**EXPERIMENT 12**

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**Write a MALTAB script for (frequency-domain parameters)  
1. ECG/PPG peak detection  
2. ECG/PPG feature extraction**

**CODE:**

clc;

clear all;

clear;

fps=100;

vec=importdata('2.txt');

[X Y Z]=pca(vec);

sig = Y;

figure(1)

plot(sig)

title('Raw Data');

sig1 = sig - mean (sig ); % cancel DC conponents

sig1 = sig1/ max( abs(sig1 )); % normalize to one

% LPF (1-z^-6)^2/(1-z^-1)^2

b=[1 0 0 0 0 0 -2 0 0 0 0 0 1];

a=[1 -2 1];

h\_LP=filter(b,a,[1 zeros(1,12)]); % transfer function of LPF

x2p = conv (sig1 ,h\_LP);

%x2 = x2 (6+[1: N]); %cancel delay

x2p = x2p/ max( abs(x2p )); % normalize , for convenience .

figure(2);

plot(x2p);

title('Filtered Data');

nFrames=length(sig1); % Signal length

t = [0:nFrames-1]/fps;

[peaks, peak\_pos,foots, foot\_pos] = peakdetect(fps, nFrames, sig1);

peaks=peaks(2:end);

foots=foots(2:end);

peak\_pos=peak\_pos(2:end);

foot\_pos=foot\_pos(2:end);

npks=length(peak\_pos);

figure(3)

plot(t,sig1, peak\_pos/fps,peaks,'\*r',foot\_pos/fps,sig1(foot\_pos),'\*m')

title('Peak Detection');

time=length(sig1)/fps;

bpm=(npks/time)\*60;

name= '2' ;

fps=100;

[psd,domFreq]=FreqDomainParameters( sig1, fps,name);

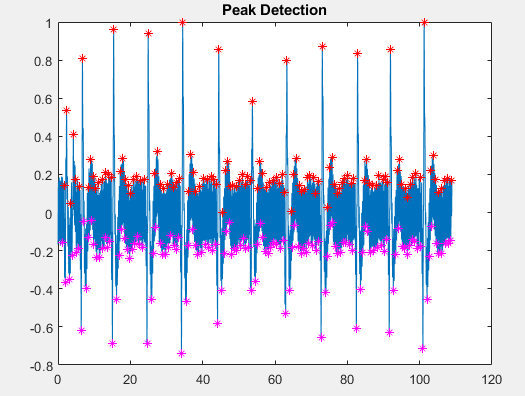
DATA1(1)=bpm;

DATA1(2)=psd;

DATA1(3)=domFreq(1);

dlmwrite('NEWD.txt',DATA1,'-append');

**OUTPUT:**

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