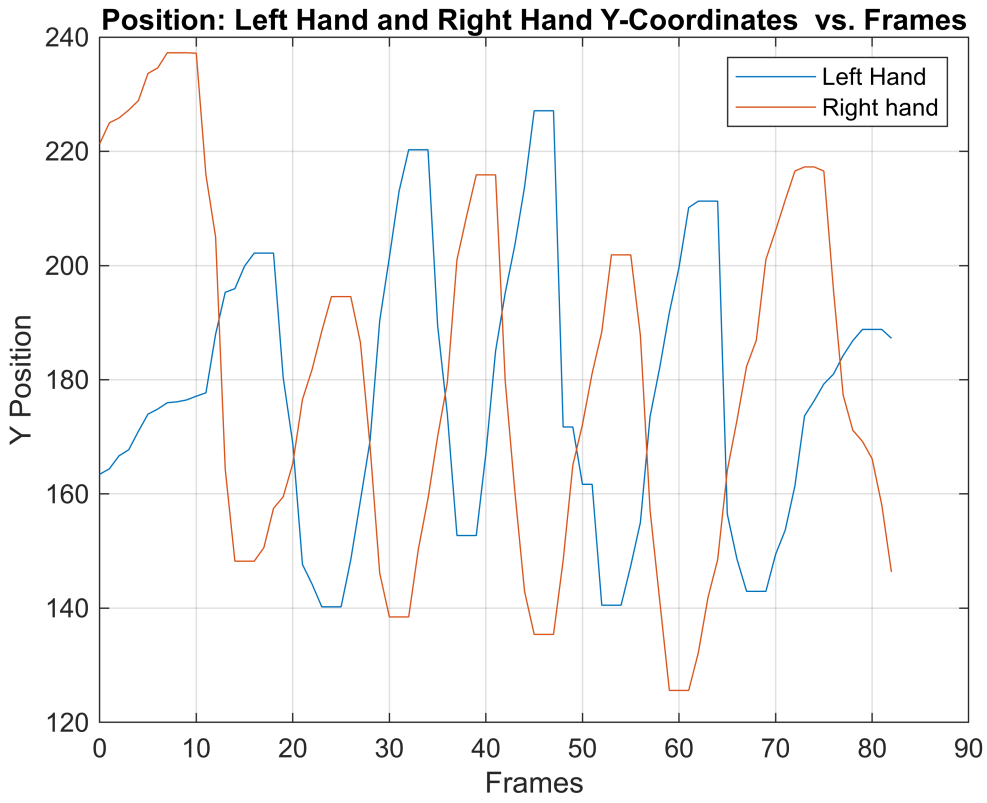
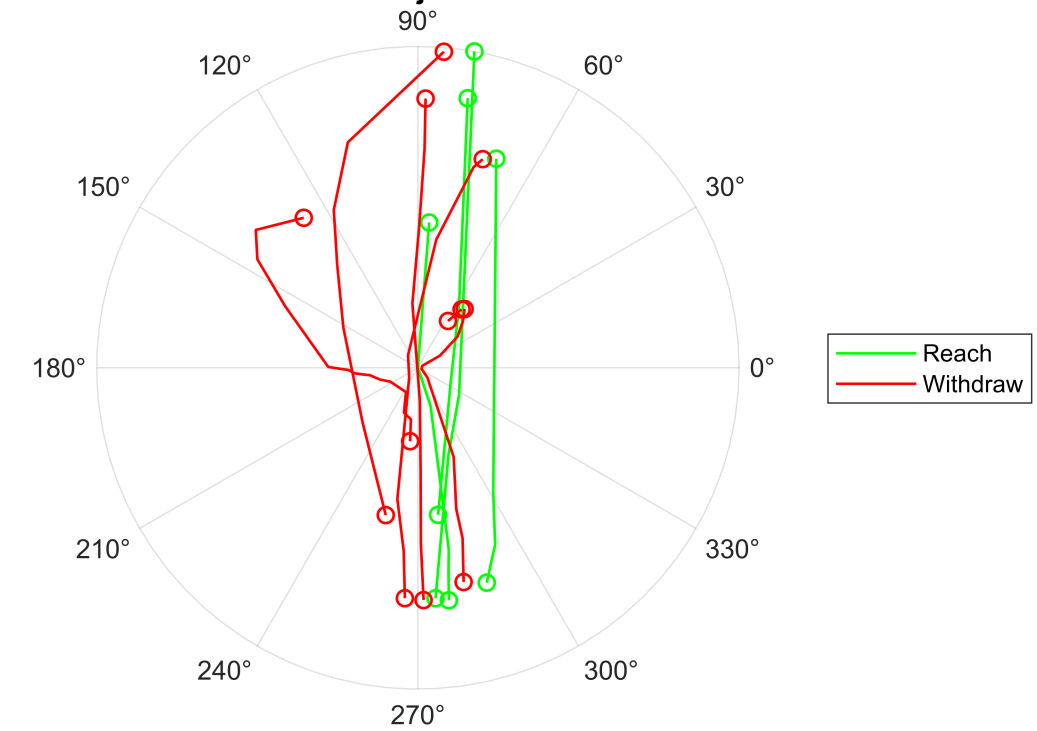
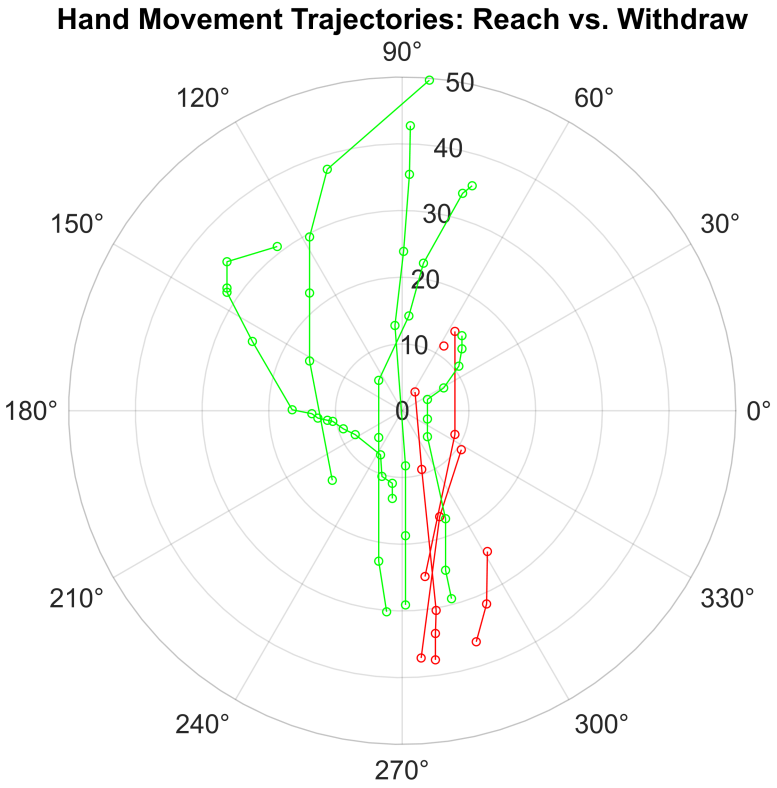
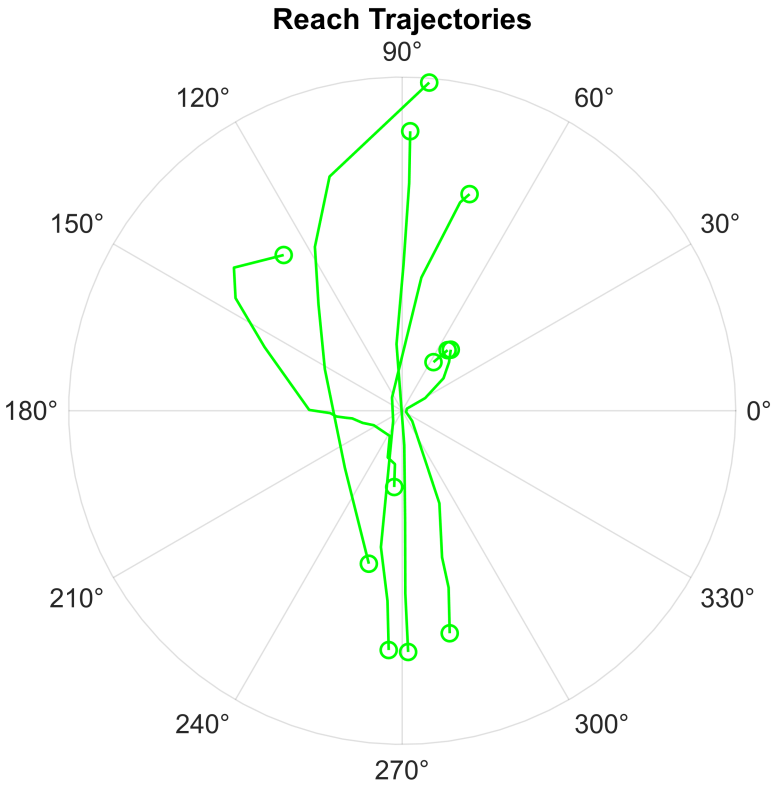
```
%multiple files run below:

%folder = uigetdir();
%filenames = File_finder_v2 (folder);

%for i = 3:length(filenames)
   % Path = (filenames {i});
  %  disp(Path)
 %   data_analyzer_v9(Path);
%end

%For one file, run below:

data_analyzer_v10('C:/Users/mikek/Desktop/
July13.23_5_HeidiOwen_Raw_1.MP4DLC_resnet50_String_model_2Jul3shuffle1_101500_filter
ed.csv')
```

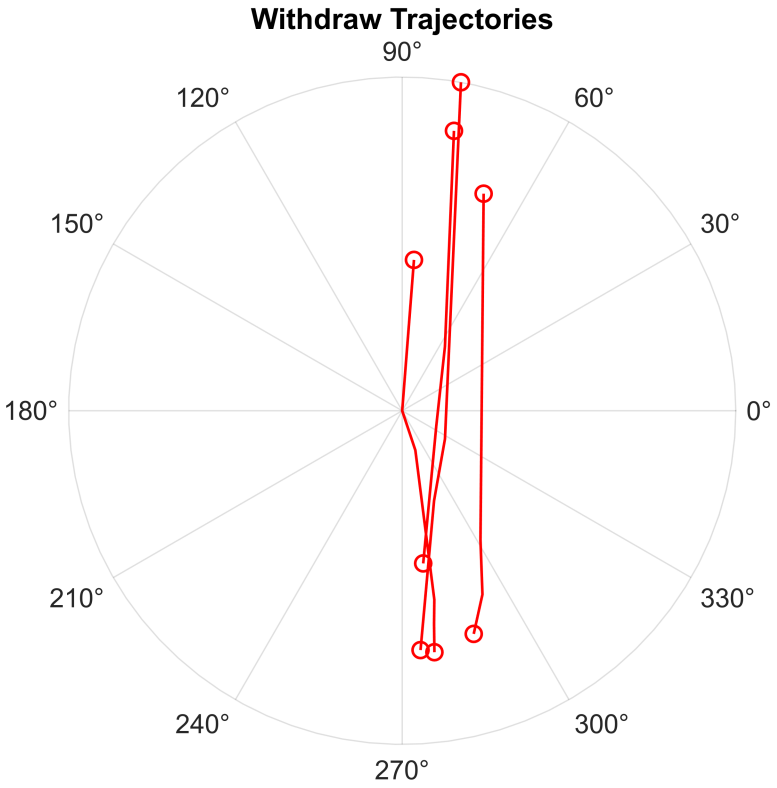


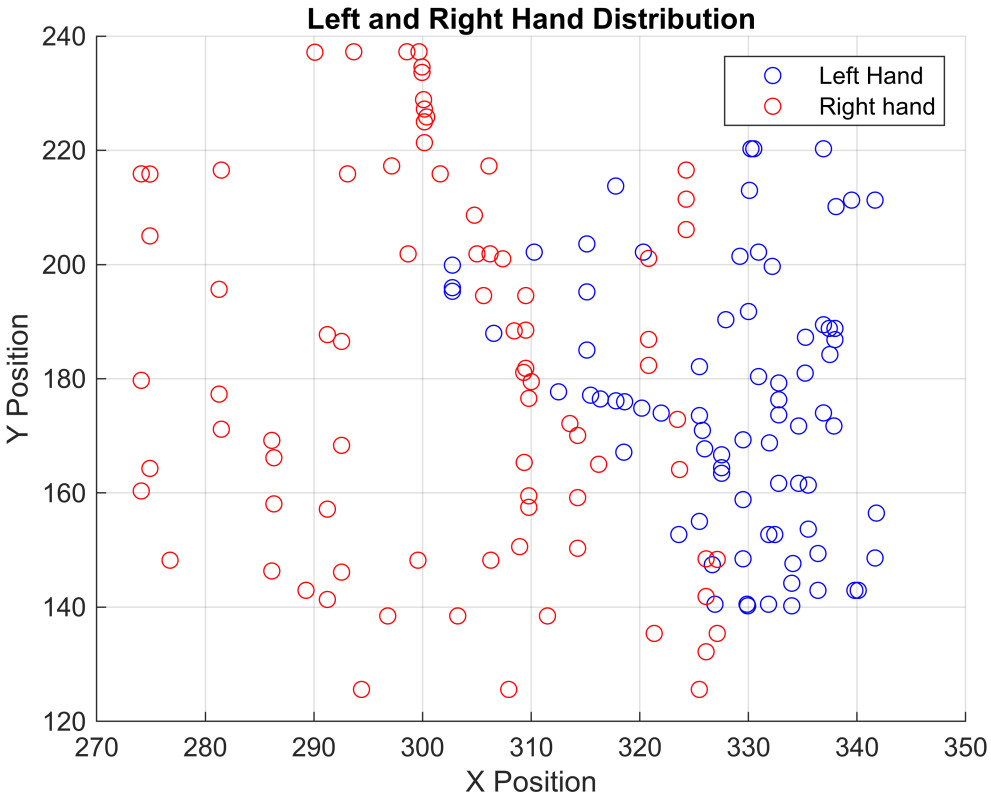
Position: Left Hand and Right Hand X-Coordinates vs. Frames
Left Hand
Right hand
X Position
Frames
350
340
330
320
310
300
290
280
270
0
10
20
30
40
50
60
70
80
90

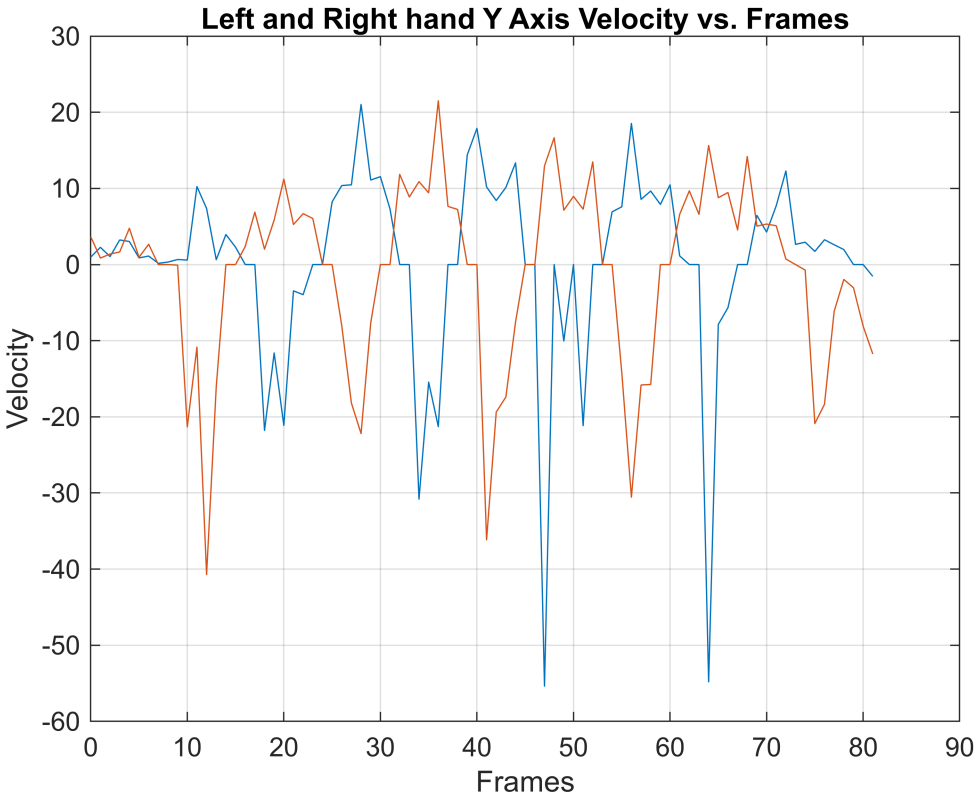

Centered Hand Movement Trajectories: Reach vs. Withdraw
90°
120°
60°
150°
30°
180°
0°
210°
330°
240°
300°
270°
Reach
Withdraw

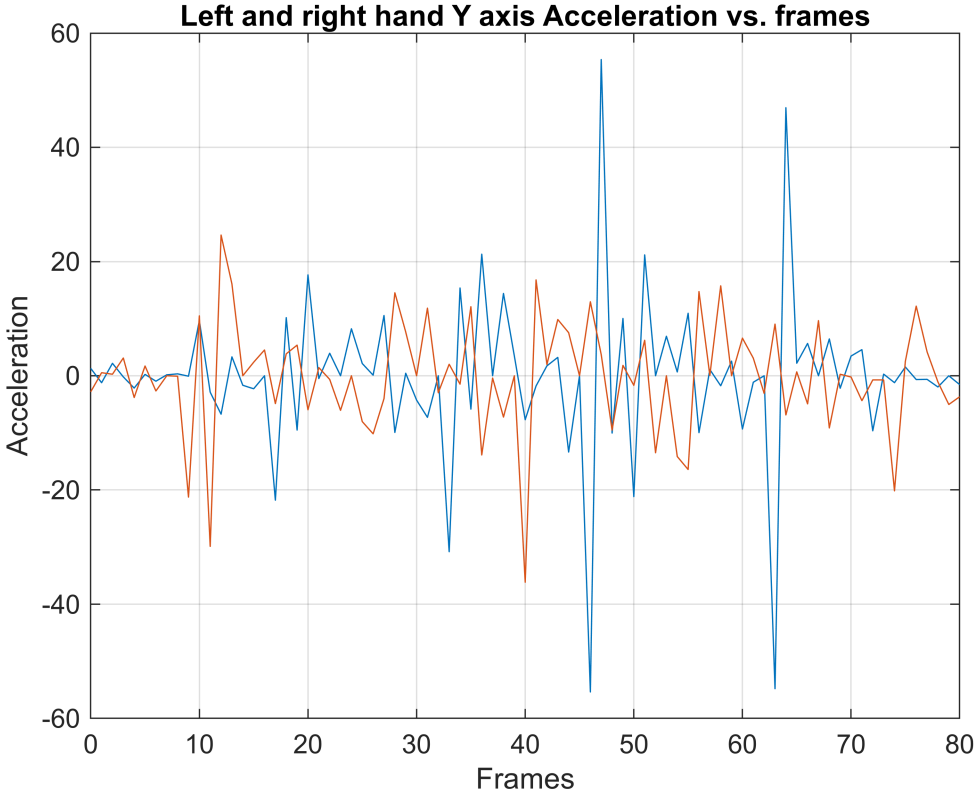

Hand Movement Trajectories: Reach vs. Withdraw
90°
120°
60°
150°
30°
180°
0°
210°
330°
240°
300°
270°
50
40
30
20
10
0


Reach Trajectories
90°
120°
60°
150°
30°
180°
0°
210°
330°
240°
300°
270°


Withdraw Trajectories
90°
120°
60°
150°
30°
180°
0°
210°
330°
240°
300°
270°

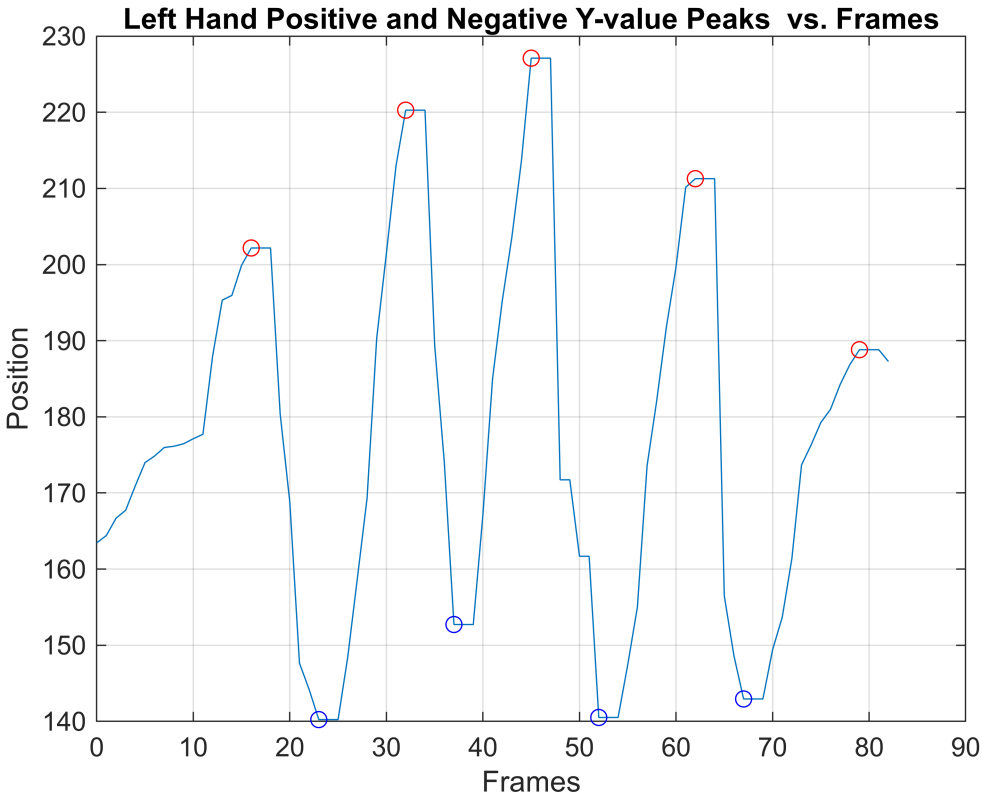

Left and Right Hand Distribution
Left Hand
Right hand
Y Position
X Position
240
220
200
180
160
140
120
270
280
290
300
310
320
330
340
350



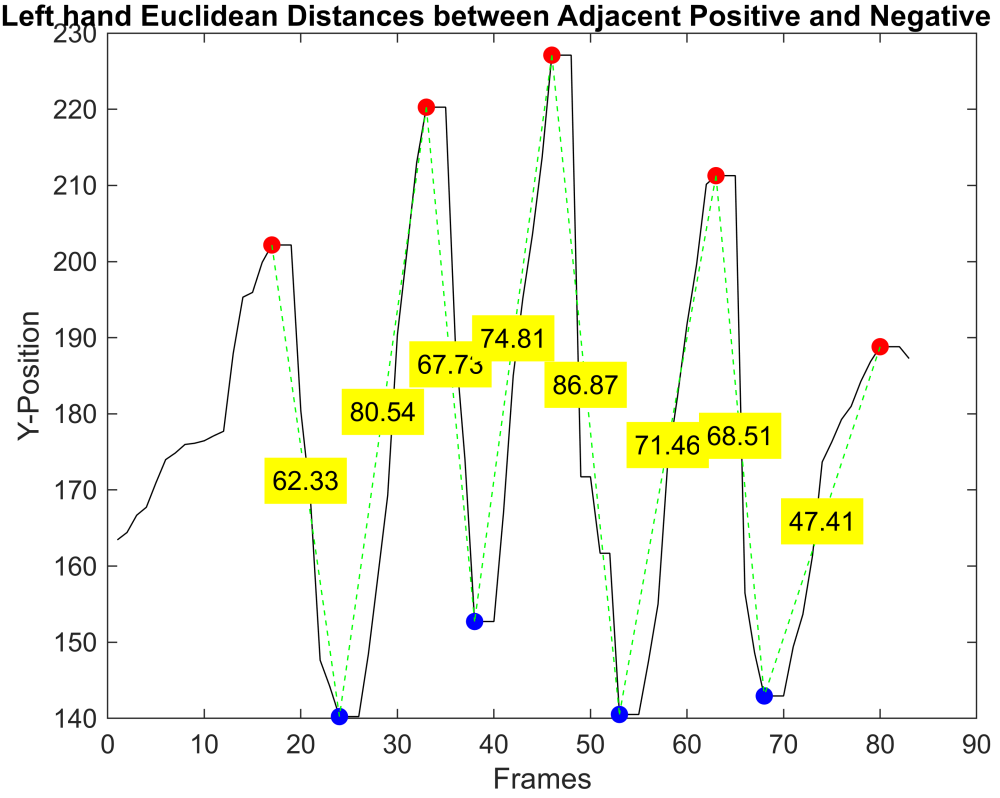



```
Correlation between Left hand Y position and right hand Y position
    1.0000   -0.6077
   -0.6077    1.0000

Correlation between Left hand X position and right hand X position
```

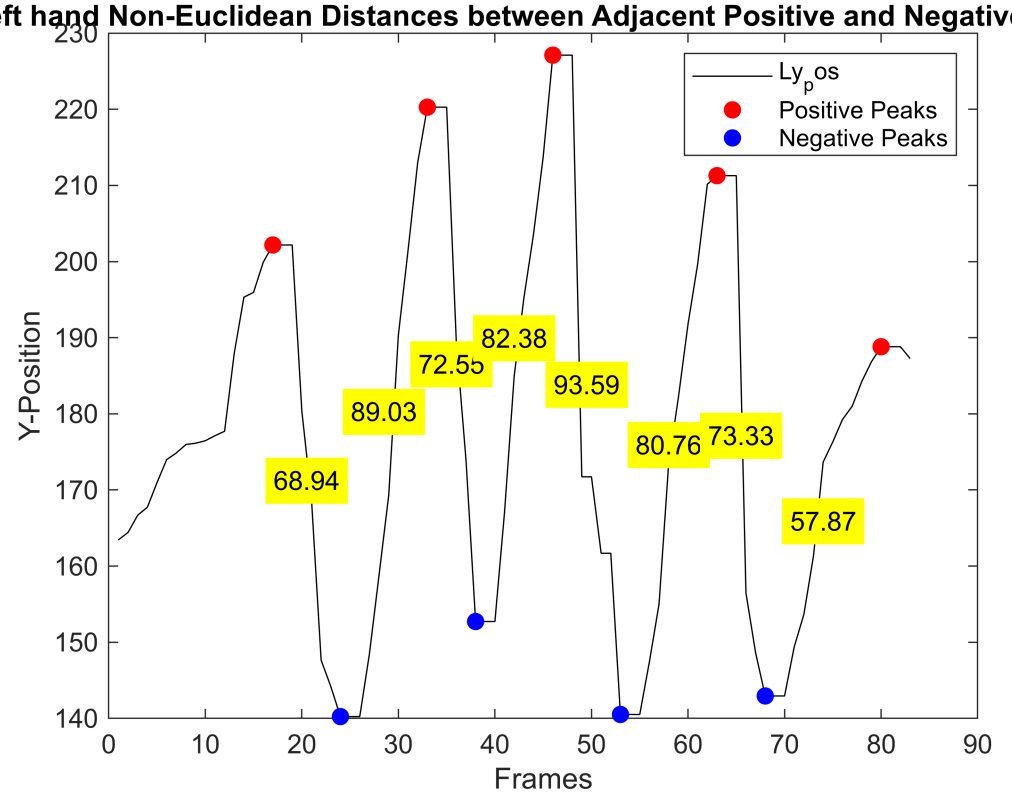
```
    1.0000    0.6192
    0.6192    1.0000
```




```
All positive and negative left hand peak Frame (x) location (number of cycles):
    16
    23
    32
    37
    45
    52
    62
    67
    79

Distances between all positive and negative left hand Peaks (cycle length:
     7
     9
     5
     8
     7
    10
     5
    12

Average distance between all positive and negative left hand peaks (average cycle length:)
    7.8750
```

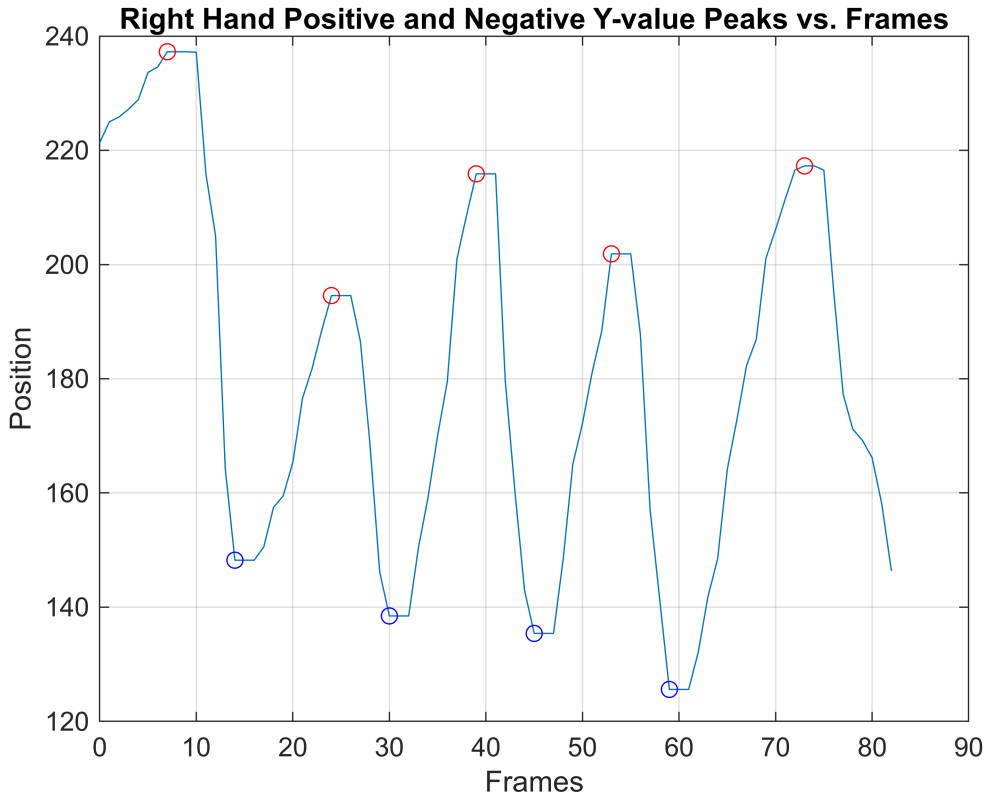



```
Left hand Euclidean Distances:
   62.3300   80.5374   67.7313   74.8077   86.8690   71.4645   68.5142   47.4104
```



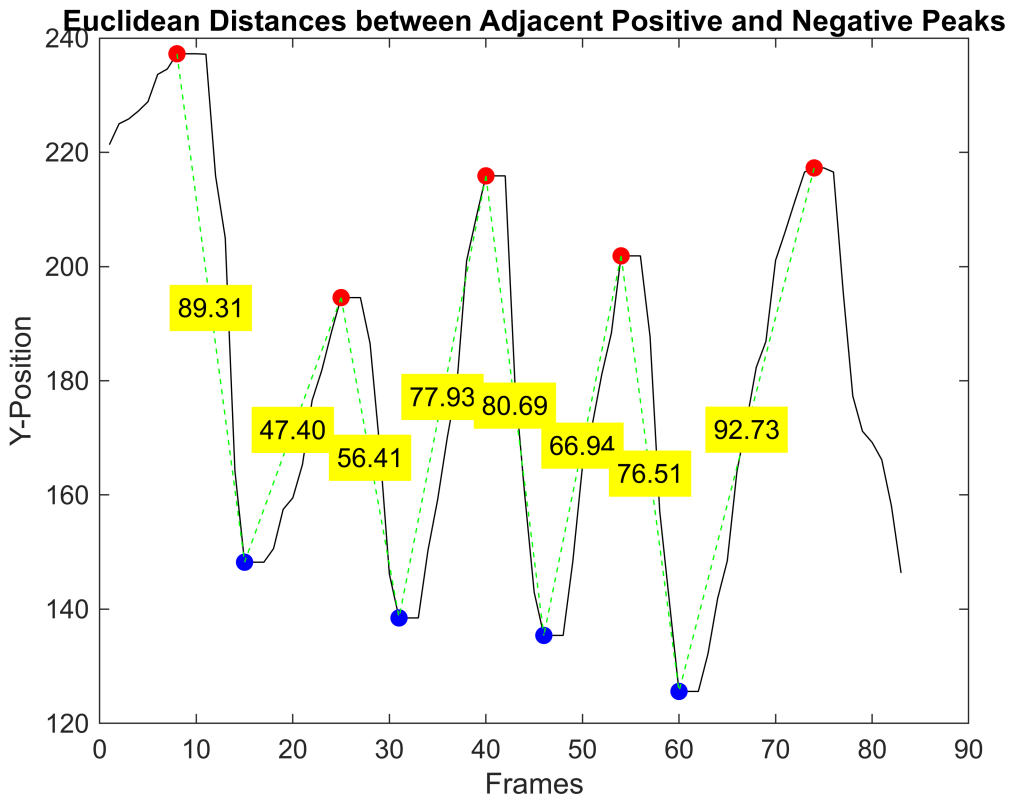

```
Ratios of left hand Euclidean to Non-Euclidean Distances:
    0.9042
    0.9046
```

```
    0.9336
    0.9081
    0.9282
    0.8849
    0.9343
    0.8193

Average Ratio of left hand euclidean:non-euclidean: 0.90215
List of peak speeds:
Peak Speed 1: 8.85
Peak Speed 2: 8.89
Peak Speed 3: 13.51
Peak Speed 4: 9.30
Peak Speed 5: 12.37
Peak Speed 6: 7.08
Peak Speed 7: 13.67
Peak Speed 8: 3.82
Correlation between Euclidean distances and peak speeds: 0.54941
```

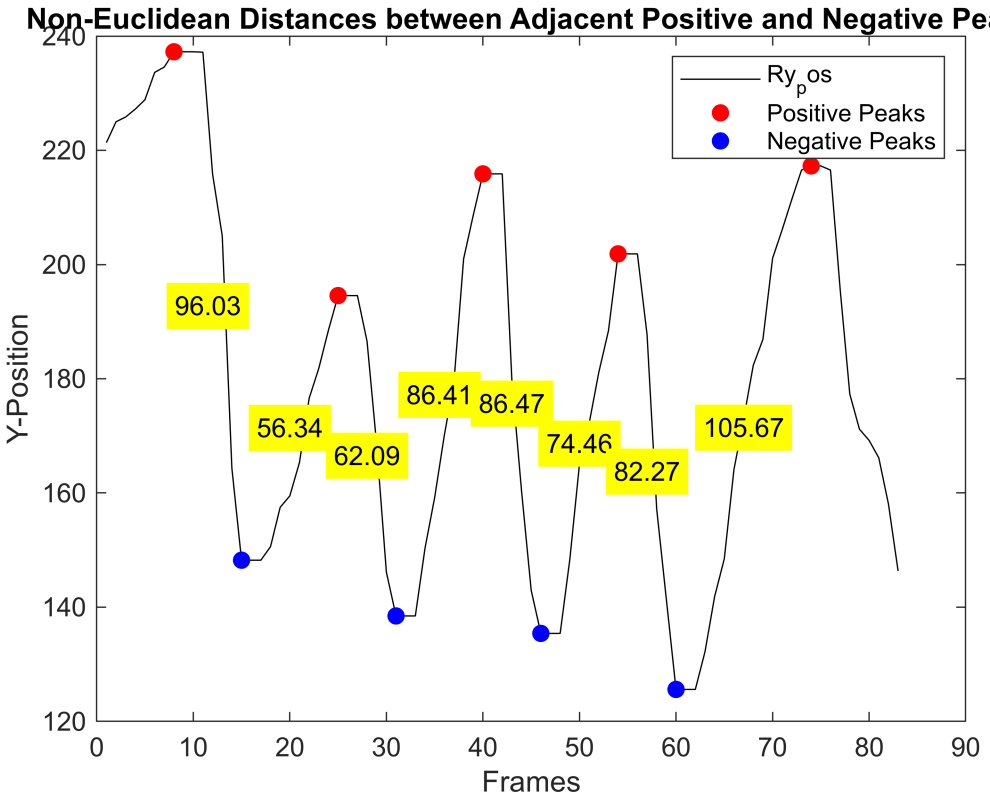



```
All positive and negative peak Frame (x) location (number of cycles):
     7
    14
    24
    30
    39
    45
    53
    59
    73

Distances between all positive and negative Peaks (cycle length):
     7
    10
     6
     9
```

```
     6
     8
     6
    14

Average distance between all positive and negative peaks (average cycle length):
    8.2500
```




```
Euclidean Distances:
   89.3053   47.4023   56.4137   77.9307   80.6939   66.9420   76.5050   92.7288
```




```
Ratios of Right Hand Euclidean to Non-Euclidean Distances:
    0.9300
    0.8414
    0.9085
    0.9019
    0.9332
    0.8990
    0.9299
    0.8776

Average Ratio of Right Hand Euclidean:Non-Euclidean: 0.90269
List of Right Hand Peak Speeds:
Right Hand Peak Speed 1: 12.72
Right Hand Peak Speed 2: 4.63
Right Hand Peak Speed 3: 9.35
Right Hand Peak Speed 4: 8.60
Right Hand Peak Speed 5: 13.41
Right Hand Peak Speed 6: 8.31
Right Hand Peak Speed 7: 12.71
Right Hand Peak Speed 8: 6.55
Correlation between Right Hand Euclidean Distances and Peak Speeds: 0.47489
ans = 83×13
         0  327.5293  163.4489    0.9430  300.1697  221.3400    0.8751  237.6796 ···
    1.0000  327.5293  164.4205    0.9630  300.1697  224.9950    0.7930  237.7880
    2.0000  327.5293  166.6860    0.9685  300.3762  225.8424    0.8322  237.7880
    3.0000  325.9701  167.7320    0.9727  300.1697  227.2236    0.8844  237.7880
    4.0000  325.7634  170.9598    0.9772  300.0901  228.8751    0.8712  237.6767
    5.0000  321.9679  173.9873    0.9585  299.9472  233.6399    0.8629  237.6767
    6.0000  320.1800  174.8594    0.9299  299.9472  234.5927    0.9045  237.6767
    7.0000  318.6017  175.9752    0.9273  299.6710  237.2588    0.9135  237.6767
    8.0000  317.8011  176.1366    0.9161  298.5572  237.2588    0.9179  237.6767
    9.0000  316.3683  176.4633    0.9322  293.6636  237.2588    0.9562  237.6951
      ⋮
```