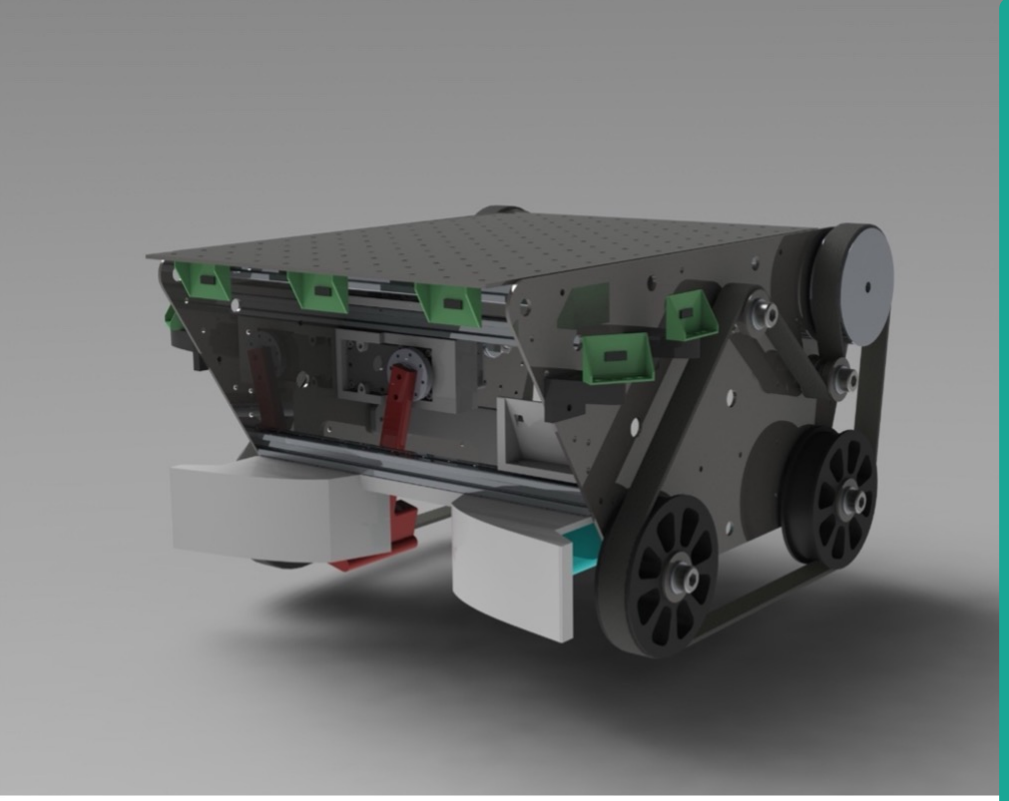
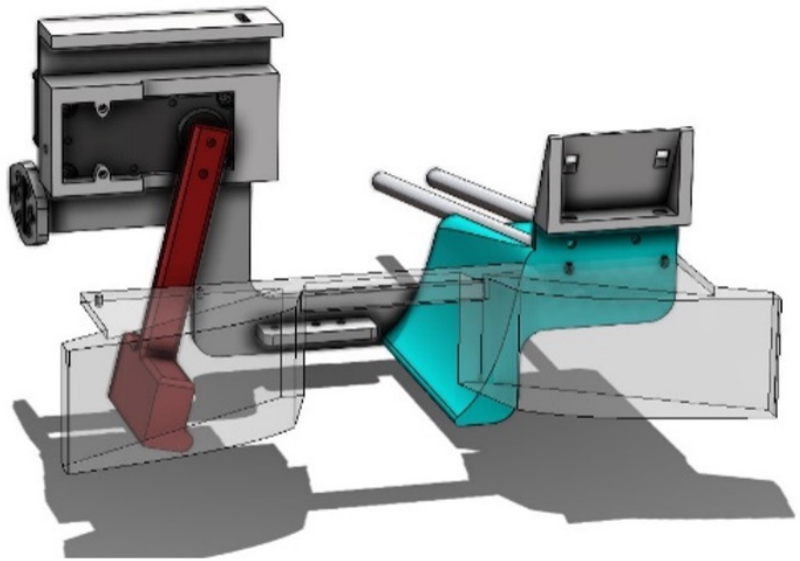




RoboCup Competition

Weight Collection

The purpose of this robot was to outperform other robots in collecting weights throughout an arena

3rd Place

This robot came 3rd place out of a pool of 39 teams

Fully Autonomous

Programmed in Arduino to perform without human input

Success

The robot successfully picked up 96% of weights detected via time-of-flight sensors (attached to green parts on upper CAD model)

Specific Skills
Iterative Hardware Testing
Team Leadership
Digital and Analogue embedded system peripheral control
Project Budgeting
Project Management Software (ClickUp)
CAD Software (Solidworks)

Github Repo: https://github.com/Alisternz/Robocup/blob/main/RobocupReport3.pdf

Guitar Pedal

Wah Wah Pedal
Created and ordered a PCB, soldered on components using a manual pick and place machine

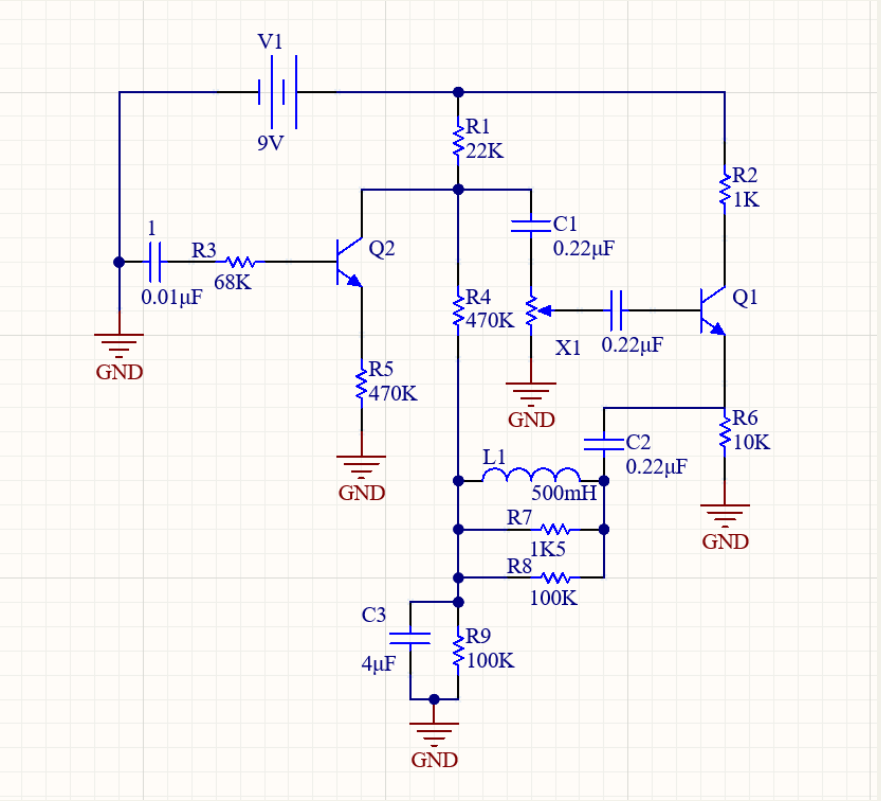
The Electronics
A wah wah pedal is an application of a band-pass filter, by adjusting the value of the potentiometer (X1), this band moves through the frequency spectrum

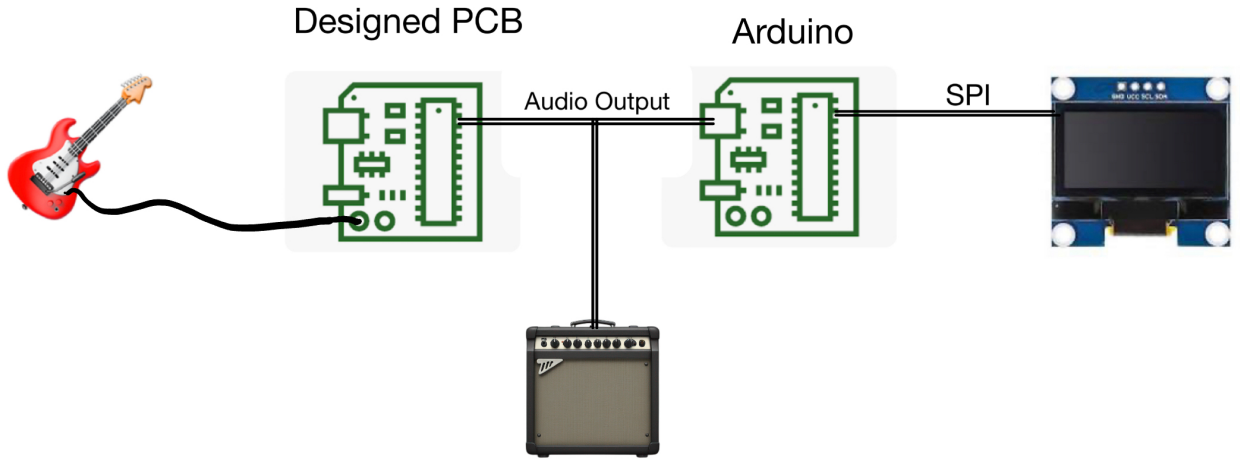
Signal Processing Modification
The output of this circuit was scaled and passed into an Arduino analogue input. The frequency spectrum of the signals were measured and plotted through an OLED display

I am currently designing a 3D printed housing in Solidworks

Specific Skills

- Schematic and PCB layout (Altium)
- Component Selection
- Signal Processing
- CAD (Solidworks)





The Garden Gnome

The Rules

Over the last year, myself and a group of friends have been running a competition, where a prize goes to the house that holds the garden gnome for the longest cumulative time.

The Project

In response to the game, I engineering a weather-resistant module to detect when a Gnome Thief enters the property. The unit contains an IR sensor, internal battery and RF unit to alert the house when the back gate is opened.

Purposefully overengineered (could do with string attached to a bell)

Specific Skills
Water-Resistant Mechanical Design
CAD (Fusion 360)
RF Design
Electrical Component Selection