

Senior Design Proposal

P.A.L.M.

Personal Automated Lawn Mower

BRIAN DARLING AND GABRIEL DE LA TORRE

SUMMER 2021

[HTTPS://PALMMOWER.COM/](https://palmmower.com/)



Fully Automated Lawn Mower

Installed 775 Motor and Cutter Blade



Installed cutter system and connected to solar panel with battery.

- Step down voltage regulator set to 5.9v
- Rotational Speed 5k RPM
- Ran for 1.5 hours
- Battery dropped from 13v to 12.6v max while under load

Concluding results, Current 6 Ah, 76.8Wh battery will be adequate to run the cutter system at idle for more than 45 minutes (3rd level requirement). Also, all voltage regulators will need a heatsink.

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Designed blade shroud

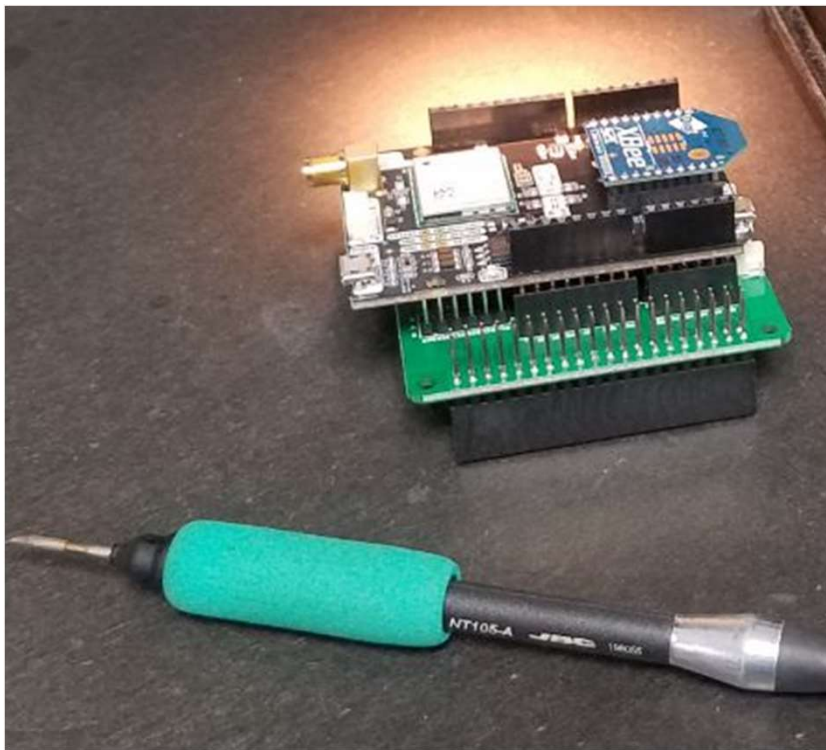


Designed a basic shroud for the cutter blade.

- Designed without mounting holes for more modularity and reduce print warp
- 3D printed with ABS

Fully Automated Lawn Mower

Soldering connectors to the RTK board

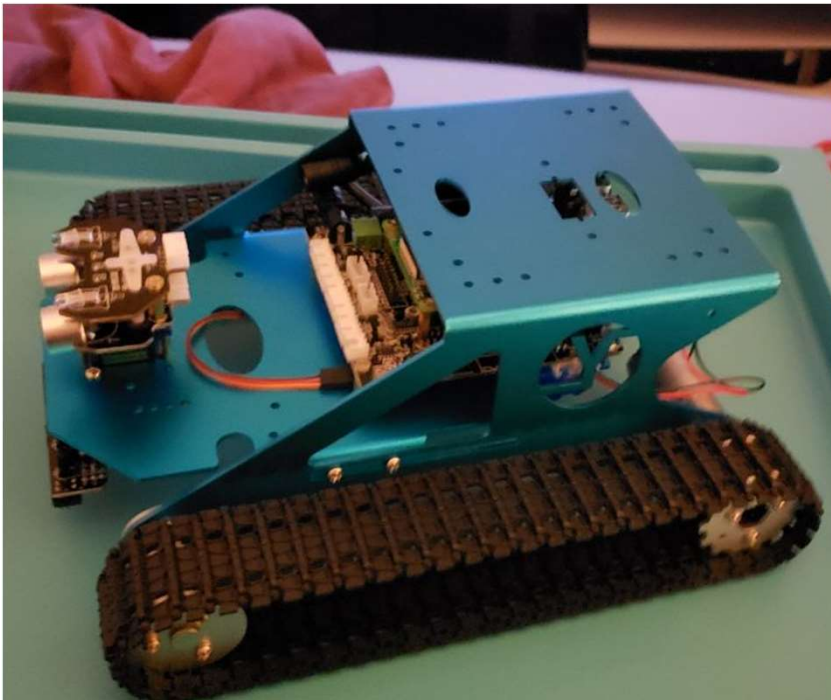


Received RTK boards in and hand soldered connectors to the board to integrate with Raspberry Pi Adapter board.

Soldering the headers ourselves saves us \$50 compared to having ArduSimple do it for us.

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Test mower for remote testing

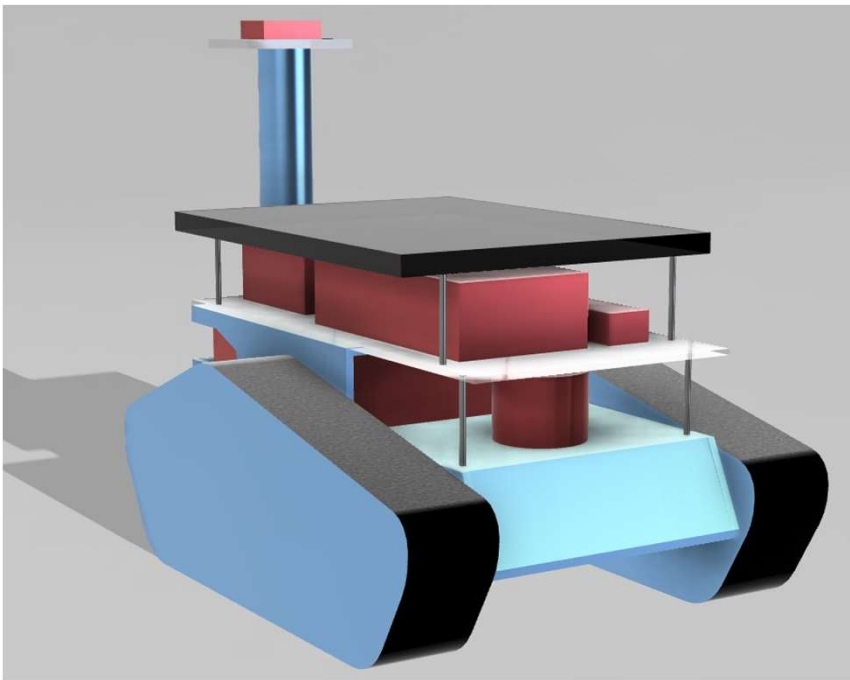


Due to COVID, we needed a way to remotely test systems and code for drive functions.

This led to us making a second “test” mower for troubleshooting and remote testing.

Fully Automated Lawn Mower

Plans for the next weeks



1. Start creating movement coding and testing drive functions.
2. Install blade shroud and major components.
3. Build Docking Station.
4. Begin testing GPS functionality and connectivity.