Arabic Spoken Language Identification System

Submitted by:

Zeyad Sulalman Alhoti	438850187
Ibrahim Abdulmajeed Alsaif	439050466
Mohammed Ibrahim Alabdulhadi	441850756

Supervised by:
Dr .Mohammed Alatiyyah

Department of Computer Science

Rajab,1443 H

Contents

Chapter 1

Chapter1 : introduction

1.1 Problem statement(إبراهيم)

Many voice recognition applications are not specialized in recognizing the voice of the Quran reader, in this project we will solve the problem of these applications by collecting certain data about Quran readers and identifying them. Through voice recognition algorithms.

1.2 Proposed system(زياد)

The application contains many services available to users for free, and special work will be done to provide this application to meet the needs of users who are searching for the voice of a specific reciter and the verse in the Book of God Almighty, so that the process of searching and extracting the reader is a quick process in terms of the algorithms provided, and also It will provide some services such as the Noble Qur'an, hadiths of the Prophet, prayer times, morning and evening remembrances, and the direction of the qiblah.

1.3 Project plan(محمد)

In the section the tasks will be divided into weeks to complete this project according to a specific time plan

Task name	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12	WEEK 13	WEEK 14	WEEK 15	WEEK 16
Chapter1 : introduction	█	█														
Chapter 2: Literature Review			█	█												
Chapter 3: requirements					█	█										
Chapter 4: System design							█	█	█	█						
Chapter 5: Conclusion											█	█	█			

1.4 conclusion

In general, the project is to solve the problem of recognizing the voice of the Quran reciter through an audio clip for reading, and it collects data for the readings of the reciters

Chapter 2

Chapter 2: Literature Review

In this chapter, the steps taken by the researcher in studying and selecting research samples and the principles he followed in applying the research in its practical framework are reviewed. And previous studies that are related to the research topic, which number four research

2.1introduction(محمد ال عبدالهادي)

in section 2.2 will talk about the application are similar to our application, and also in section 2.3 will talk about algorithm are used in Identification who speakers and also in section 2.4 will talk about what tools are used in Features extraction and also in section 2.5 will talk determine the proposal system are solve the problem and also in section 2.6 will be compared between similar to our application, in finally the chapter will write conclusion.

2.2application(محمد ال عبدالهادي)

In this section, we will talk about the applications that are similar to our applications, and we will explore each application and its features

2.2.1 Soundhound(محمد ال عبدالهادي)

SoundHound: has applied audio processing and machine learning on millions of songs to extract features that are characteristic of each song,this is used to identify who speakers,the application works with natural language understanding technology.

Features of the SoundHound App

- Immediately identifies the song.
- Extract words from audio.
- Getting to know the Quran reciter but not well

Disadvantages of the SoundHound app

- Doesn't always play the correct song
- Has a slight learning curve.
- Does not recognize the sound in Arabic well

2.2.2 Shazam(إبراهيم السيف)

Definition of Shazam application:-

Shazam is an application that can identify music, movies, TV shows and clips in general by taking a sample of the audio clip, and this is done using the device's microphone.

Who are the users of the application?:-

Users of the Shazam application are the ones who want to find the name of the music or audio track that was searched, the Shazam application allows them to find the name of the music or audio track that they want.

Shazam application advantages and disadvantages:-

- **Advantages:**
  - ❖ easy to use.
  - ❖ Easy to discover music.
  - ❖ Recognizes the voice in ten second.

- **Disadvantages**:
  - ❖ The user can not sing the song and search for it.
  - ❖ It is not easy to recognize the reader.

Technology used in Shazam application:-

The Shazam application uses the microphone of the mobile phone or the device in which the application is located to identify the audio clip, and Shazam uses fingerprint technology to puts it in a graph through which the audio clip is fragmented and searched in databases.

2.2.3 MusixMatch(زياد الحوطي)

How does the program work and howdoes it work?

A program that can use some algorithms to obtain music through the microphone, after which it is read and extracted the results from the sounds of the Qur'an, poem or music in general.

Who is using the app or who needs it?

Those who use the app or who need it are people who have some music and want to know more about it.

Features and Disadvantages:
-Some of the features

- Some words can be captured in offline mode.
- Tracking the fast download feature of the subscribed user.
- Can read static characters from within a page.

-Some of the Disadvantages

- Sometimes the lyrics are not accurate.
- Classical music instruments cannot be read.
- It may not be possible to get all the lyrics correctly.

2.2.4 Rateel (محمد ال عبدالهادي)

Rateel : Application to identify the reader of the Qur'an,use the Application who want to search for the voice of the reciter of the Qur'an..

Features of the Rateel App

- Get to know the reciter of the Qur'an

Disadvantages of the Rateel app

- Does not recognize the reader in the short voice

- It takes a long time to get to know the reader

- Has a slight learning curve.

2.3 Algorithms

Hidden Markov model is one of the successful techniques of voice modeling in speech recognition systems. The reasons for the success of the model are the analytical ability to recognize speech and its accuracy in the systems.
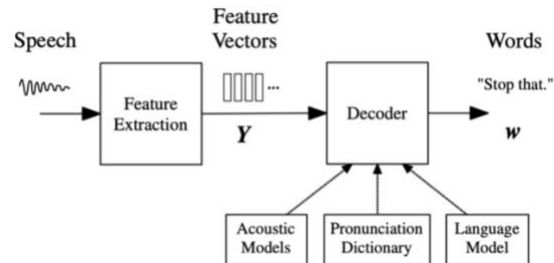

Figure 1 Architecture of a HMM-based Recogniser

2.4 Features extraction

The first step in speech recognition system is to extract features here we will use Mel Frequency Cepstral Coefficients (MFCCs) ,it is a feature widely used in speech and speaker recognition.
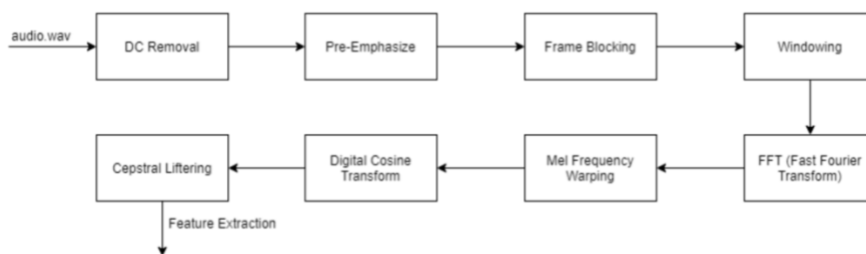

Figure 2 MFCC Process

2.5 Proposal System

This system aims to identify and know the voice of the reciters in the Qur'an and make this application recognize quickly and correctly and make the application learn to help identify the new reader

2.6 Comparison of the Research

	SoundHound	Shazam	MusixMatch	Rateel
recognition speed	✔	✔	✔	
Arabic speaker recognition	✔	✔	✔	✔
Often recognized correctly		✔	✔	
recognition the reader of the Qur'an	✔	✔	✔	✔
high learning curve		✔		
easy to use.	✔	✔	✓	

2.7 Conclusion

In this chapter we talked about similar applications and compared them and searched for some algorithms to identify the voice of the reciter in Arabic.

Chapter 3

Chapter 3: requirements:(ابراهيم)

In this chapter, we will talk about the functional and non-functional requirements of the proposed system and user, what quality is required of the system, and what is the response time.

3.1 Functional requirements:(ابراهيم)

They are the features and functions of the system that the system developer must implement to enable the user to use the system as required. The functional requirements are divided into two parts:

1- User requirements.

2- System requirements.

In this section of the chapter we will talk about what are the user requirements and what are the system requirements.

3.1.1 User requirements:(ابراهيم)

User requirements are what the user shall or should have to use the system as required, in this section we will review the points of the user requirements:

1- The user shall have the microphone.

2- The user shall have small clip from the voice of his Quran reader.

3- The user shall test specific Quran readers.

4- The user should test the system in a quiet place to capture the voice of the reader.

3.1.2 System requirements(زياد)

- If the system takes the voice of a reader, it sends it to the database, and then the voice of the reader is recognized and sent to the system.

 - If the system does not recognize the voice of the reader, it will be saved in the database and will be trained in the upcoming passages.

- Mostly there are votes for the reader, but if it is new, a fingerprint is created for it based on the sample and it is compared in the central database for later matching

3.2 non - Functional requirements(محمد)

In the non-functional requirements we talk about additional features of

the program, such as Quality and response time, which are requirements for the overall

quality of the program

3.2.1 Quality

It is the quality in extracting the correct and accurate reciter of the Qur'an.

3.2.2 response time

It is the response time of the program through sound and recognition of the reader.