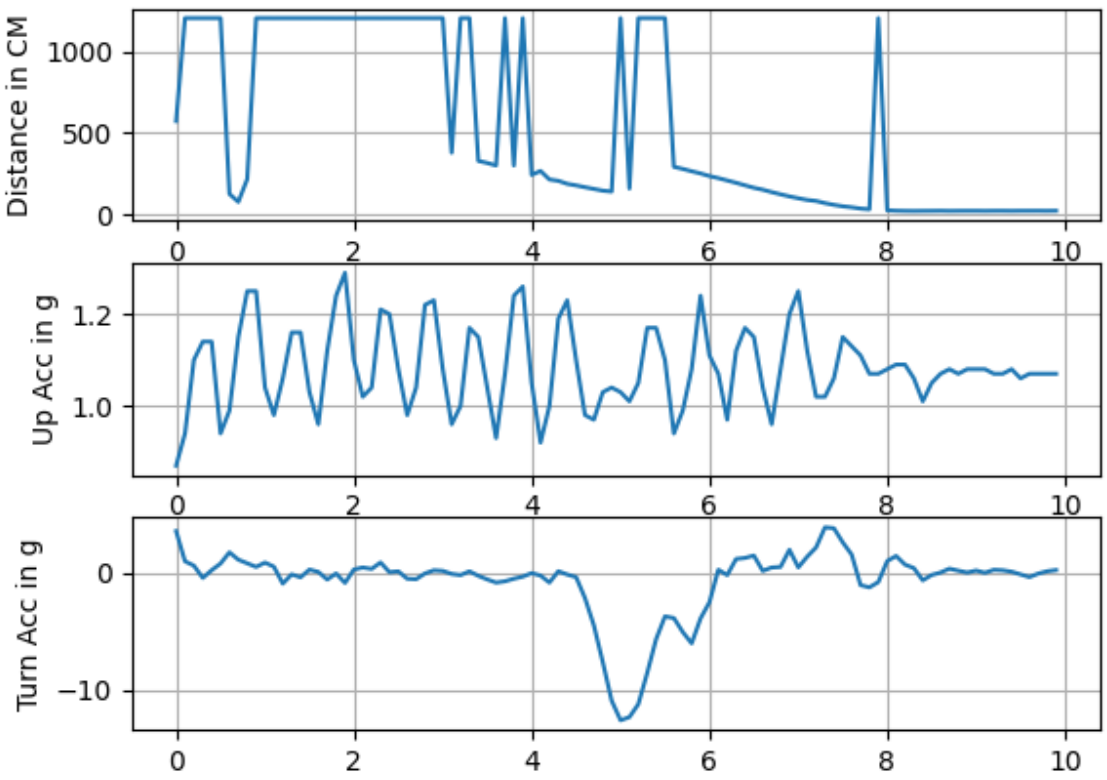
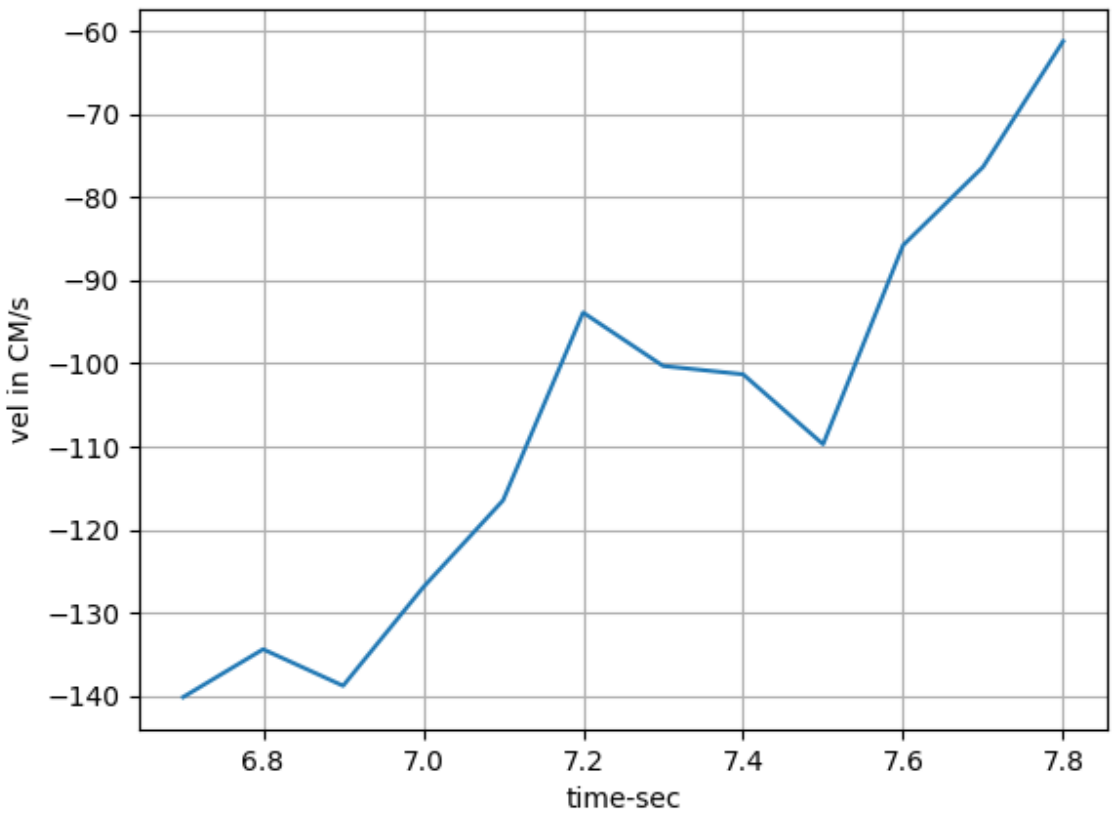


1. The distance walked knowing your average stride.
If my average stride is 2 ft, then I walked a distance of 28 ft. Every time I took a step, I moved the accelerometer up and down a little as a part of my natural walk. This causes acceleration in the vertical direction, which is shown on the middle graph. Everytime I took a step, there is a peak on the graph because my acceleration increased then decreased. There are about 14 peaks, so if I multiply this by my stride distance, I get 28 feet.

2. The distance from the start, to the turn to the end.
The turn occurred at 5 sec, and there are 9 peaks in my vertical acceleration graph between 0 and 5 seconds. Multiplying this by my stride distance, I can tell the distance from the start to the turn is about 18 ft. After the turn, there are 5 peaks in the vertical acceleration graph, so there is about 10 ft between the turn and the end. I can't use my distance graph to determine this information because the ultrasonic sensor is only reliable up to 400 cm, and the wall I was using to bounce back the sound was more than 400 cm away. However, once I was about 400 cm from the first and second wall, my graph accurately shows the distance.

3. If a corner was turned along the journey, at what time during the journey.
The turn occurred at around 5 seconds. I can tell by looking at the graph of my angular acceleration. The graph is fairly flat up to 5 seconds and after 6 seconds. When I turned, I had an angular acceleration, which is indicated by the peak on the bottom graph.



4. The velocity at several equally spaced (time wise) times in the path traveled *
6.8s: -135 cm/s
7.0s: -127 cm/s
7.2s: -95 cm/s
7.4s: -110 cm/s
7.6s: -85 cm/s
7.8s: -63 cm/s

Because our distance data is only accurate from 4-5 and 6-8 seconds, we can only determine the velocity at these certain times. We isolated the distance data from 6.8 - 7.8 sec, and used the formula $v=\Delta x/\Delta t$ to find the average velocity. We then created the plot shown above. Although the velocity graph is separate from the other three graphs, it uses the same data. We had trouble plotting all four graphs together in an easy to read way, so we used a separate program to plot velocity that used the same data as program4f.py.