Code:

MATLAB CODE

% Loading and Plotting the Speech Signal:

[y, fs] = audioread("female (2).wav");

figure;

plot(y);

title('Speech Signal')

xlabel('Discrete time index')

ylabel('y(n)')

N = length(y);

% Frequency Spectrum Analysis:

NFFT = 2^nextpow2(N);

% Applying N-point DFT algorithm

Y = fft(y, NFFT)/N;

% Generate plot of the frequency spectrum

f = fs/2 \* linspace(0, 1, NFFT/2 + 1);

% Plot single-sided amplitude spectrum.

figure(2);

stem(f, 2 \* abs(Y(1:NFFT/2 + 1)));

title('Single-Sided Amplitude Spectrum of y(t)')

xlabel('Frequency (Hz)')

ylabel('|Y(f)|')

% Dominant Frequency Identification and Voice Gender Classification:

Y\_mag = abs(Y);

[pks, n\_dominant\_freq] = max(Y\_mag(1:4350));

freq = f(n\_dominant\_freq);

if (freq < 155)

disp("This is a Male Voice");

elseif (freq > 155 && freq < 165)

disp("Overlapping region");

else

disp("This is a Female voice");

end

% SYNTAX:

player\_filtered = audioplayer(filtered\_signal, Fs);

N = length(y);

NFFT = 2^nextpow2(N);