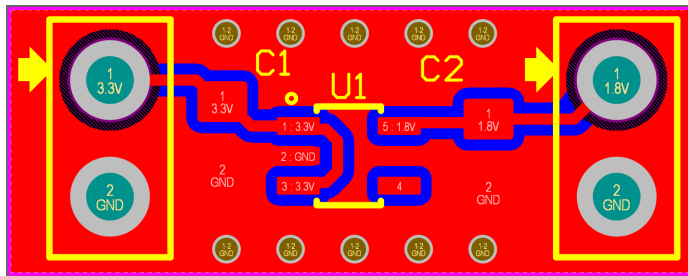


# Portfolio

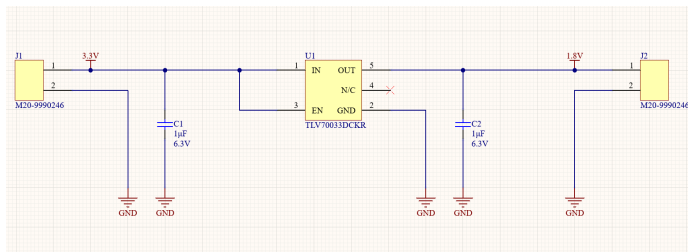
[jeremypoulin197@gmail.com](mailto:jeremypoulin197@gmail.com)

[github.com/jeremypoulin](https://github.com/jeremypoulin)

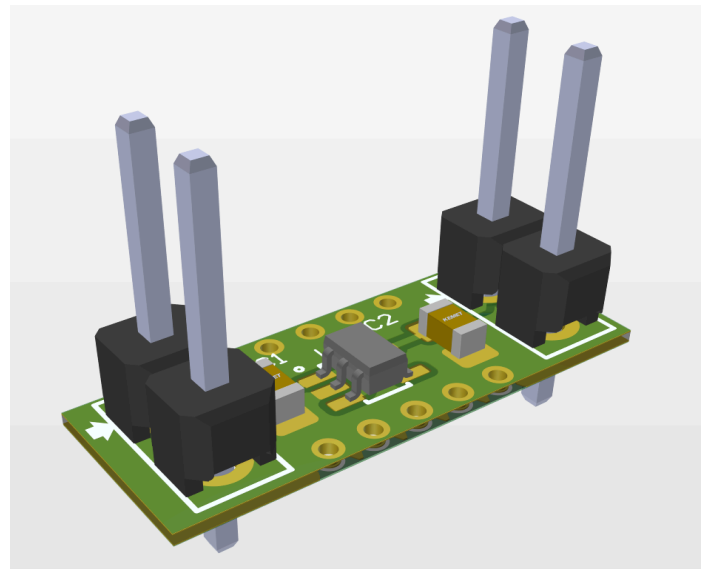
## Voltage Regulator PCB



PCB Layout



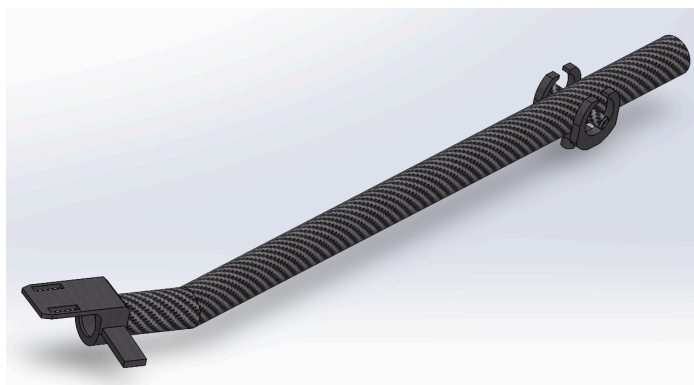
Schematic Layout



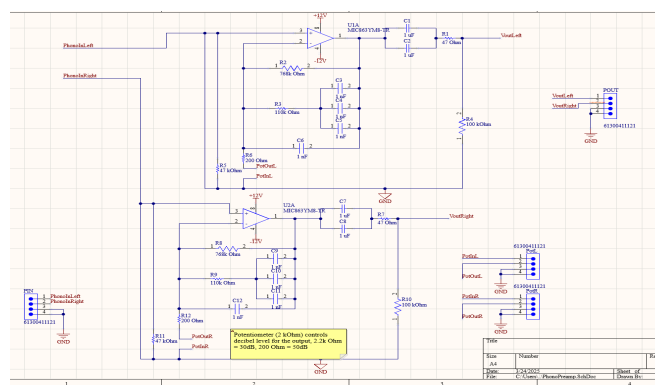
3D Model

- Solo designed a Voltage Regulator PCB as a task for the Waterloo Aerial Robotics Group (WARG) intended to reduce a 3.3V input to a 1.8V output, ideal for testing and rapid implementation purposes
- Researched resistors, connectors, and LDO Voltage Regulator IC components to optimize circuit functionality while adhering to design team's manufacturer preferences and standards
- Created component footprints in accordance with WARG standards to ensure consistency across board designs
- Implemented vias to connect the 2 ground layers and reduce electromagnetic interference
- Schematic and PCB files available [here](#)

## Turntable Design - In Progress



Tonearm 3D Model



Phono Preamp Schematic

- Engineering a functional, affordable and open-source turntable from scratch to increase the hobby's accessibility
- Designing Phono Preamp, Motor Driver and Power Supply PCBs with the ability to interface with a common microcontroller, enabling full control of motor rpm and preamp signal output level through rotary encoders
- Modeling the Tonearm and external casing, ensuring vinyl protection through an adjustable force balance system and enhancing sound quality through minimizing signal interference within the electronic components and isolating/encasing sources of vibration
- Design document available [here](#) and project files available [here](#)

# Portfolio

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## FPV Drone Design

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Photo of the drone mid-assembly

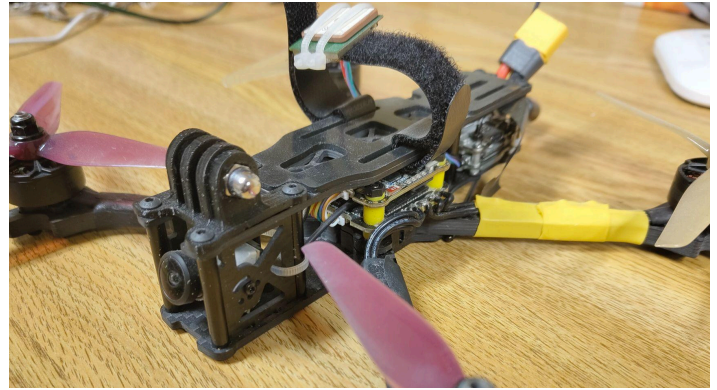


Photo of the completed product

- Designed a custom FPV drone from components to improve my knowledge of electrical systems and assembly, as well as provide an affordable and repairable alternative to the monopolized consumer UAV market
- Researched components to ensure compatibility with one another and tuned the drone to be able to achieve acrobatic goals and speeds of over 100km/h during the first flight test
- Learned electrical skills such as soldering, harnessing and multimeter use in order to safely assemble the final product and test vital connections to prevent against dangerous faults such as short circuits
- Obtained the necessary radio and RPAS operator certifications in order to legally and knowledgeably operate the drone
- **Project documentation available [here](#) and flight video available [here](#).**

## Library Noise Monitor

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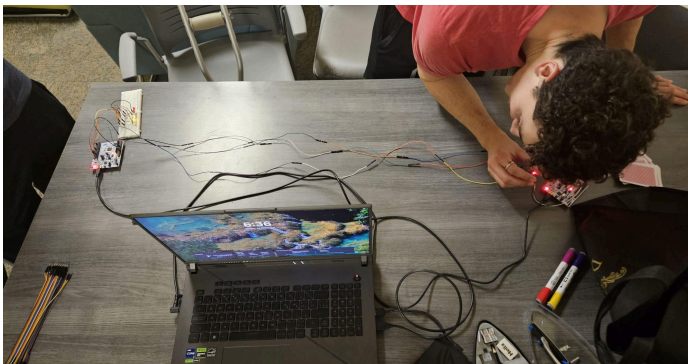


Photo of the initial noise signal transmission test

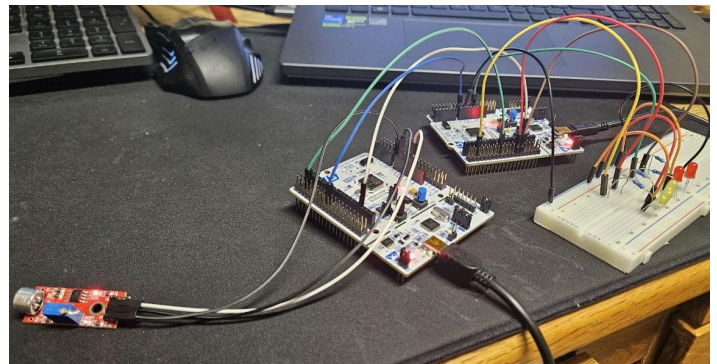


Photo of the entire system

- Designed a compact solution to silently and efficiently combat undesired high noise levels in libraries
- Conducted research on the common issue of excessive library noise to find current solutions which could be improved on
- Utilized 2 STM-32 microcontrollers to analyze information received by the microphone and output high noise level warning lights accordingly
- Wrote C code to transmit information between microcontrollers and handle input/output logic, using documented tests to ensure an input to output delay of under 1000ms and processing audio level processing within 5dB of precision
- Ensured the device met the requirements of transmitting signals over a length of 1m and utilizing less than 30W of power
- **Design document and code is available [here](#).**