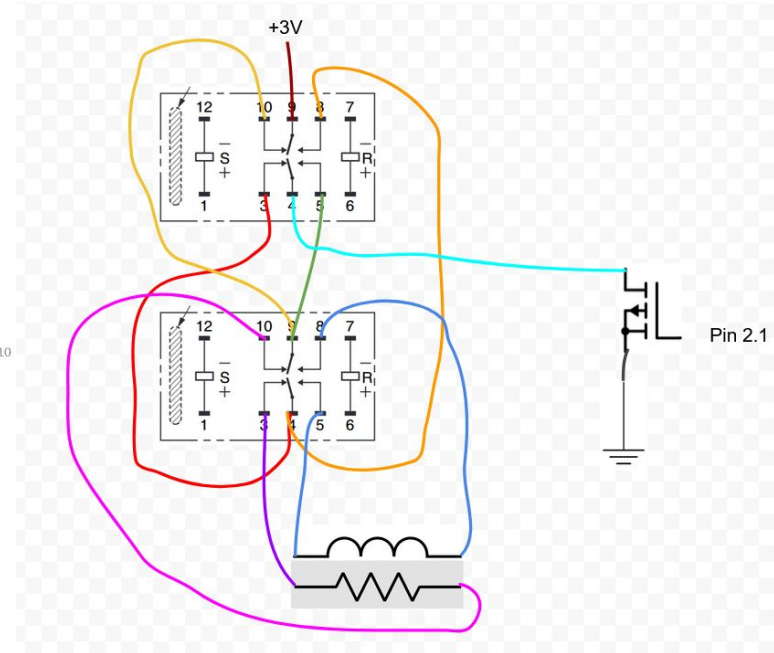
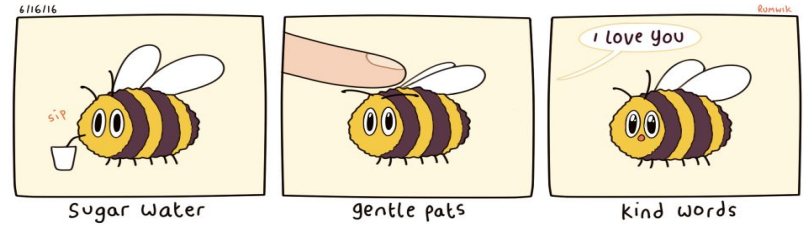


Figure 2

Goal Next Week(s)



- Do any modifications for the feeder design (if needed)
- Printing the feeder, if approved by Dr. Rich Howard
- Build customized library and footprint for relay G6SK-2G

Questions?

