SPEECH RECOGNITION SECURITY SYSTEM USING MATLAB

PROJECT REPORT

Submitted for the course: Signals and Systems (ECE1004)

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ACKNOWLEDGEMENTS

In performing our assignment, we had to take the help and guideline of some respected persons, who deserve our greatest gratitude. The completion of this assignment gives us much Pleasure.

We would like to show our gratitude to **PROF. RAJESH KUMAR M**

for giving us a good guideline for assignment throughout numerous consultations. We would also like to expand our deepest gratitude to all those who have directly and indirectly guided us in writing this assignment. We also thank the VIT UNIVERSITY and Dean of SENSE office for this opportunity. Many people, especially our classmates and team members itself, have made valuable comment suggestions on this proposal which gave us an inspiration to improve our assignment. We thank all the people for their help directly and indirectly to complete our assignment.

ABSTRACT

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.

We have come up with a Security System using speech recognition.

INTRODUCTION

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.

To recognize the words from the sound the concept Mel frequency cepstral coefficients (MFCCs) is used.
We have used Arduino and a servo motor for the demonstration of the hardware of the door lock security system.

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.

CODE

```
rec=audiorecorder;
disp('Start1');
recordblocking(rec,3);
disp('End1');
test=getaudiodata(rec); test=test';
test=test(1,:); test=test';
pause(2); y2=audioread('MANASA(1).wav');
y2=y2'; y2=y2(1,:); y2=y2';
z2=xcorr(test,y2); m2=max(z2);
l2=length(z2);                  t2=-
((l21)/2):1:((l2-1)/2);       t2=t2';
y3=audioread('tanvi(1).wav');
y3=y3'; y3=y3(1,:); y3=y3';
z3=xcorr(test,y3); m3=max(z3);
l3=length(z3);                  t3=-
((l31)/2):1:((l3-1)/2);       t3=t3';
y4=audioread('aarathy.wav'); y4=y4';
        y4=y4(1,:);  y4=y4';
z4=xcorr(test,y4); m4=max(z4);
l4=length(z4); t4=-((l41)/2):1:((l4-1)/2);
t4=t4';
y5=audioread('dakshayani.wav');
y5=y5'; y5=y5(1,:); y5=y5';
z5=xcorr(test,y5);
m5=max(z5); l5=length(z5); t5=-((l5-1)/2):1:((l5-1)/2);
```

```
t5=t5';
y6=audioread('mounika.wav');
y6=y6';      y6=y6(1,:);      y6=y6';
z6=xcorr(test,y6);     m6=max(z6);
l6=length(z6); t6=-((l61)/2):1:((l6-
1)/2); t6=t6';
y7=audioread('aditya.wav'); y7=y7';
y7=y7(1,:);                          y7=y7';
z7=xcorr(test,y7);       m7=max(z7);
l7=length(z7);
t7=-((l7-1)/2):1:((l7-1)/2); t7=t7';
m8=30; a=[m2 m3 m4 m5 m6  m7
m8]; maxima=max(a);
h=audioread('Matchfound.wav'); if
maxima<=m3     soundsc(h,50000)
ab=arduino('COM12','Uno','Libraries','Servo');
s = servo(ab, 'D8');     writePosition(s,1) elseif
maxima<=m2       soundsc(h,50000)
ab=arduino('COM12','Uno','Libraries','Servo');
s = servo(ab, 'D8');
writePosition(s,1) elseif maxima<=m4
soundsc(h,50000)
   ab=arduino('COM12','Uno','Libraries','Servo');
s = servo(ab, 'D8');
   writePosition(s,1) elseif  maxima<=m5
soundsc(h,50000)
   ab=arduino('COM12','Uno','Libraries','Servo');       s =
servo(ab, 'D8');     writePosition(s,1) elseif maxima<=m6
soundsc(h,50000)
   ab=arduino('COM12','Uno','Libraries','Servo');     s = servo(ab, 'D8');
writePosition(s,1)  elseif maxima<=m7     soundsc(h,50000)

ab=arduino('COM12','Uno','Libraries','Servo');
s  =  servo(ab,  'D8');         writePosition(s,1)  else
soundsc(audioread('Nomatch.wav'),50000) end
```

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.

REFERRENCE

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