Journal Report 12
11/26/19 - 12/8/19
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Daily Log

Monday November 26

I familiarized myself with the docker environment. I ran the position data on the test case they gave us and the test video I recorded before. Then I recorded more test videos.

Monday December 2

I ran openpose on test videos and saved the position data. They're stored in a json file so I printed it out to see how it was organized.

Tuesday December 4

I continued to parse the data and began on organizing the data accordingly. I set up the data structures and began to convert the json file into dictionaries.

Thursday December 6

I wrote code to calculate the angle between three points and began to calculate the angles of the body.

Timeline

Date	Goal	Met
11/18 modeling	Calibrated cameras and have calibration model ready for testing	No, changed approach to this. Now attempting to extract from video
11/25	Set up the big machine with all the necessary packages and run it own video	Yes and no, set up big machine with necessary packages but ran out of time to run on my own video
12/2	Find and extract Position data from the videos	Yes, I have met this goal
12/9	Create pose using kmeans and begin classifying poses using k-nn	
12/16	Classify pose using k-nn	
Winter Goal	Have data for classification algorithm and be able to classify a move	

Reflection

Recognizing the skeletons will require three steps:

1. Create poses by running kmeans on the body angles
2. Classify poses using K-nearest neighbors (knn)
3. Classify moves using Dynamic Time Warping (DTW)

I'm not sure if we will be able to classify a complete move by next week. I think we will be able to create a pose this week. We will possibly be able to classify a pose using knn this week but most likely next week. Currently, we will be storing the angle data in a dictionary. Key: frame number Value: list of angles. From there, we will use kmeans to find the angles for a given move/pose. We will then classify a move as a collection of poses.

Each point has an x, y, and confidence value. For now, we will only be working with the x and y values for the angles. Once we are able to classify the moves, we may report the confidence level to the user.

Part of Sample Output
0 Nose [856.916, 224.115, 0.950295]
1 Neck [842.256, 288.976, 0.893944]
2 RShoulder [803.937, 277.244, 0.808458]
3 RElbow [721.563, 250.635, 0.807036]
4 RWrist [671.645, 194.7, 0.815814]
5 LShoulder [883.516, 291.997, 0.935688]
6 LElbow [954.103, 356.594, 0.781723]
7 LWrist [1024.79, 406.601, 0.680515]
8 MidHip [836.29, 433.097, 0.859098]
9 RHip [809.972, 430.181, 0.816215]
10 RKnee [839.424, 536.15, 0.793073]
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