VOICE RECOGNITION BASED SECURITY SYSTEM

SENSORS AND INSTRUMENTATION THEORY J-COMPONENT

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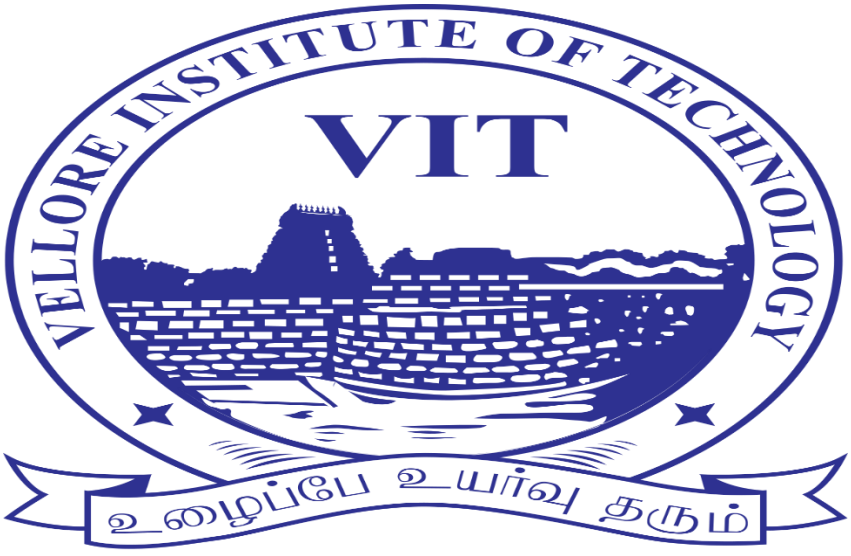


CONTENT

INTRODUCTION

Speech Recognition is the way of capturing the talked words using a gadget and converting them into a digitally stored set of words.

In the current world, there is a continually expanding need to confirm and recognize the voice of individuals automatically.

Speech recognition is basically and widely used concept for providing the security to the applications.

FEATURE OF THE PROJECT

- Use mic to record the voice input and store it as .wav file.
- Processing the signal using correlation method to verify the voice.
- Depending on limitations of other models, the technique called cross correlation for recognition of speech is used and simulated in MATLAB.
- Correlation compares the two signals, considering the samples and comparing them with the test sample gives us the result.

MAIN COMPONENTS

- Mic
- Matlab

OBJECTIVE OF THE PROJECT

- The objective of the project is to use the audio input as a basis of a security measure.

CROSS-CORRELATION TECHNIQUE

- Cross - correlation is a measure of similarity of two series as a function of the displacement of one relative to the other.
- Syntax for Correlation in MATLAB is derived as r = xcorr(x,y).
- r = xcorr(x,y) returns the cross-correlation of two discrete-time sequences, x and y.
- Cross-correlation measures the closeness amongst x and moved (slacked) duplicates of y as a component of the slack.

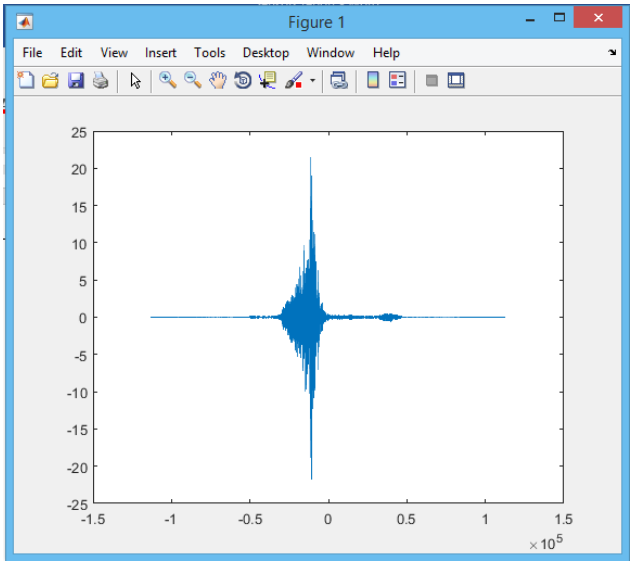
MATLAB CODE

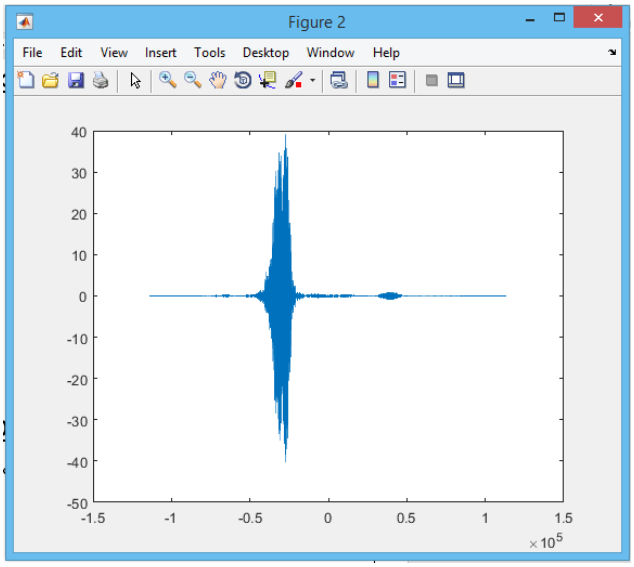
```
function speechrecognition(filename)
voice=audioread(filename);
x=voice;
x=x';
x=x(1,:);
x=x';
y1=audioread('one.wav');
y1=y1';
y1=y1(1,:);
y1=y1';
z1=xcorr(x,y1);
m1=max(z1);
l1=length(z1);
t1=-((l1-1)/2):1:((l1-1)/2);
t1=t1';
%subplot(3,2,1)
plot(t1,z1);
y2=audioread('two.wav');
y2=y2';
y2=y2(1,:);
y2=y2';
```

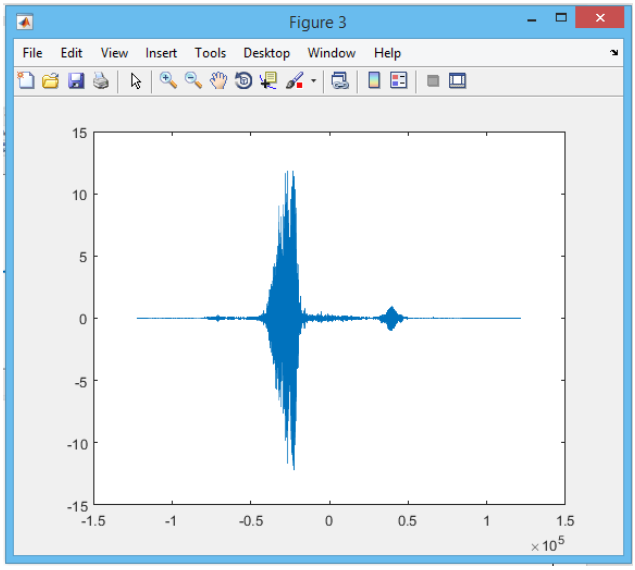
```
z2=xcorr(x,y2);
m2=max(z2);
l2=length(z2);
t2=-((l2-1)/2):1:((l2-1)/2);
t2=t2';
%subplot(3,2,2)
figure
plot(t2,z2);
y3=audioread('three.wav');
y3=y3';
y3=y3(1,:);
y3=y3';
z3=xcorr(x,y3);
m3=max(z3);
l3=length(z3);
t3=-((l3-1)/2):1:((l3-1)/2);
t3=t3';
%subplot(3,2,3)
figure
plot(t3,z3);
y4=audioread('four.wav');
y4=y4';
y4=y4(1,:);
y4=y4';
z4=xcorr(x,y4);
m4=max(z4);
l4=length(z4);
t4=-((l4-1)/2):1:((l4-1)/2);
t4=t4';
%subplot(3,2,4)
figure
plot(t4,z4);
y5=audioread('five.wav');
y5=y5';
y5=y5(1,:);
y5=y5';
```

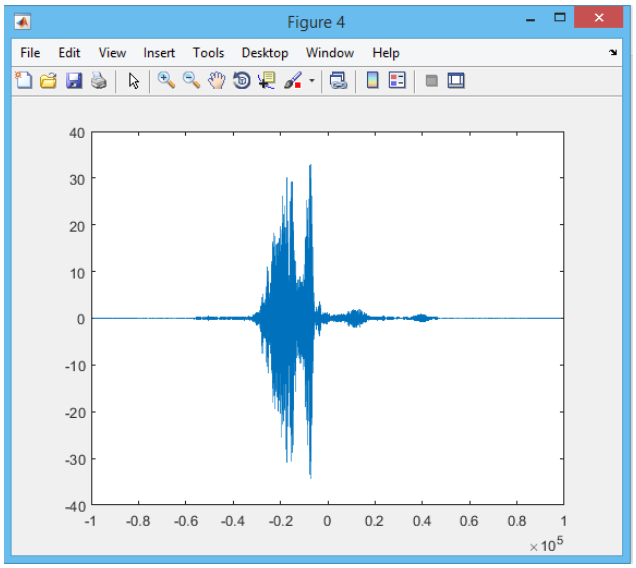
```
z5=xcorr(x,y5);
m5=max(z5);
l5=length(z5);
t5=-((l5-1)/2):1:((l5-1)/2);
t5=t5';
%subplot(3,2,5)
figure
plot(t5,z5);
m6=300;
a=[m1 m2 m3 m4 m5 m6];
m=max(a);
h=audioread('allow.wav');
if m<=m1
    soundsc(audioread('one.wav'),50000)
        soundsc(h,50000)
elseif m<=m2
    soundsc(audioread('two.wav'),50000)
        soundsc(h,50000)
elseif m<=m3
    soundsc(audioread('three.wav'),50000)
        soundsc(h,50000)
elseif m<=m4
    soundsc(audioread('four.wav'),50000)
        soundsc(h,50000)
elseif m<m5
    soundsc(audioread('five.wav'),50000)
        soundsc(h,50000)
else
   soundsc(audioread('denied.wav'),50000)

end
```

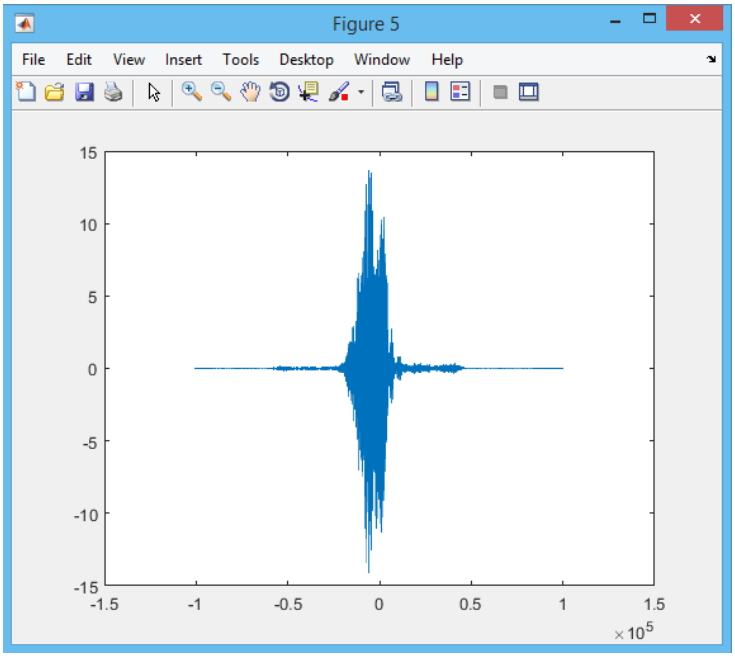
Picture of project











RESULTS AND CONCLUSIONS

At the end of this project have gained working knowledge with the concept of correlation and also have good theoretical knowledge about the same.

We also gained more hands-on experience in MATLAB as we did more complicated codes.

References

1. www.wikipedia.com
2. www.ijcter.com
3. www.practicalcryptography.com
4. www.github.com