Design of Voice Command Access Using Matlab

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Abstract: This particular project is mainly deals with security and access to a device. As the present generation the technology was increasing rapidly. The security for the electronic devices is also increasing highly. There are different types of security was implemented for the electronic devices. They are: Biometric, Iris Scan, Facial Recognition and Voice Recognition We preferably think Voice Recognition is more secured when compared. So we are designing a voice Access Module. For which we are using Audio processing subject on a lighter note. The central idea of the project is to use MATLAB software and record few people audio and store them as a data- base. Now the task to be done by design is when a person tries to open system with his voice command, the design need to verify that particular audio with the database created. The design allows the person only when he is one of the authorized persons, in else case it recognizes that the one is an intruder.
Keywords: Security, Voice processing, database.

I. INTRODUCTION

In the modern world, there is an ever-increasing need to authenticate and identify individuals automatically. Securing personal privacy and deterring identity theft are national priorities. Biometrics, the physical traits and behavioral characteristics that make each of us unique, area natural choice for identity verification. It is an emerging technology that promises an effective solution to our security needs. It can accurately identify or verify individuals based upon their unique physical or behavioral characteristics. It is a key that can be customized to an individual's access needs opening doors for one while keeping others out. We can use a biometric to access our home, our account, or to invoke a customized setting for any secure area or application. In this chapter we explore the various types of biometric authentication techniques and their deployment potential. We take a look into the emerging technologies in this field and note their potential applications and future prospects.

II. LITERATURE SURVEY

Several experiments have been carried out over the years by different groups of researchers.

Here are some of the following groups:

1) Bhuvan Taneja, Jones C J, Rohan Tanwar –" Speech Recognition"- International Journal of Scientific Research & Engineering Trends - January 2021. In this thesis, we have exhibited an evaluation pertaining to Automated Speech Recognition Systems. We have discussed the system more-over its vital attributes, also the overall architecture pertaining to Automated Speech Recognition. We consider utilizing neural networks in our perspective that is pertaining with automated speech processing to construct an intelligent interface built on computer vision moreover functions to input the speech of users with the purpose that the interfaces permit smart inter communication along with users more over initiate a natural as well as smooth communication amongst the machines and human.

2) Neha Sharma , Shipra Sardana " Designing a Real Time Speech Recognition System using MATLAB"- National Conference on Latest Initiatives& Innovations in Communication- April 2020. In this project nine words were collected and analyzed. Words were distinguished by energies associated with them. The system was able to separate the words according to their energies. Final output comes out in the form of text. By using this code the system can be trained for more words and paragraphs. This system is also very sensitive to noise. In future we can work for this task. Also this system is very sensitive to word pronunciation during training.

3) Daniel S. Park, Yu Zhang, Ye Jia, Wei Han, Chung-Cheng Chiu, Bo Li, Yonghui Wu and Quoc V. Le – "Improved Noisy Student Training for Automatic Speech Recognition" – 29 October 2020. We have adapted and improved noisy student training for ASR. We have employed Spec Augment, language model fusion and sub-modular sampling into the noisy student training pipeline to adapt it for speech recognition.

III. PROPOSED SYSTEM

Our proposed model is voice recognition using matlab. Biometrics is unique identification for even two twins as well know, One can use therebiometrics with copying finger prints, without knowledge of actual authority. For achieving this we are using Matlab software and few of its features. In our model the design begins with access of the human voice, who is the actual user of the device this voice. The characteristics of this voice like the Cepstrum, Automatic Dialect, Mel frequency, Gaussian feature, Frequency
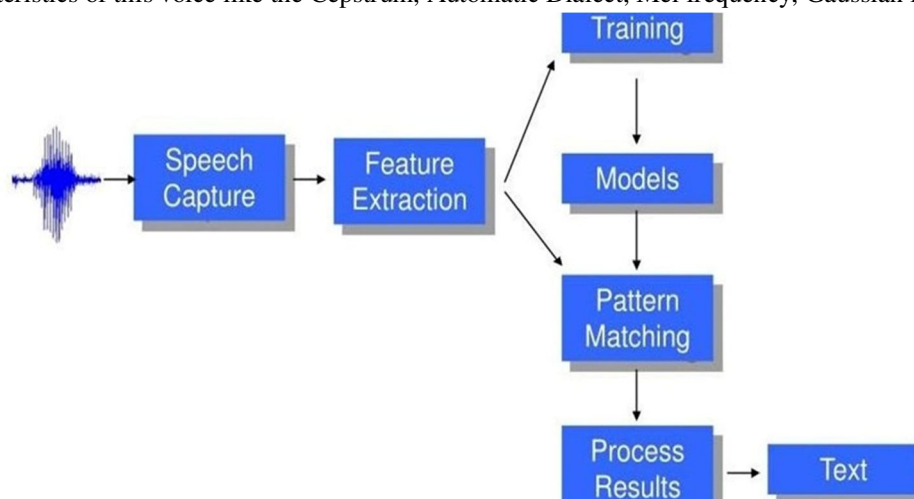

Figure 3.1: Work Flow of Model

IV. RESULT

We can upload the dataset that is our voice command with the help of MATLAB tool and observe the obtained results.
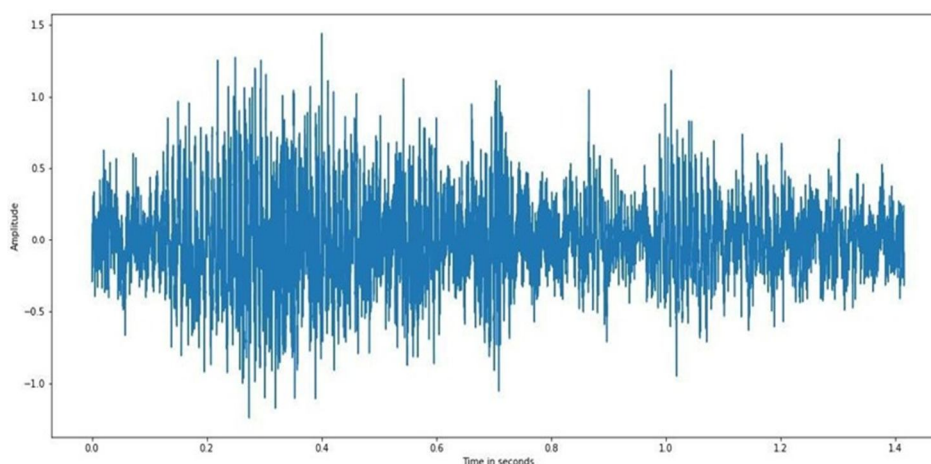

Fig 4.1: Voice Signal

Here the above we gave the actual voice of the user and plotted the voice as a signal showing its modulation and its amplitude. Here the other features are also saved as the data of the original user. Now the other person voice signal is given to the program and the features are analysed. This features are compared with original data. For the users who are or the one is not the actual user, it is displayed as "You are an intruder! Try AGAIN" For the actual user it has recognized the voice and displayed as "Hi user! WELCOME"

Thus we get the desired output through a MATLAB program by using its few of the features. This is just a program wrote down in the software, and the same program can be further developed as an application or website with some more detailed work on it nad can be used as a security access control by the user
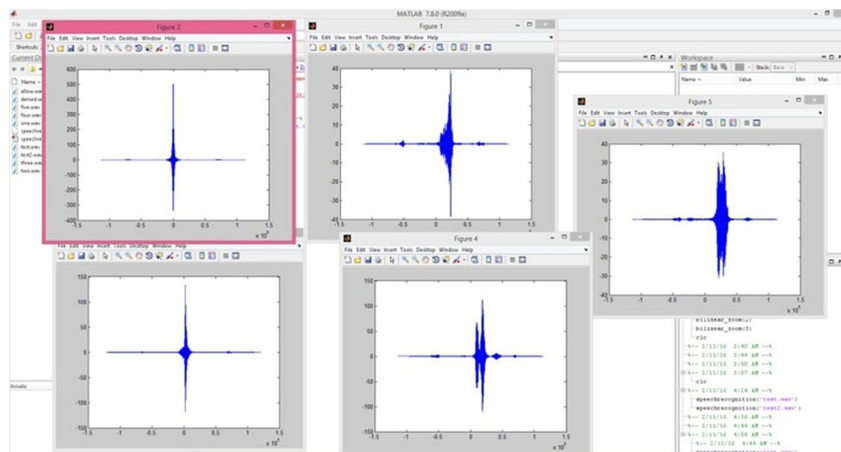
Fig 4.2: Analysis of Voice

This work describes Speaker Recognition systems as a part of the Biometric Security System. Mainly, this work aims at the speaker identification and the research in this field. The Speaker Identification system using Gaussian Mixture Model is implemented on MATLAB 11 platform. There is two session of system first is Registration and second is Testing . In Registration session firstly silence is removed from the voice print to improve the precision of the recognition. The feature MFCC is extracted for recognition than GMM training is applied for extracting µ, Σ, C is stored. In testing session voice print of unknown speaker is taken then silence removed and like hood isfound, the corresponding to the maximum like hood person in database isidentified. Experiments have been conducted on the database stored in the lab. And it has been observed that the system is accurate to a value of 90%.

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