Signoff – 12/8/21 - Navigation Sensors

Wednesday, December 08, 2021 6:13 PM

- Camera x 2
    - https://www.amazon.com/Arducam-Camera-Raspberry-Windows-Android/dp/B07YHK63DS?th=1
    - $29.99 / unit
    - We will utilize computer vision system on the Raspberry Pi. We chose these for their small size as to not take up too much space on the upper chassis. The Pi only has one camera port, but has 4 USB ports. This is why we chose to use USB cameras, because using two cameras with the special pi ports would require extra equipment. It has a resolution of 8MP 3264H x 2448V and a focusing range of 200 mm to infinity (per Arducam website). It has a FOV of H=62.2° and V=48.8°. As the nets will be more than 200 mm and less than infinity feet from the track, the focal length is sufficient. The 8MP resolution is able to capture clear pictures, and if needed, video. The FOV should also be adequate as the camera will be directly facing the nets and should not need much FOV.
- IR sensors x 4
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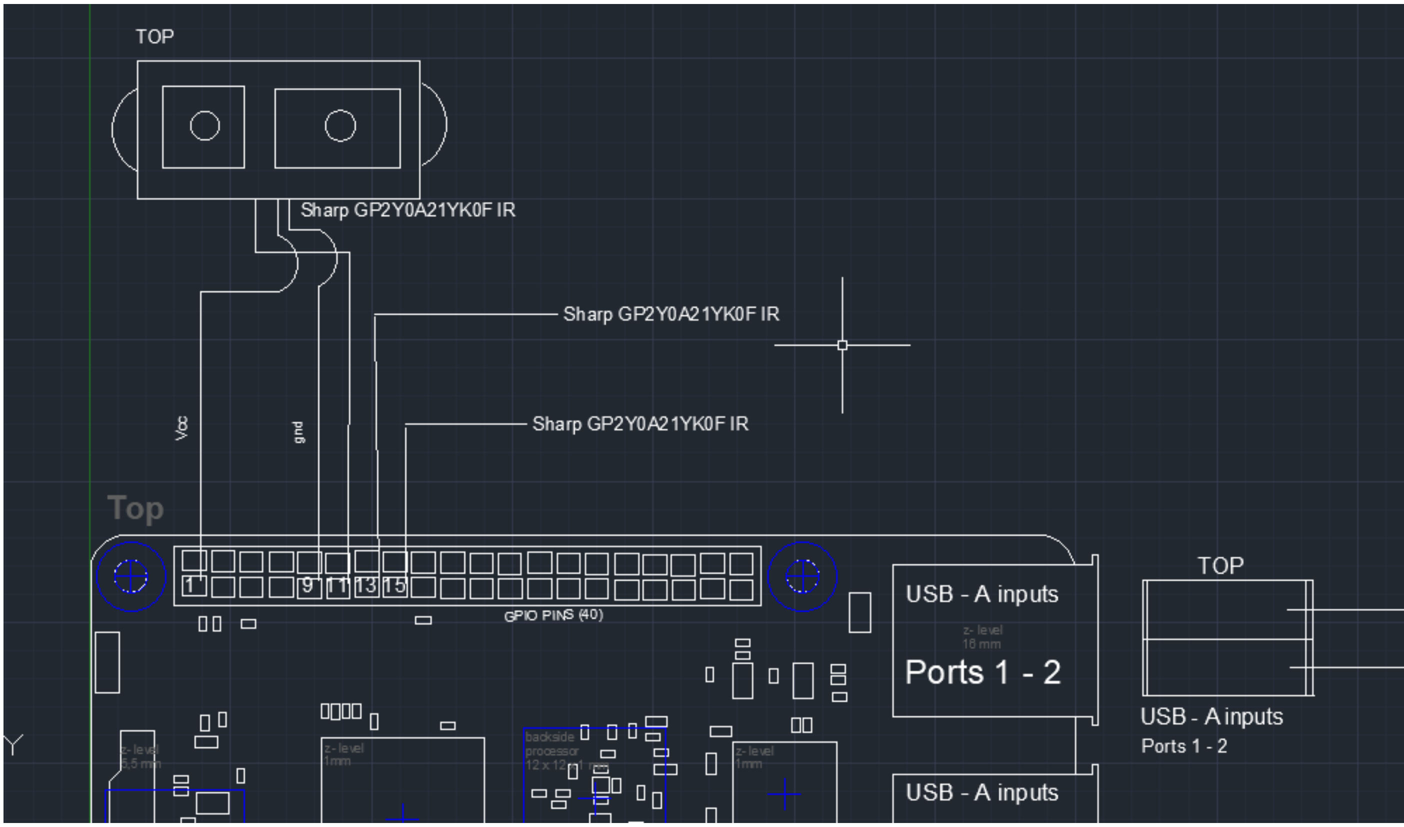
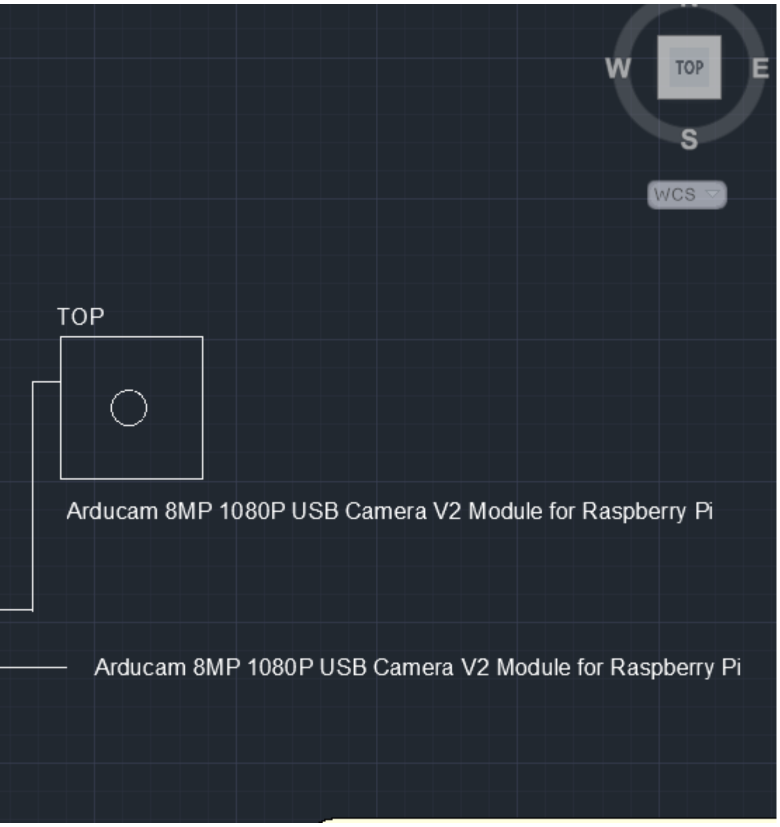
    - https://www.bananarobotics.com/shop/Sharp-GP2Y0A21YK0F-IR-Distance-Sensor?gclid=Cj0KCQiAzMGNBhCyARIsANpUkzNWchZn37YdYXPMACacTAmxHW5-crp-4ObSHPp9KN3HDrkfkgJiB9IaAp8YEALw_wcB
    - $8.99 / unit
    - Once the camera identifies the net, the IR sensor will fine tune the location of the bot for shooting. Once lined up, the Pi will send a message to the Arduino to shoot the beads. The IR Sensor has a range of 4-32". We have not heard back from the competition organizers, we are unsure of the distance between the track and the nets, but judging from provided images, we believe that it will be less than 18" inches, which is well within the provided range. This sensor also includes both the transmitter and receiver.


TOP
Sharp GP2Y0A21YK0F IR
Sharp GP2Y0A21YK0F IR
Sharp GP2Y0A21YK0F IR
Vcc
gnd
Top
1
9
11
13
15
GPIO PINS (40)
USB - A inputs
z- level
16 mm
Ports 1 - 2
TOP
USB - A inputs
Ports 1 - 2
USB - A inputs
z- level
5,5 mm
z- level
1mm
backside
processor
z- level
1mm
Y


W
TOP
E
S
WCS
TOP
Arducam 8MP 1080P USB Camera V2 Module for Raspberry Pi
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