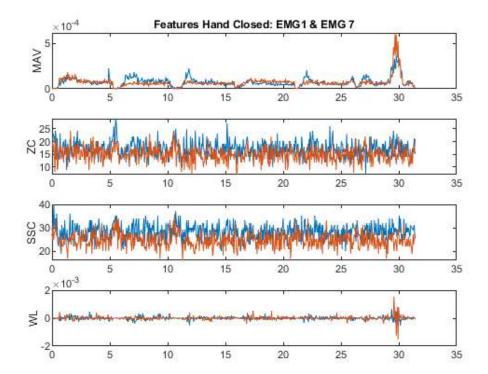
```
clear
close all
\% Binning data and extracting all four features at with 50ms bins
load("EMG_Off_Removed.mat")
Names = fieldnames(EMG on);
EMG_Feat = EMG_on;
% Sampling frequency and time vector
Fs = EMG_on.HC.posture.Fs(1);
t = linspace(0,(69852/Fs),69852);
binms = 50; % binsize in ms
window = round(binms*Fs/1000); % active window in #of data points
NumBins = ceil(69852/window); % 69852/window rounded up to the next whole number
bin = zeros([8,window]);
Features = zeros([32,315]);
for p = 1:11
    EMG_Feat.(Names{p}).posture.Time = linspace(0,(69852/Fs),NumBins);
    for j = 1:NumBins
        first = 1+j*window-window;
        last=j*window;
        if last > 69852
            last=69852;
        end
        for i = 1:(last-first)
            bin(:,i) = EMG_on.(Names{p}).posture.Data(:,first+i);
        end
        for i = 1:8
            % Mean Absolute Value
            MABS = mean(abs(bin),2);
            mean(abs(bin),2);
            Features((4*i)-3,j)=MABS(i,1);
            % Zero Crossings
            ZC = 0;
            for pts=1:window-1
                if bin(i,pts)*bin(i,pts+1) < 0</pre>
                    ZC = ZC+1;
                end
            Features((4*i)-2,j) = ZC;
            % Slope Sign Changes
            SSC = 0;
            for pts=1:window-2
                S1 = bin(i,pts+1)-bin(i,pts);
                    S2 = bin(i,pts+2)-bin(i,pts+1);
                if S1*S2 < 0
                    SSC = SSC +1;
                end
            end
            Features((4*i)-1,j) = SSC;
```

```
% Waveform Length
          WL = 0;
          for pts=1:window-1
             dist = bin(i,pts)-bin(i,pts+1);
             WL = WL + dist;
          end
          Features((4*i),j) = WL;
          % The features are organized thusly with N bins forming a 32XN
          % matrix
          % MAV1.1 MAV1.2 ... MAV1.N
          % ZC1.1 ZC1.2
                          ZC1.N
          % SSC1.1 SSC1.2 SSC1.N
          % WL1.1 WL1.2
                        WL1.N
          % MAV2.1 MAV2.2 MAV2.N
          % ZC2.1 ZC2.2
                         ZC2.N
          % SSC8.1 SSC8.2 SSC8.N
          % WL8.1 WL8.2 ... WL8.N
      end
   end
   EMG_Feat.(Names{p}).posture.Data = Features;
figure(1)
subplot(4,1,1)
plot(EMG_Feat.HC.posture.Time,EMG_Feat.HC.posture.Data(25,:))
title('Features Hand Closed: EMG1 & EMG 7');
ylabel('MAV')
subplot(4,1,2)
plot(EMG Feat.HC.posture.Time,EMG Feat.HC.posture.Data(2,:),EMG Feat.HC.posture.Time,EMG Feat.HC.posture.Data(26,:))
ylabel('ZC')
subplot(4,1,3)
plot(EMG_Feat.HC.posture.Time,EMG_Feat.HC.posture.Data(27,:))
ylabel('SSC')
subplot(4,1,4)
plot(EMG_Feat.HC.posture.Time,EMG_Feat.HC.posture.Data(28,:))
ylabel('WL')
```



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