Programmable Embedded Systems
ASSIGNMENT 8

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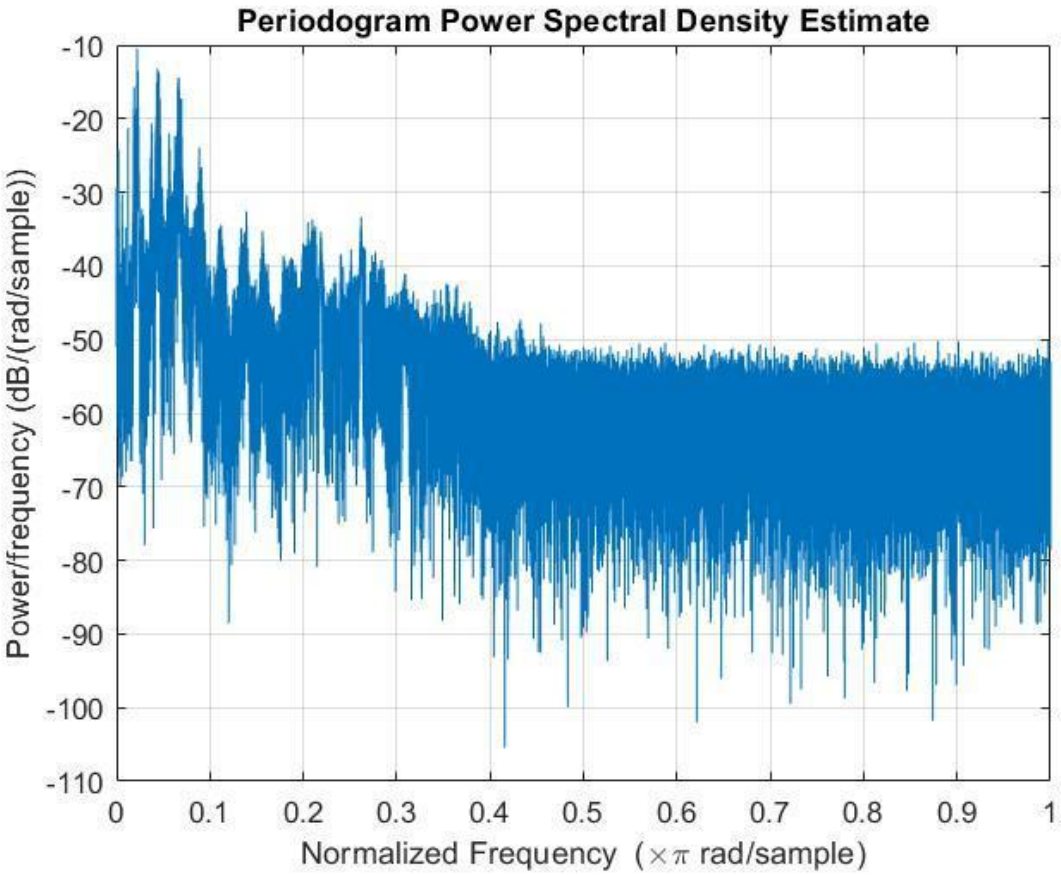
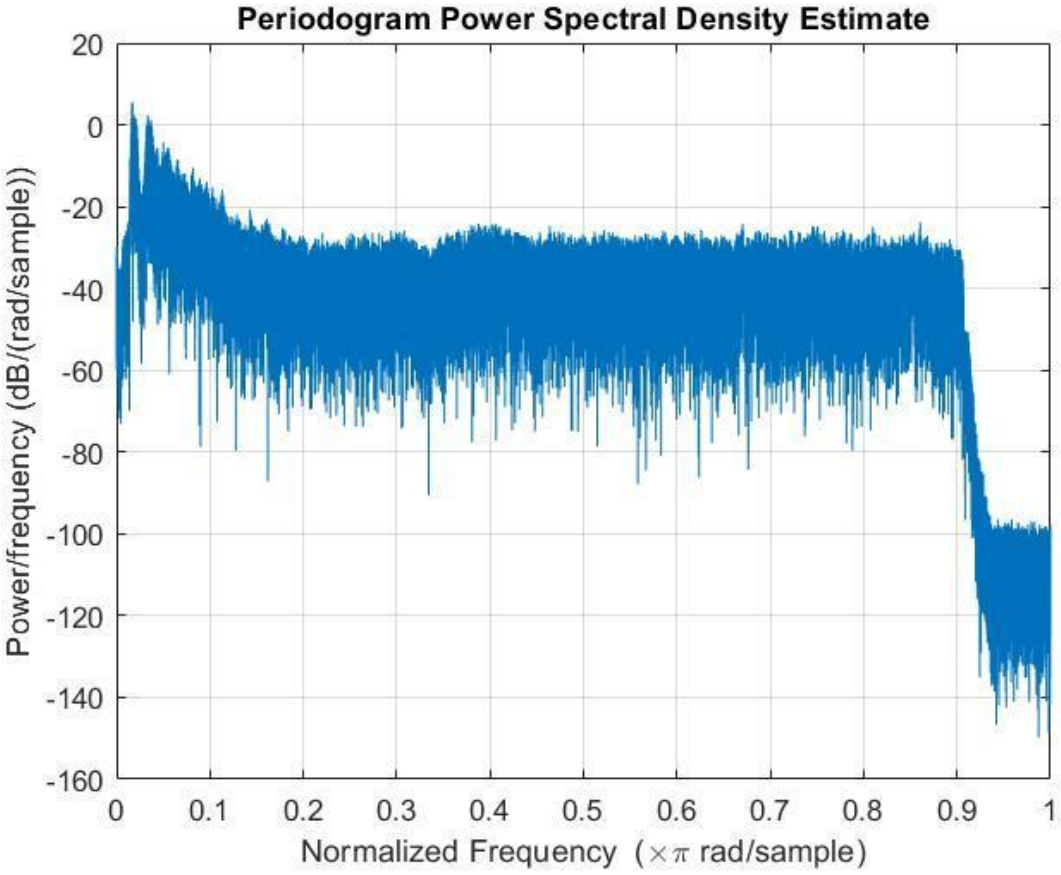
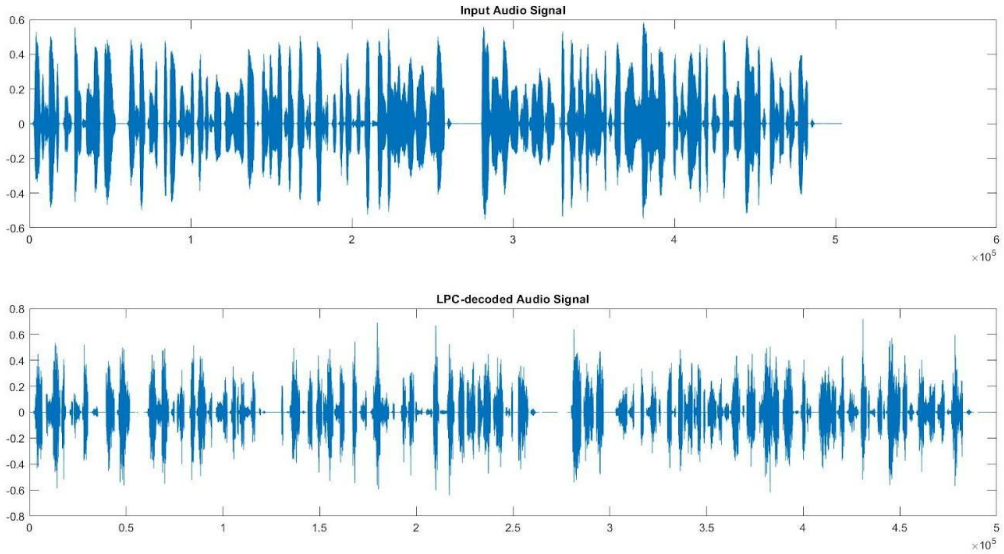


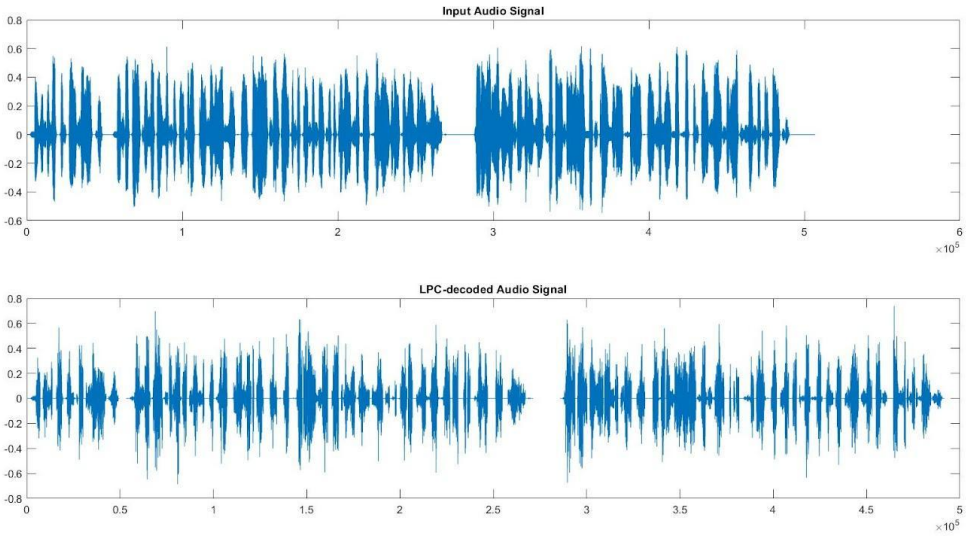
PSD of female voice



PSD of male voice

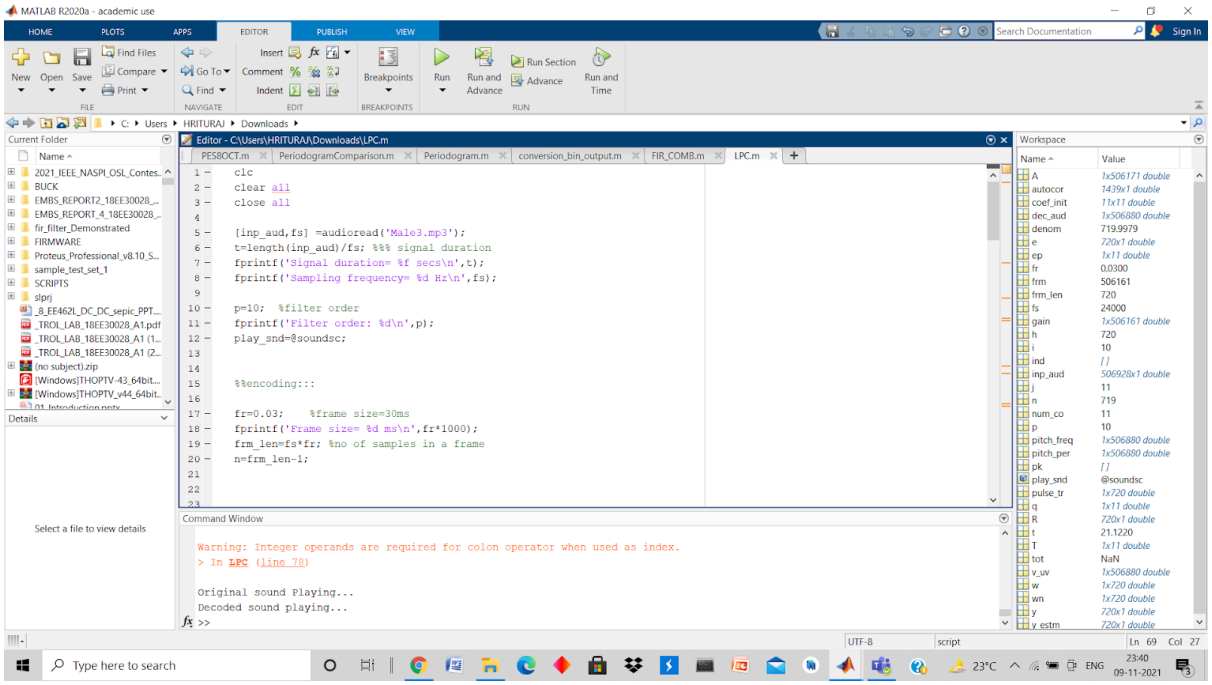


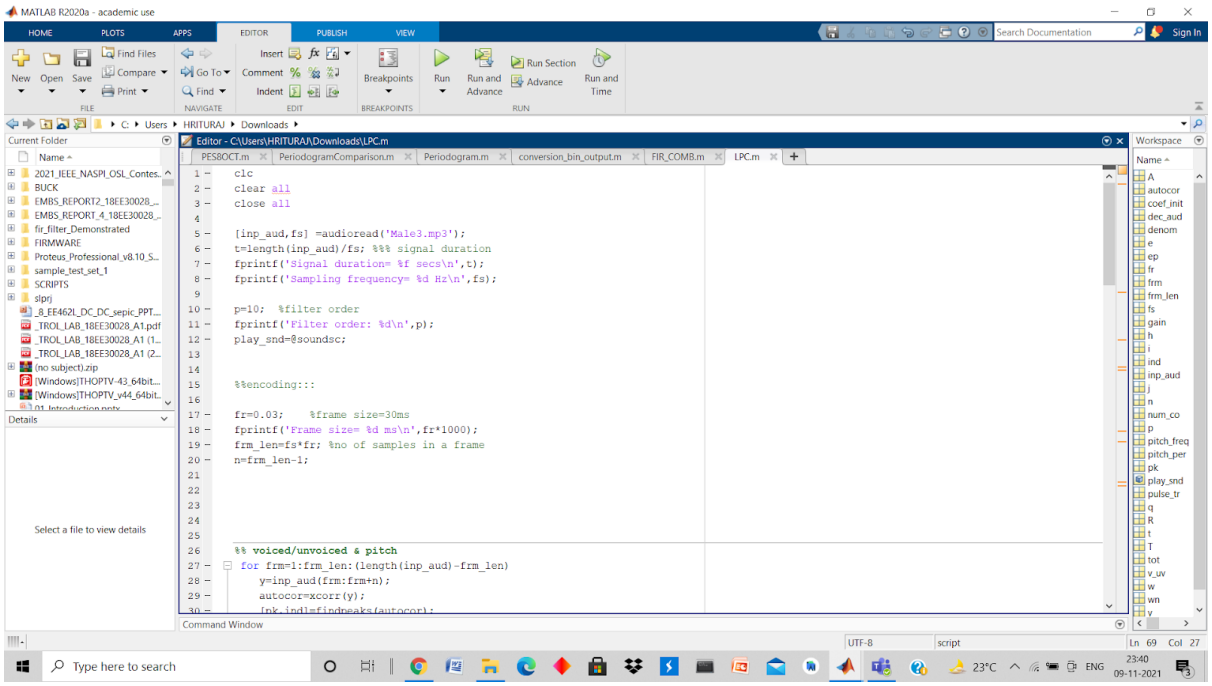
LPC decoded signal for Female voice

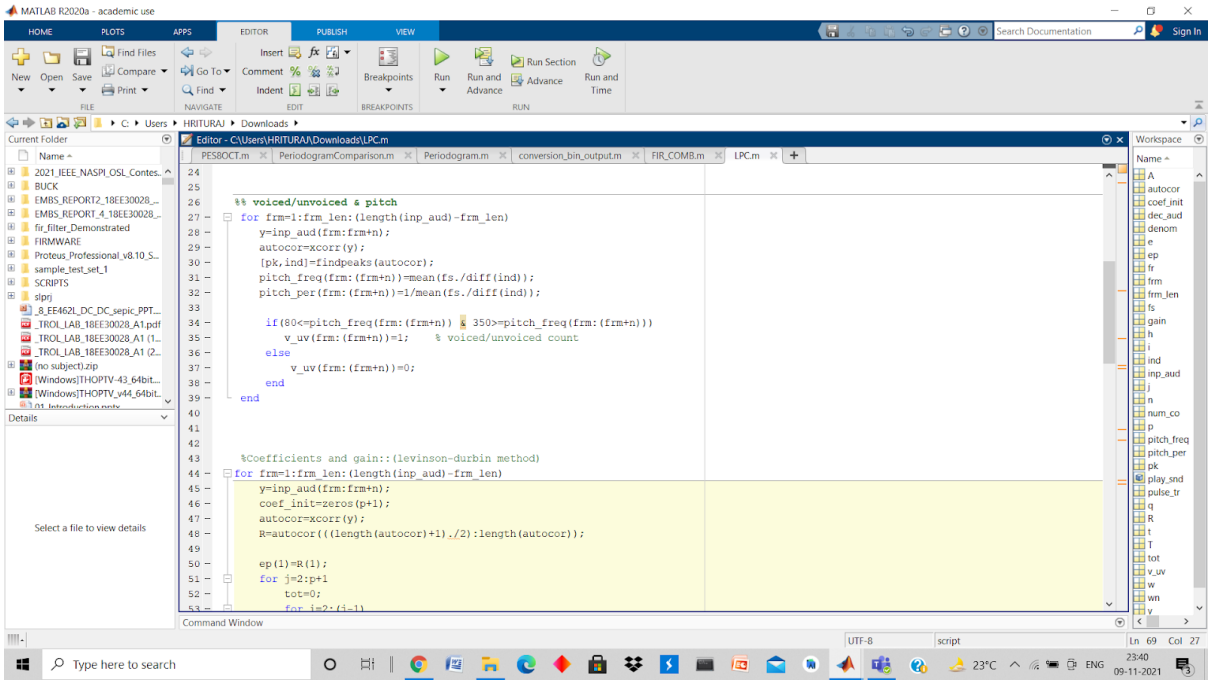


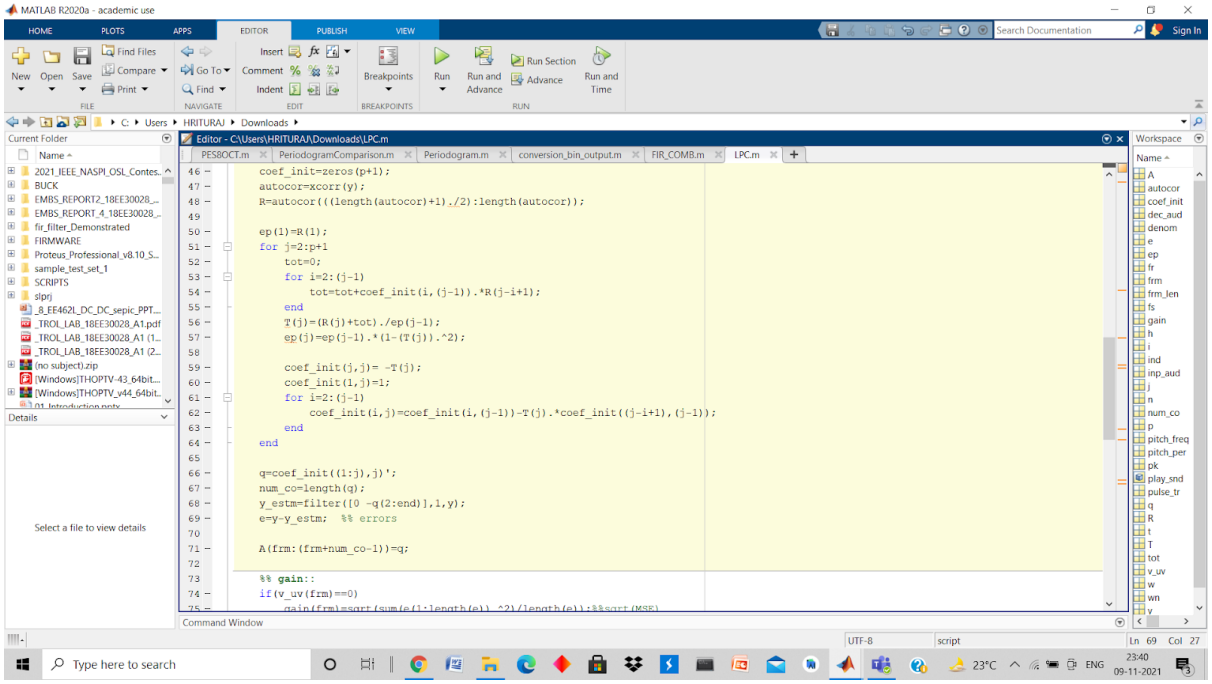
LPC decoded signal for Male Voice

LPC Code in MATLAB






MATLAB R2020a - academic use
Editor - C:\Users\HRITURAJ\Downloads\LPC.m
PES8OCT.m
PeriodogramComparison.m
Periodogram.m
conversion_bin_output.m
FIR_COMB.m
LPC.m
%% voiced/unvoiced & pitch
for frm=1:frm_len:(length(inp_aud)-frm_len)
y=inp_aud(frm:frm+n);
autocor=xcorr(y);
[pk,ind]=findpeaks(autocor);
pitch_freq(frm:(frm+n))=mean(fs./diff(ind));
pitch_per(frm:(frm+n))=1/mean(fs./diff(ind));
if(80<=pitch_freq(frm:(frm+n)) & 350>=pitch_freq(frm:(frm+n)))
v_uv(frm:(frm+n))=1; % voiced/unvoiced count
else
v_uv(frm:(frm+n))=0;
end
end
%Coefficients and gain::(levinson-durbin method)
for frm=1:frm_len:(length(inp_aud)-frm_len)
y=inp_aud(frm:frm+n);
coef_init=zeros(p+1);
autocor=xcorr(y);
R=autocor(((length(autocor)+1)./2):length(autocor));
ep(1)=R(1);
for j=2:p+1
tot=0;
for i=2:(i-1)
Command Window
Select a file to view details
Type here to search
23°C
ENG
23:40
09-11-2021


MATLAB R2020a - academic use
Editor - C:\Users\HRITURAJ\Downloads\LPC.m
coef_init=zeros(p+1);
autocor=xcorr(y);
R=autocor(((length(autocor)+1)./2):length(autocor));
ep(1)=R(1);
for j=2:p+1
tot=0;
for i=2:(j-1)
tot=tot+coef_init(i,(j-1)).*R(j-i+1);
end
T(j)=(R(j)+tot)./ep(j-1);
ep(j)=ep(j-1).*(1-(T(j)).^2);
coef_init(j,j)= -T(j);
coef_init(1,j)=1;
for i=2:(j-1)
coef_init(i,j)=coef_init(i,(j-1))-T(j).*coef_init((j-i+1),(j-1));
end
end
q=coef_init((1:j),j)';
num_co=length(q);
y_estm=filter([0 -q(2:end)],1,y);
e=y-y_estm; %% errors
A(frm:(frm+num_co-1))=q;
%% gain::
if(v_uv(frm)==0)
Command Window
Select a file to view details
Type here to search
23°C
ENG
23:40
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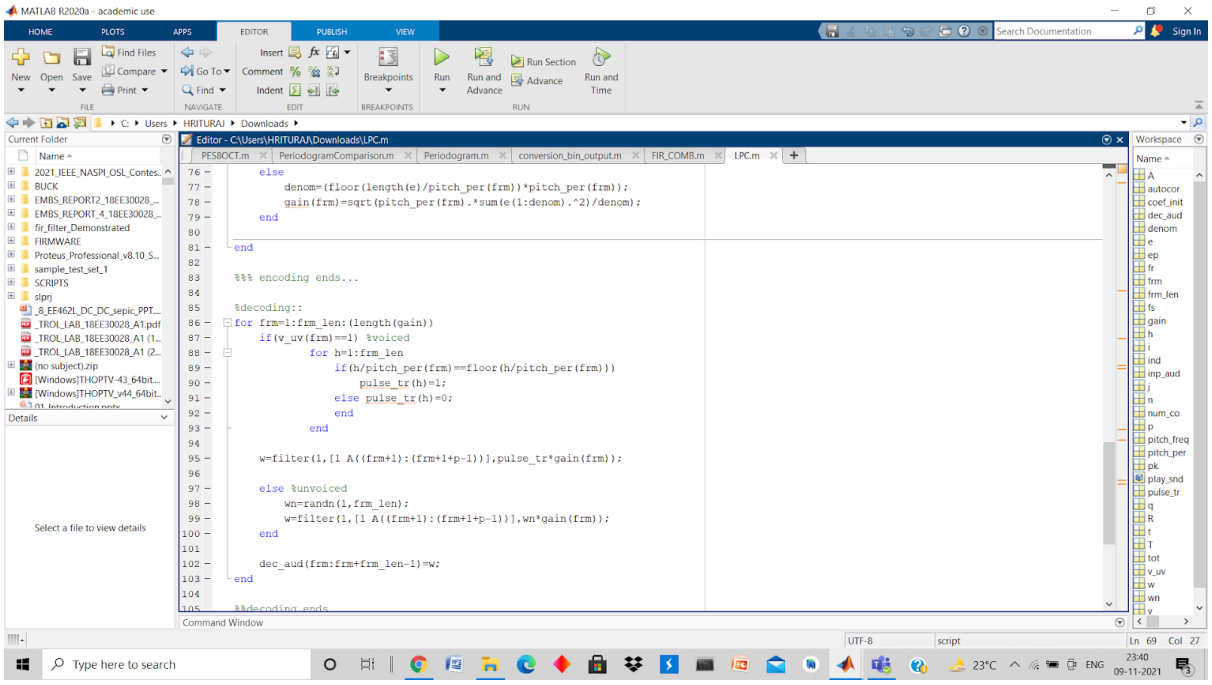
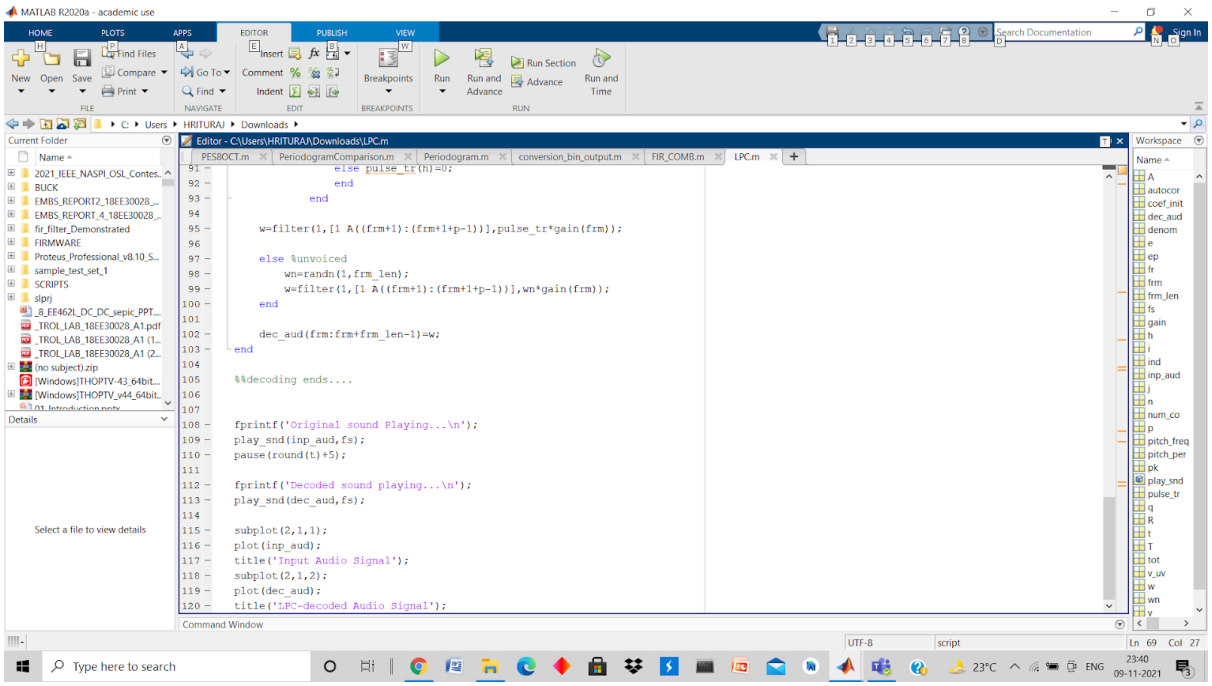
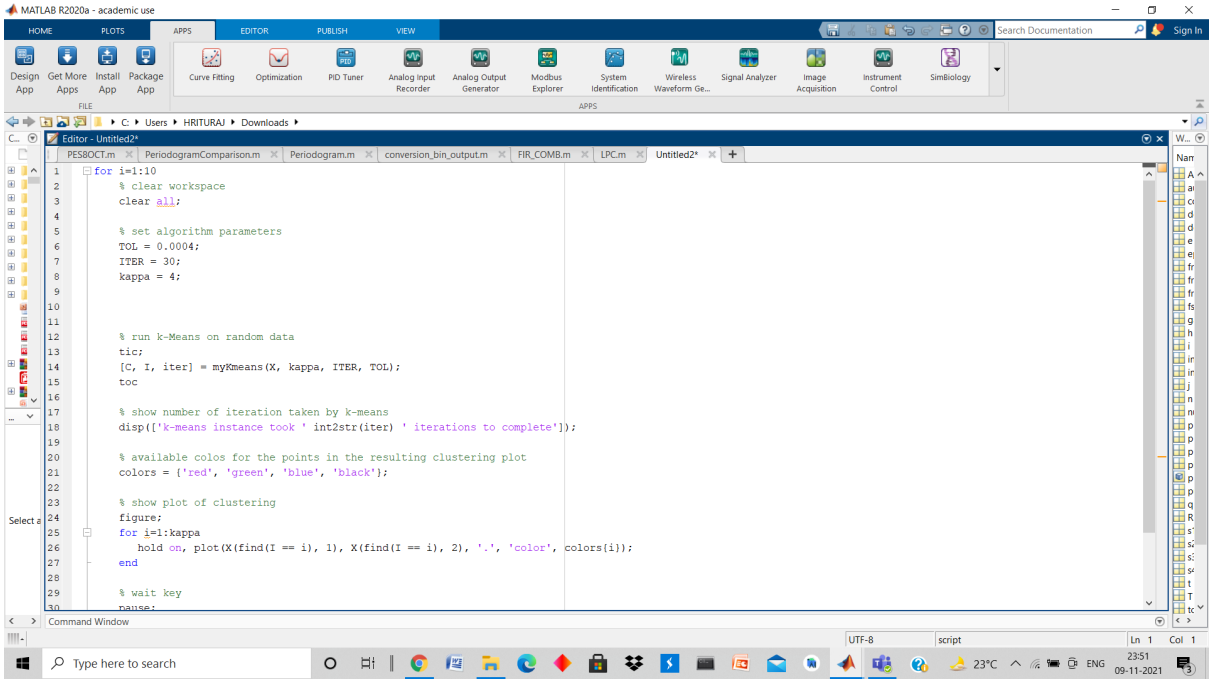




Kmeans code in MATLAB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PID Tuner
Analog Input Recorder
Analog Output Generator
Modbus Explorer
System Identification
Wireless Waveform Ge...
Signal Analyzer
Image Acquisition
Instrument Control
SimBiology
FILE
APPS
C: ▸ Users ▸ HRITURAJ ▸ Downloads ▸
Editor - Untitled2*
PES8OCT.m
PeriodogramComparison.m
Periodogram.m
conversion_bin_output.m
FIR_COMB.m
LPC.m
Untitled2*
for i=1:10
% clear workspace
clear all;
% set algorithm parameters
TOL = 0.0004;
ITER = 30;
kappa = 4;
% run k-Means on random data
tic;
[C, I, iter] = myKmeans(X, kappa, ITER, TOL);
toc
% show number of iteration taken by k-means
disp(['k-means instance took ' int2str(iter) ' iterations to complete']);
% available colos for the points in the resulting clustering plot
colors = {'red', 'green', 'blue', 'black'};
% show plot of clustering
figure;
for i=1:kappa
hold on, plot(X(find(I == i), 1), X(find(I == i), 2), '.', 'color', colors{i});
end
% wait key
pause;
Command Window
UTF-8
script
Ln 1
Col 1
Type here to search
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23:51
09-11-2021