# Code

% % % % % % % % % % % % % % % % % %

% %Variable Dictionary %

% % % % % % % % % % % % % % % % % %

% Itme= first column of data

% X=second Colum

% Y=third column

% Z=fourth column

% Fs=sample frequency

% Ts=Time period

% time=time vector

% find\_adduction= adduction angle in degree

% rotation\_angle= rotation angle in degree

% flexion\_angle= flexion angle in degree

% max\_flex= maximum angle of flexsion angle

% min\_flex= minimum angle of flexsion angle

% % % % % % % % % % % % % % % % % % %

% clear command window

clc

% clear workspace

clear all

% close all fingure

close all

% load text file

load\_data=importdata('inclinewalkXYZ.txt');

% display load\_date

disp('Text file contains:')

disp(load\_data)

% make variables for each column of data

Item=load\_data.data(:,1);

X=load\_data.data(:,2);

Y=load\_data.data(:,3);

Z=load\_data.data(:,4);

% create time vector

Fs=100;

Ts=1/Fs;

% time and X,Y,Z are must b same in length for plotting

time=0:Ts:(length(Item)/Fs)-Ts;

% find angle's

% flexion angle

flexion\_angle=[];

% loop for finding the all flexion angle

for i=1:length(Item)

% flexion angle calculate

temp= atan2(Y(i),X(i));

% concatenate all flexion angle

flexion\_angle=[flexion\_angle temp];

end

% find max and min angle

max\_flex=max(flexion\_angle);

min\_flex=min(flexion\_angle);

% convert from rad to degree angle

max\_flex=rad2deg(max\_flex);

min\_flex=rad2deg(min\_flex);

disp(['Max flexion Angle:',num2str(max\_flex),' degrees'])

disp(['Min flexion Angle:',num2str(min\_flex),' degrees'])

% find adduction angle and rotation angle

rotation\_angle=[];

find\_adduction=[];

for i=1:length (Item)

find\_adduction=[find\_adduction atan2(Y(i),Z(i))];

rotation\_angle=[rotation\_angle atan2(X(i),Z(i))];

end

% angle conversion

rotation\_angle=rad2deg(rotation\_angle);

find\_adductione=rad2deg(find\_adduction);

flexion\_angle=rad2deg(flexion\_angle);

% plot all in one figure

figure

subplot 311

plot(time,flexion\_angle, 'b-')

title('flexion angle')

xlabel('time [s]')

ylabel('angle[degree]')

subplot 312

plot(time,find\_adductione,'y\*-')

title('adductione angle')

xlabel('time [s]')

ylabel('angle[degree]')

subplot 313

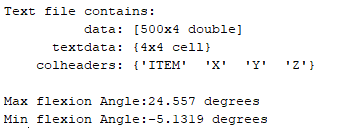
plot(time,rotation\_angle,'r--')

title('rotation angle')

xlabel('time [s]')

ylabel('angle[degree]')

# Output



# Graph

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