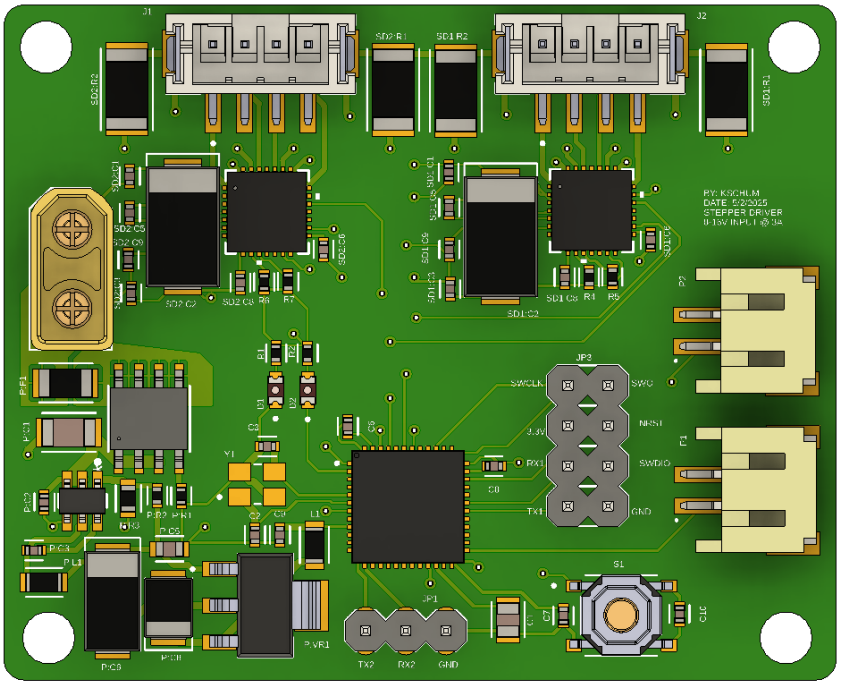
MEMORANDUM

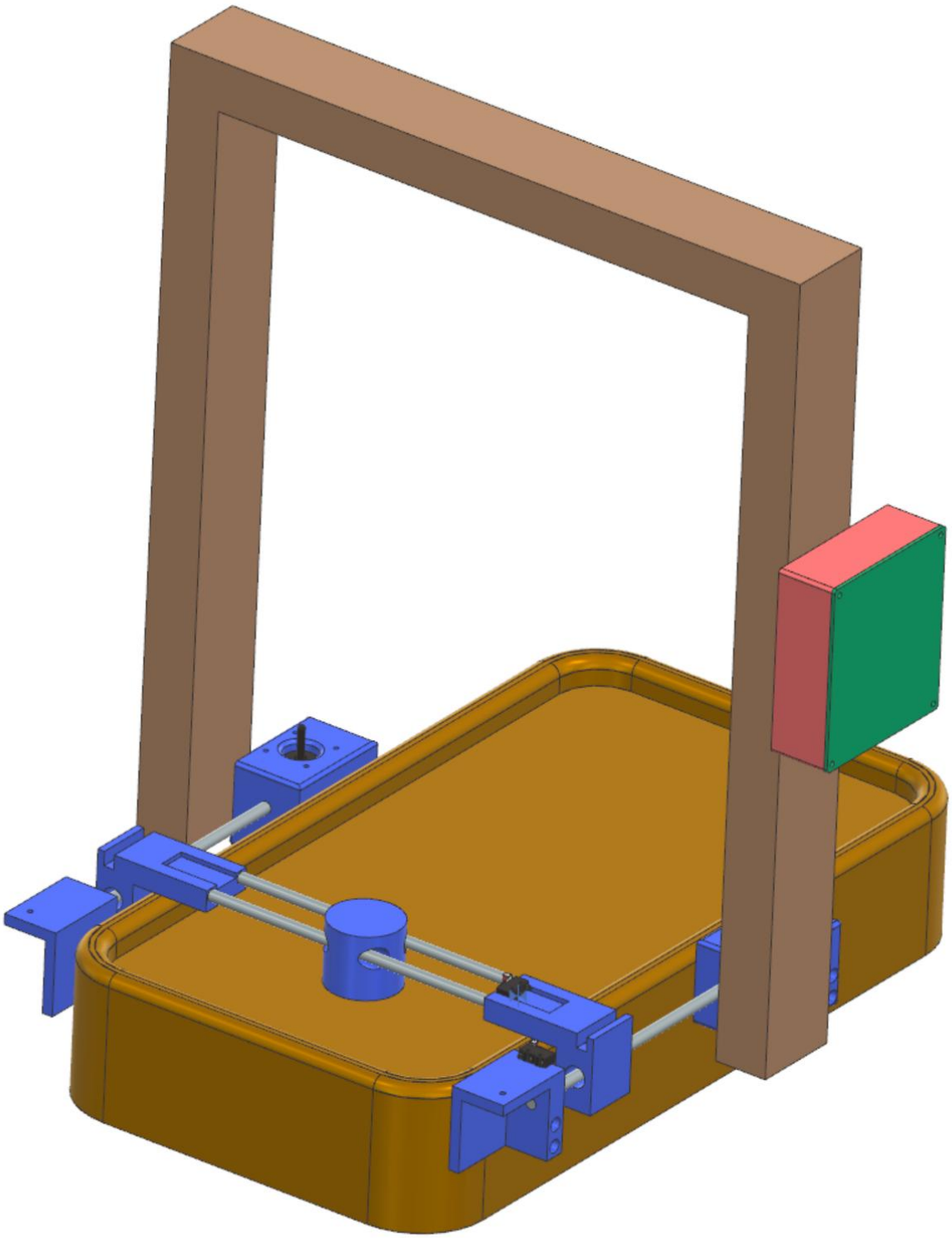
To:	Charlie Refvem, Lecturer, Department of Mechanical Engineering, Cal Poly SLO crefvem@calpoly.edu
From:	Kyle Schumacher
Date:	**5/2/2025**
RE:	**Term Project Deliverable**

Introduction



The board now uses 2x silent stepper drivers, along with the respective circuitry to drive it. It will drive 2x 1.5A NEMA 17 stepper motors. There is a 3 pin Dupont connection to connect to a raspberry pi. There are 2x inputs for limit switches to detect the bounds.

Mechanical Changes



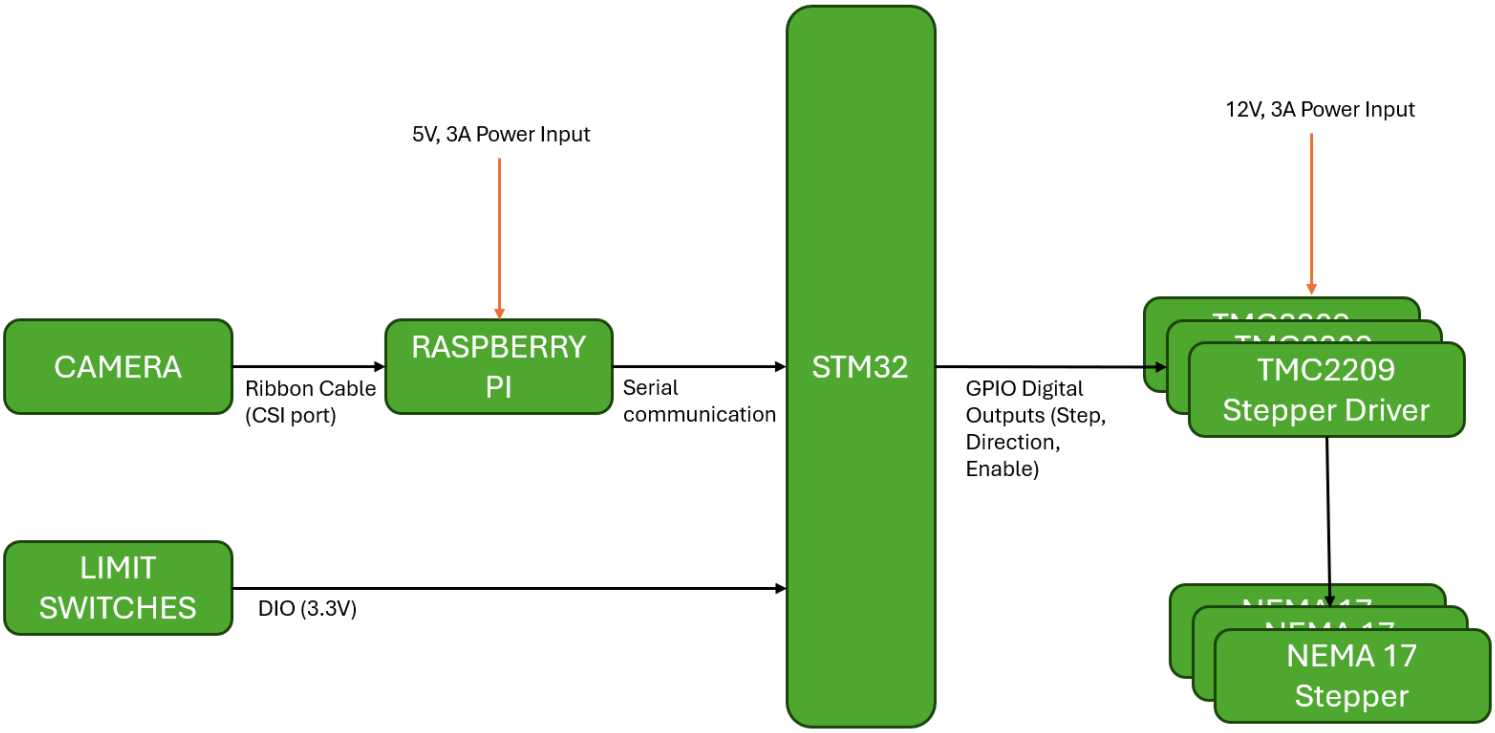
[1] The three stepper motors have been decreased to only 2 to act as a differential. This takes off a heavy stepper from the gantry and should make it faster.

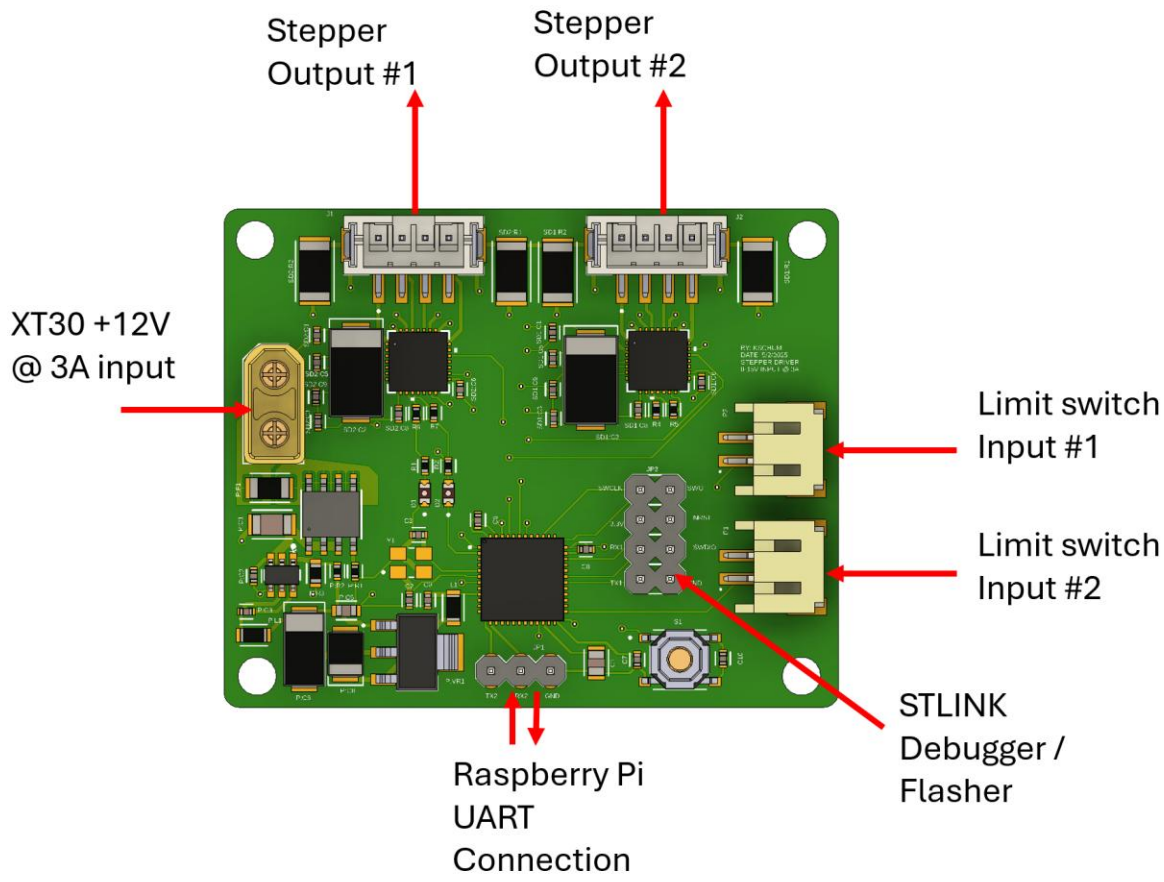
[2] Limit switches added

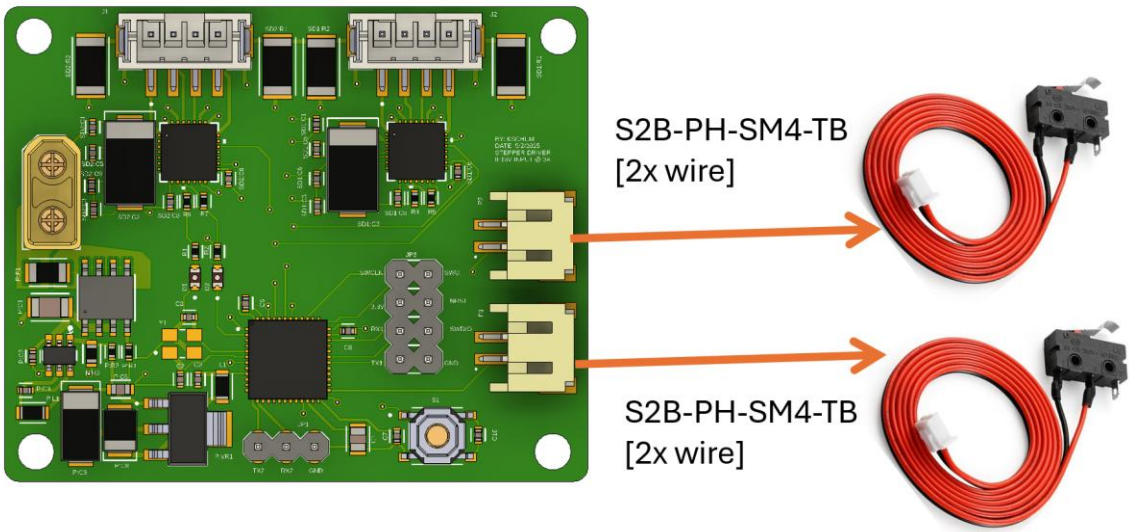
[3] Camera up above on 2x4’s for full visibility. The height was set by the FOV of the Raspberry Pi camera.

[4] An electronics box was added to the side to mount the custom board and the raspberry pi.

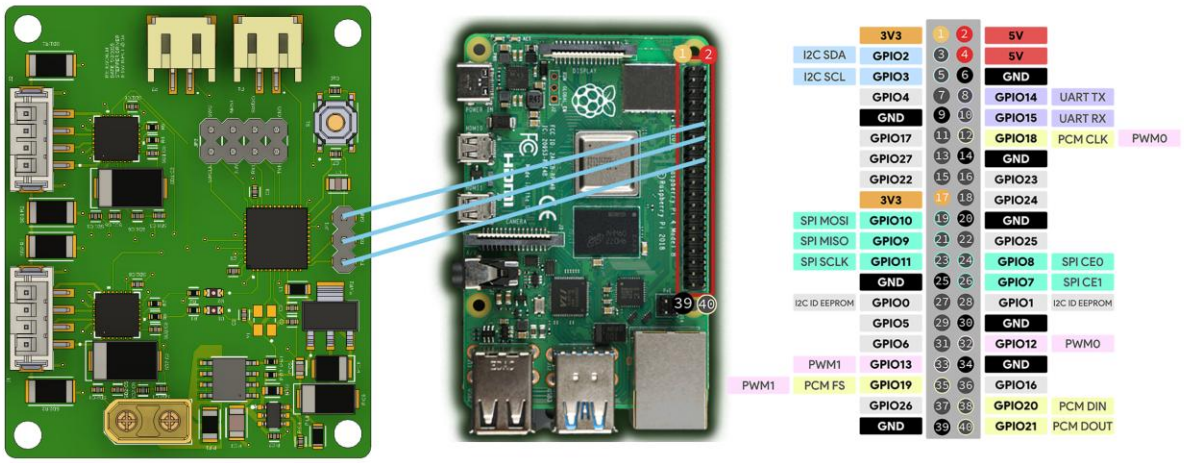
High Level Wiring Diagram



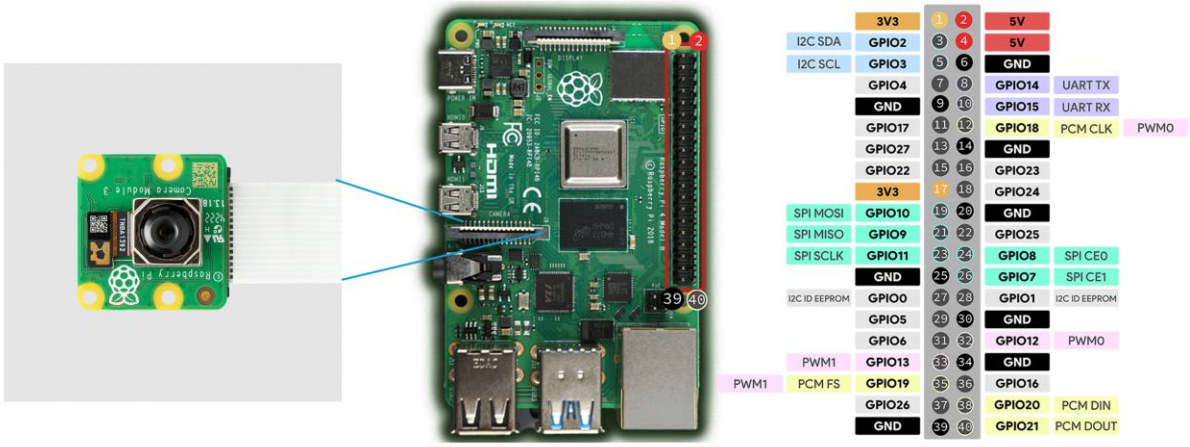

Stepper
Output #1
Stepper
Output #2
XT30 +12V
@ 3A input
Limit switch
Input #1
Limit switch
Input #2
STLINK
Debugger /
Flasher
Raspberry Pi
UART
Connection

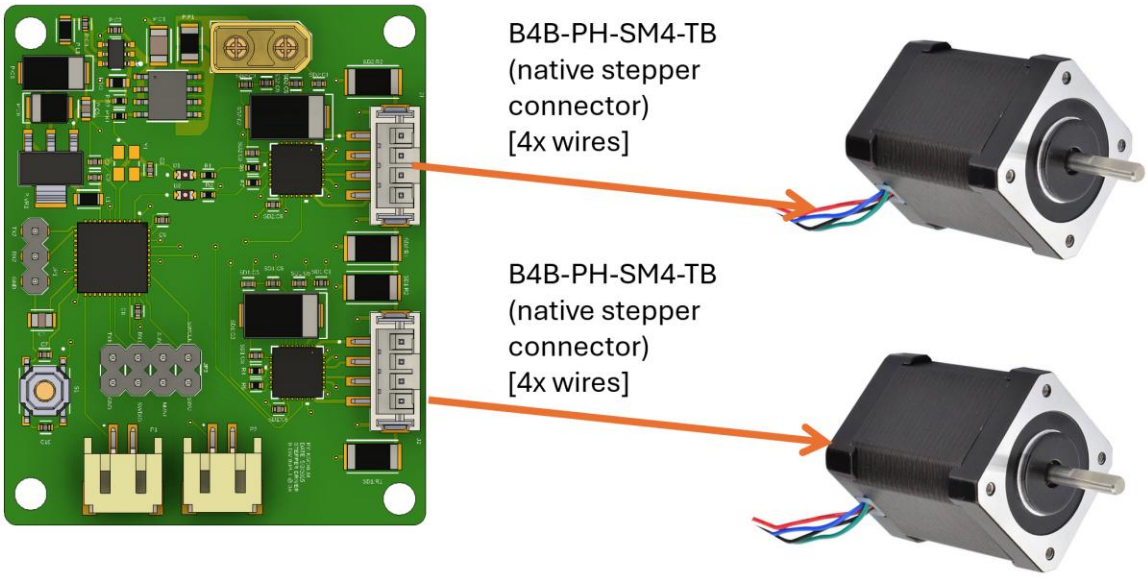

S2B-PH-SM4-TB
[2x wire]
S2B-PH-SM4-TB
[2x wire]

Raspberry Pi UART Connection (Dupont Connection)



Raspberry Camera Connection




B4B-PH-SM4-TB
(native stepper
connector)
[4x wires]
B4B-PH-SM4-TB
(native stepper
connector)
[4x wires]