كلية الحاسبات والذكاء الإصطناعي
Faculty of Computers & Artificial Intelligence

Write **date here**

Tajweed recitation

Computer Science Department

Supervisor
Dr. Marwa Abd-Alfattah

Our Team Member

Eslam Fayez

Team Leader

Eyad Essa

Member 1

Anwer Mohamedĩ

Member 2

Mariam Anis

Member 3

Esmail Samir

Member 4

Shimma Mohamed

Member 5

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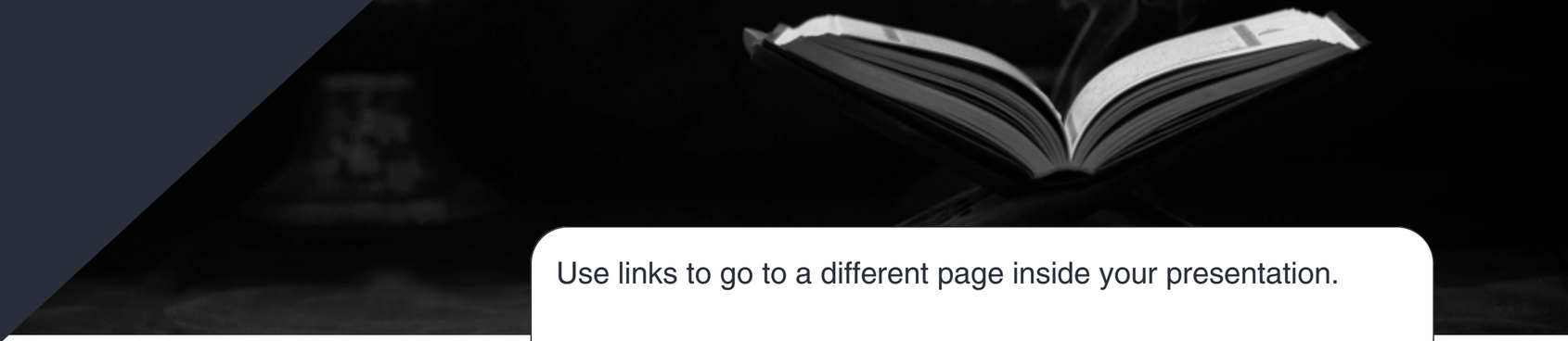
Agenda



Use links to go to a different page inside your presentation.

Highlight text, click on the link symbol on the toolbar, and select the page in your presentation you want to connect.

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introduction

INTRODUCTION

- Holy Quran is divine work for Muslims, and it is very important for them .

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INTRODUCTION

- Holy Quran is divine work for Muslims, and it is very important for them .

- Quran has Set of Rules (Tajweed) which be followed to recite Quran Property

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INTRODUCTION

- Holy Quran is divine work for Muslims, and it is very important for them .
- Quran has Set of Rules (Tajweed) which be followed to recite Quran Property
- Many Muslims are not Arabic native speakers and need to learn Quran because Different Reading might give different Meaning

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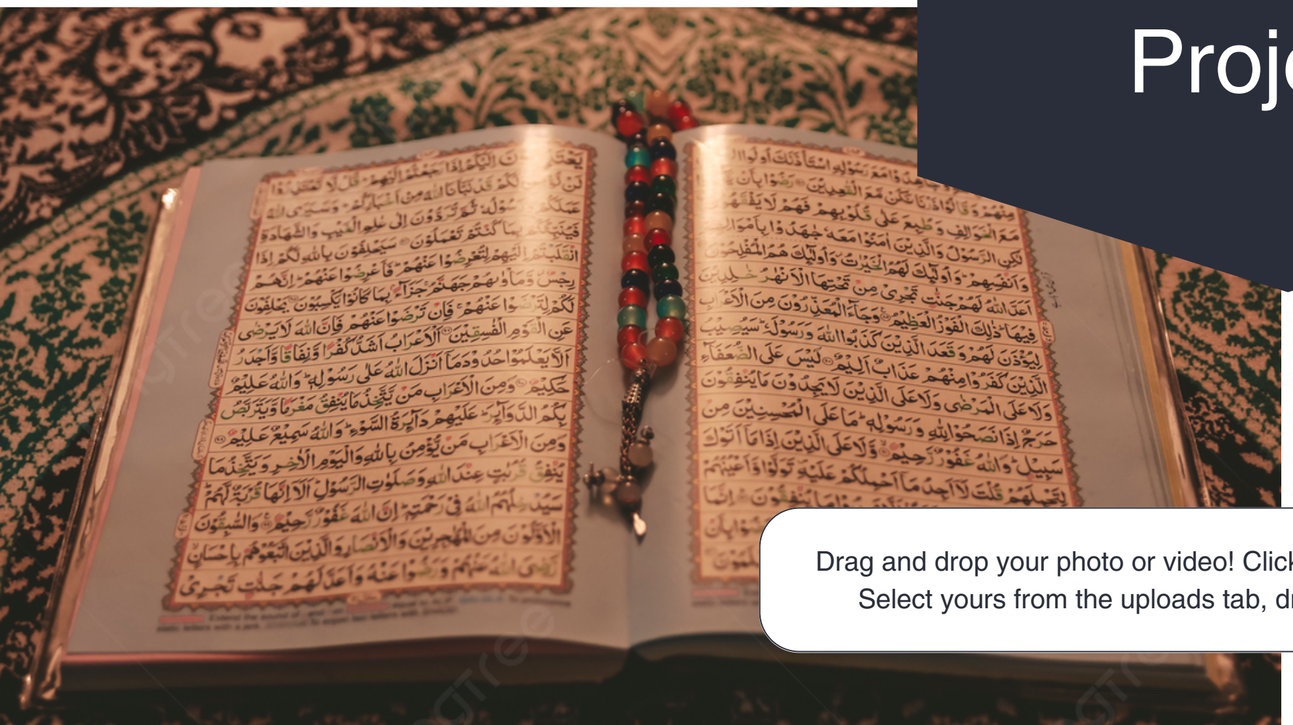
Purpose Of Project .



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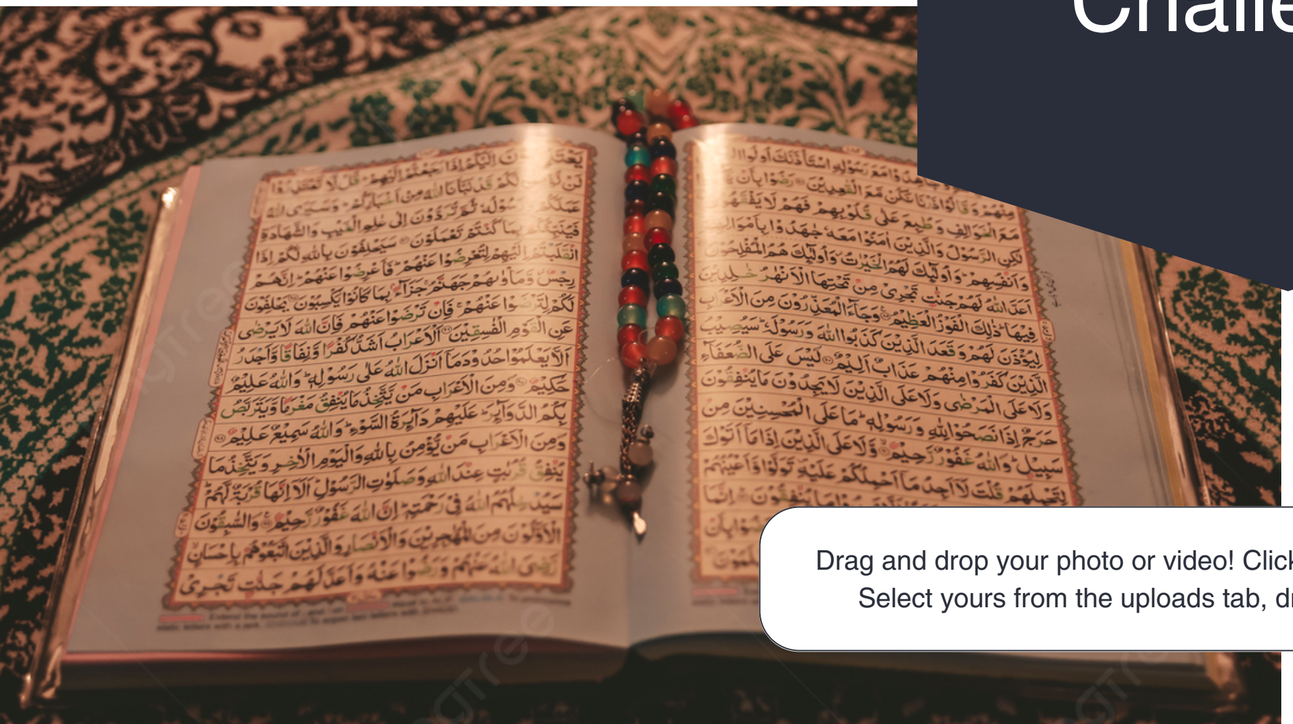
WHAT IS THE PROJECT ?

IS AN INTERACTIVE SOFTWARE FOR LEARNING RULES OF QURAN RECITATION BY USING HOT TOPICS IN MACHINE LEARNING & DEEP LEARNING SUCH AS ASR & DEEP SPEECH WITH FRIENDLY INTERFACE

Challenges



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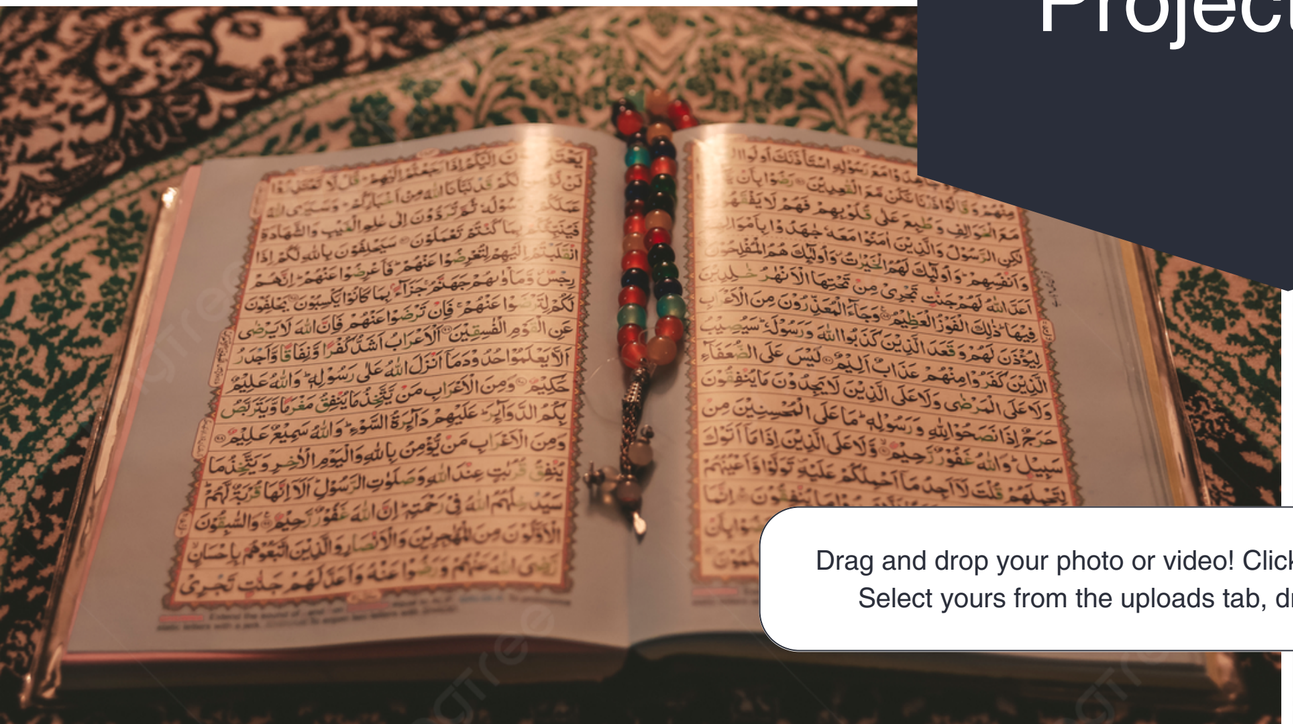
Challenges

- Arabic Language Challenge (Open Source for Speech Recognition)
- Data availability (Contact With Experts)
- Removing unrequired noises from a record

Project Flow



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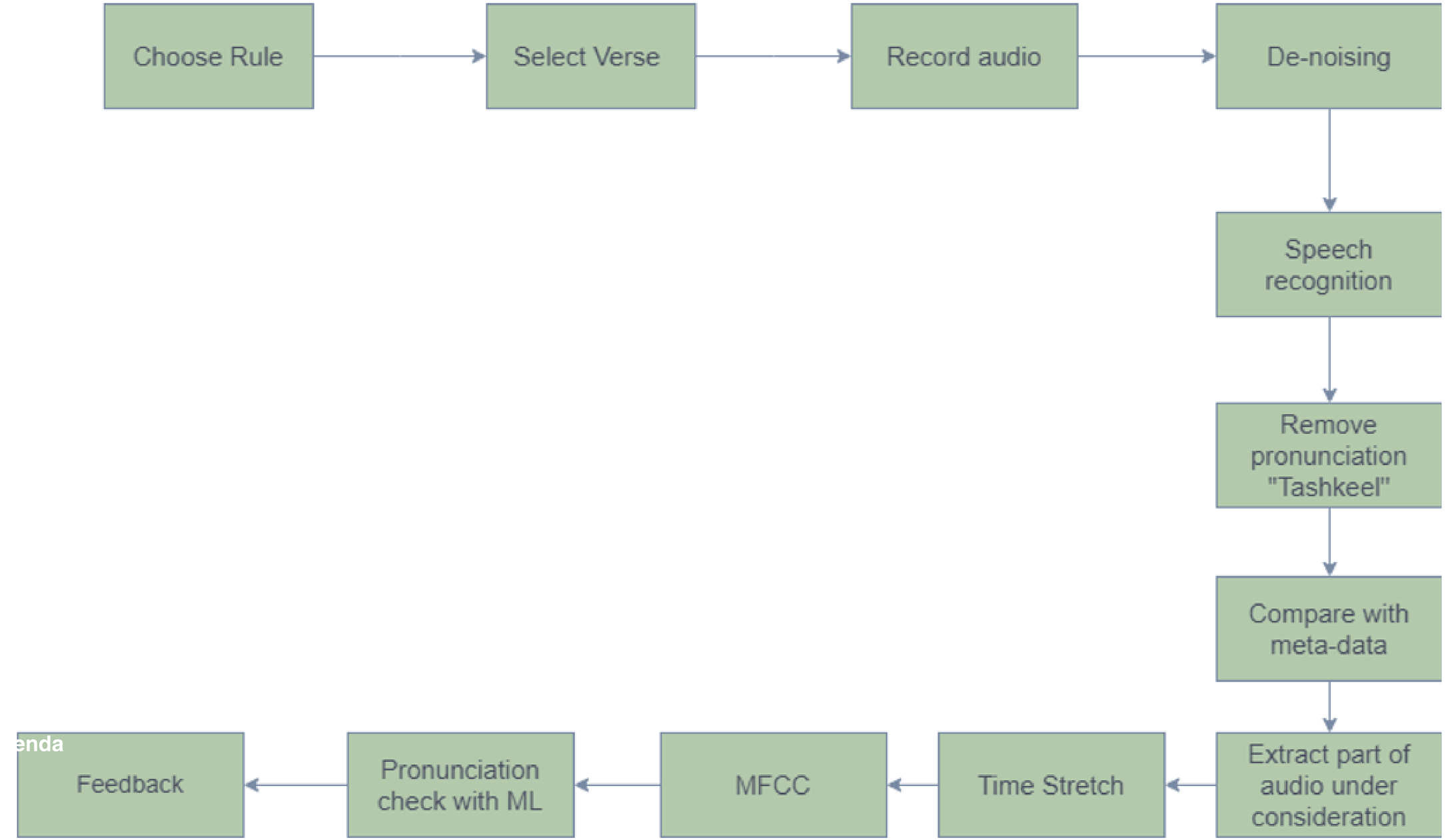

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Speech recognition

The options available

- Build Speech Recognitions from scratch

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The options available

- Build Speech Recognitions from scratch

Out of Scope....

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The options available

- Google speech reccognition
- Microsoft Speech recognition

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The options available

- Google speech reccognition
- Microsoft Speech recognition

Very Expensive....

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The options available

- Open Source speech (Deep Speech)

best choice....

Deep Speech

- is an open-source speech recognition engine to recognize spoken words from audio signals.
- Based on a recurrent neural network architecture.
- Designed to be language-independent, and can be adapted to recognize speech in different languages by retraining the network on a different corpus of speech data.

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Deep Speech

- Use models of expert "Tarek Eldeeb" in train DeepSpeech
- 'Imam' model (Imam Full Quran Recitation: 7*6236 wav files)
- 'Tarteel' model (Tarteel dataset ~25k wav files)

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Challenges

- Noise

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Challenges

- Noise
- Accuracy With tashkeel

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Challenges

- Noise
- Accuracy With tashkeel
- Extract part of audio under Consideration

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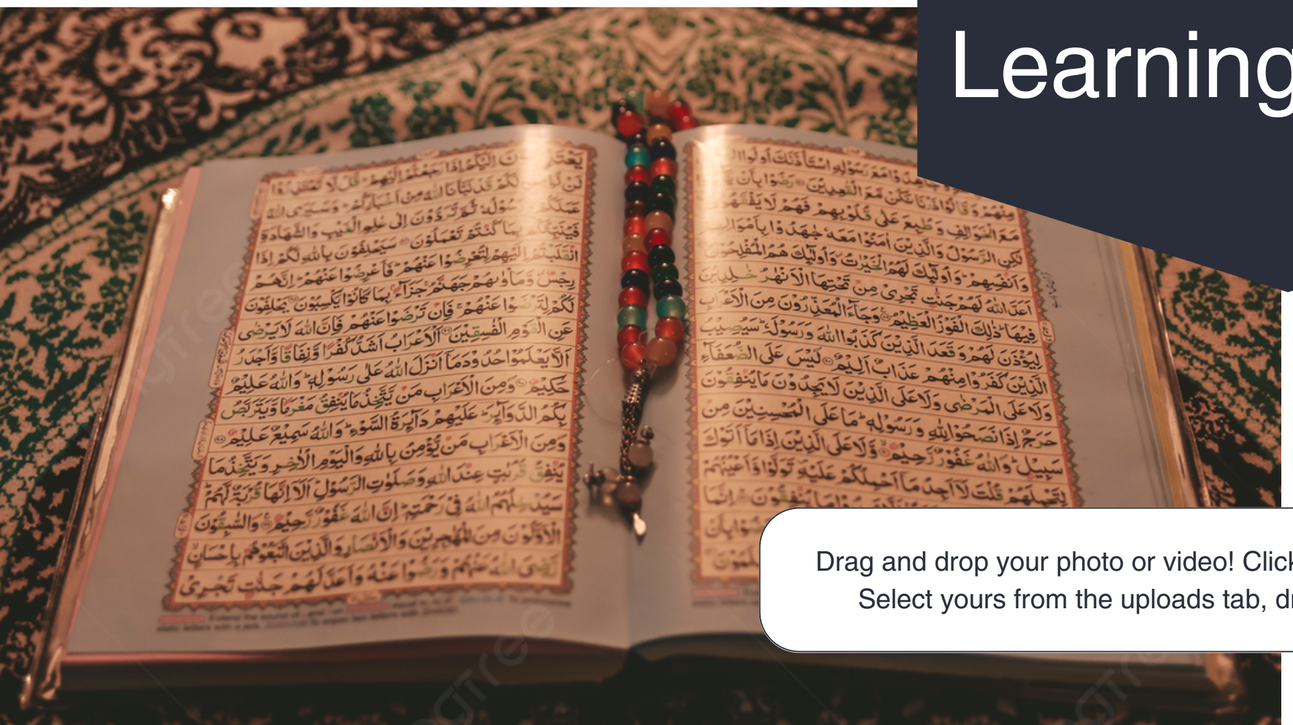
Machine Learning Models



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Model Component

01 Dataset

02 Preprocessing

03 Feature Extraction

04 Model Architecture

05 Testing

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Dataset

Challenges

- Lack of Dataset.
- Difficulty collecting dataset.

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Dataset

Available Dataset

	Right	Wrong
Ekhfaa Meem (K)	60	30
Edgeem Meem (D)	60	30
Tarqeeq Lam (S)	90	30
Tafkheem Meem (L)	140	55

Resorces:-
https://www.semanticscholar.org/paper/A-Database-for-Speech-Processing-Based-Qur'anic-Alobaylani-Parvez/5f2cf338770b51533d2fc9ae99faaf6f761e4013

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Dataset

Collect Dataset

- Contact With Experts

500 Record ▶▶▶ 1000 Record

Expert:-

الشيخ : احمد عبدالمنعم

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Dataset

Collect Dataset

- Contact With Experts

	Right	Wrong
Ekhfaa Meem(K)	148	118
Edgeem Meem(D)	120	88
Tarqeeq Lam(S)	124	100
Tafkheem Lam (L)	165	90

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Preprocessing

Challenges

- Unequal records lengths

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Preprocessing

Zero Padding

```
1  def fixing_range (mfcc , maxRange):
2      for j in  range(len(mfcc) , maxRange) :
3              mfcc = list(mfcc)
4              mfcc.append([0,0,0,0,0,0,0,0,0,0,0,0,0])
5              mfcc = np.array(mfcc)
6      #print(mfcc.shape)
7      return mfcc
```

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Preprocessing

Time stretch

```python
import wave
def get_duration(file_path) :
    with wave.open(file_path) as mywav:
        duration = mywav.getnframes() / mywav.getframerate()
        return duration
```

```python
def fixing_signal_range (file_path , signal ) :
    rate =  get_duration(file_path) / 3.0;
    new_sound_1 = librosa.effects.time_stretch(signal, rate=rate)
    return new_sound_1
```

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Feature Extraction

Challenges

- Dealing with signal processing

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Feature Extraction

Mel-frequency cepstral coefficients (MFCCs)

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Model Architecture

ANN

```
model = keras.Sequential([

      #First hiddenlayer
      keras.layers.Dense(512,activation = "relu"),
      #Second hiddenlayer
      keras.layers.Dense(256,activation = "relu"),
      #Third hiddenlayer
      keras.layers.Dense(128,activation = "relu"),

      #outputlayer
      keras.layers.Dense(1,activation = "sigmoid")

 ])
```

```
model.compile(optimizer= 'adam', loss="binary_crossentropy",metrics = ['accuracy'
```

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Model Architecture

SVM

```
# SVM model
classifier = SVC(C=1 , kernel = 'poly' , gamma = 0.2 )
```

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Testing

ANN	Model Accuracy	External test	Error
Ekhfaa Meem (K)	93 %	70 %	23 %
Edgeem Meem (D)	98 %	66 %	32 %
Tarqeeq Lam (S)	99 %	78 %	21 %
Tafkheem Meem (L)	97 %	74 %	23 %

ANN	Model Accuracy	External test	Error
Ekhfaa Meem (K)	92 %	80 %	12 %
Edgeem Meem (D)	97 %	83 %	14 %
Tarqeeq Lam (S)	94 %	90 %	4 %
Tafkheem Meem (L)	93 %	87 %	7 %

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Testing

SVM	Model Accuracy	External test	Error
Ekhfaa Meem (K)	97 %	76 %	21 %
Edgeem Meem (D)	100 %	72 %	28 %
Tarqeeq Lam (S)	100 %	82 %	15 %
Tafkheem Meem (L)	100 %	76 %	24 %

SVM	Model Accuracy	External test	Error
Ekhfaa Meem (K)	87 %	77 %	10 %
Edgeem Meem (D)	96 %	83 %	13 %
Tarqeeq Lam (S)	95 %	87 %	8 %
Tafkheem Meem (L)	96 %	87 %	9 %

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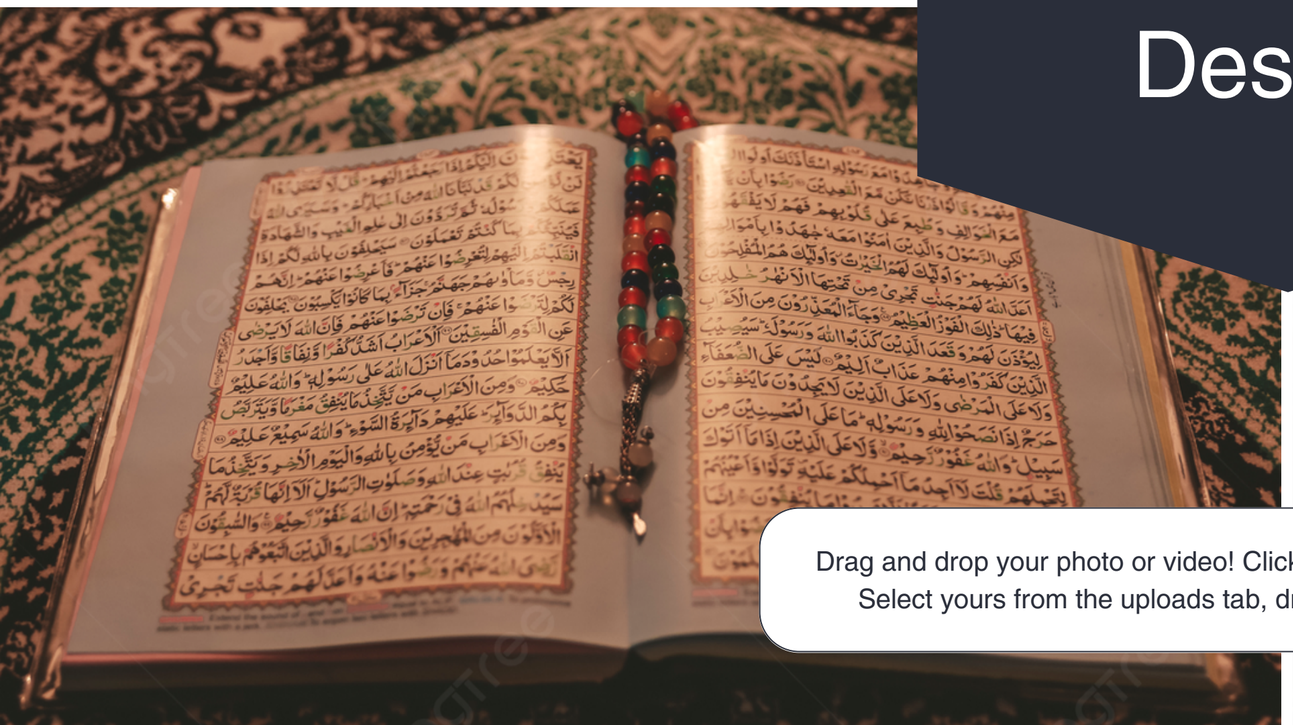
Application Design



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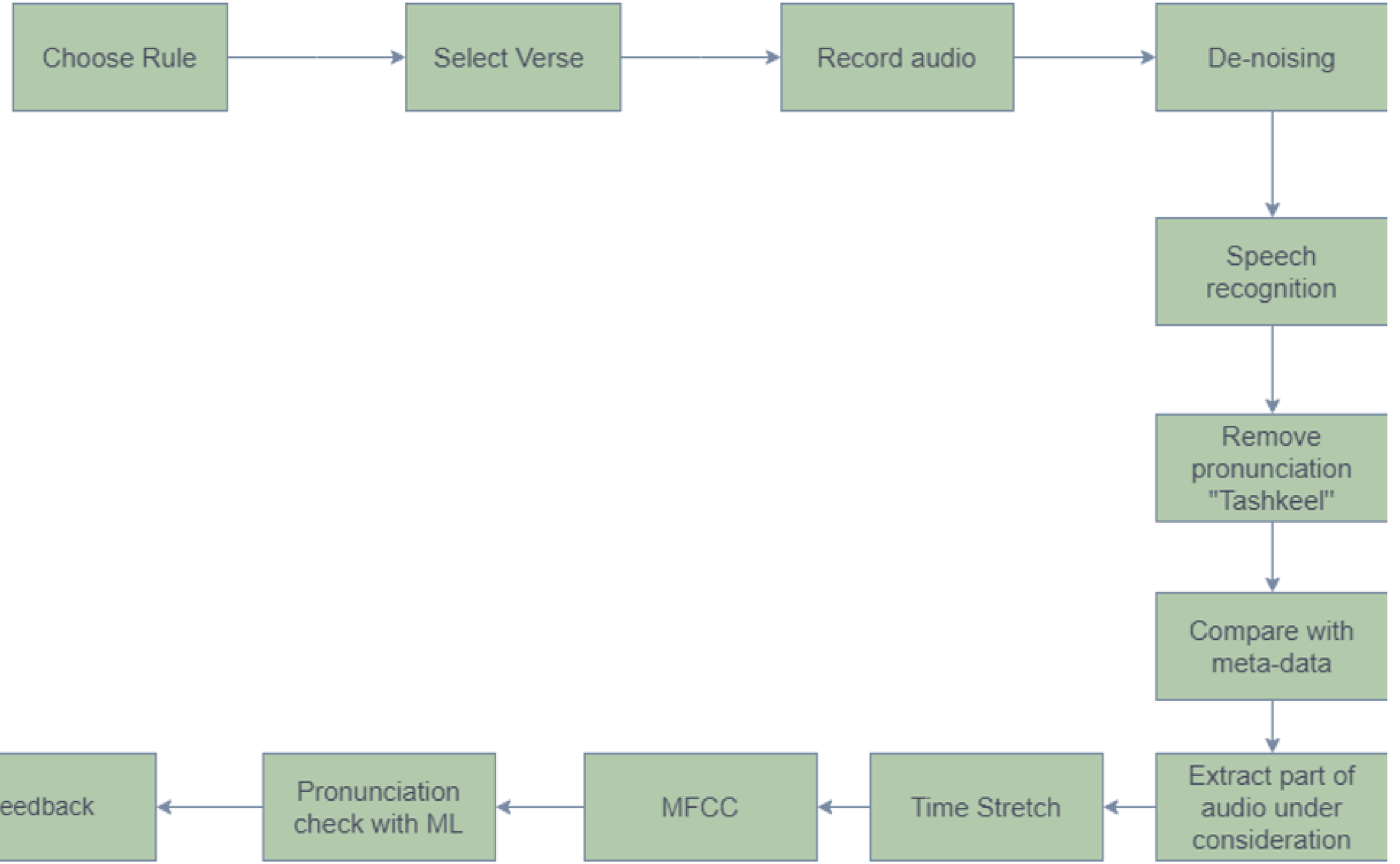
Choose Rule
Select Verse
Record audio
De-noising
Speech recognition
Remove pronunciation "Tashkeel"
Compare with meta-data
Extract part of audio under consideration
Time Stretch
MFCC
Pronunciation check with ML
Feedback

We have built two different versions of the application:

01 Beta (Desktop application)

02 Full version (Web application)

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Beta Version

- **Technology**: we have built this version using python
- **Aim** : the aim of this version is connecting the different components of the project and visualize the flow of the project
- **Gui:** This version consists of three pages

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Back to Agenda

Challenges

Why are we needing for other version ?

- Recorder
- Availability
- Responding time
- Gui

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Full Verion

- **Technology**: we have built this version using Html5,css3,javascript,jquery,python
- **Aim** : solve all the problems in the beta version and makes a version free of bugs
- **Gui:** Home page , Hkm page , Recorder page , About US page

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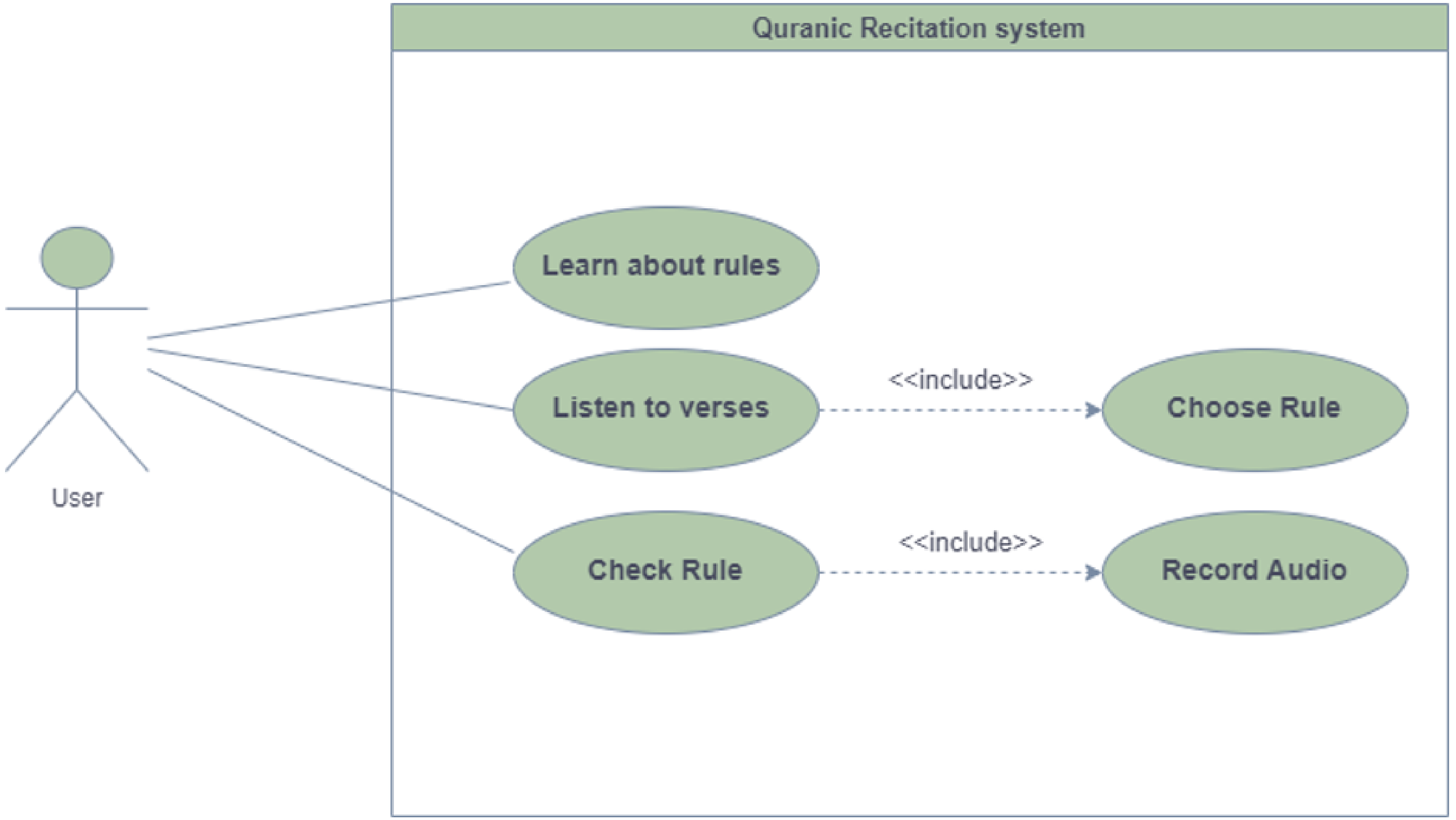

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أحكام التجويد

أحكام التجويد هي إتقان تلاوة وقراءة القرآن بالشكل الذي أنزله الله على رسوله الكريم صلى الله عليه وسلم ، فالتجويد في اللغة هو إتقان الشيء، وهي عبارة عن أحكام لغوية وضعها علما ء القرآن والشريعة واللغة لكي يتعلمها كل مسلم حريص على تلاوة القرآن بشكل جيد، فالتلاوة وفقاً للأحكام هذه من أهم الأمور التي تساعدنا على التلاوة

1 تفخيم اللام
في لفظ الجلالة الله

2 ترقيق اللام
في لفظ الجلالة الله

3 إخفاء الميم
إخفاء الميم الساكنة

4 إدغام الميم
إدغام متماثلين صغير

تعلم احكام التجويد

يمكنك تعلم احكام التجويد من خلال المتخصصين للحصول علي افضل تجربة من القرأة

ما هو التفخيم؟

لتفخيم لغة هو التغليظ ، أما اصطلاحًا في التجويد فيعني تسمين وتغليظ الحرف وذلك يكون بجعله سمينًا في المخرج وقويًا في الصفة، فيمتلئ الفم بصدى الحرف

متى يحدث التفخيم في لفظ الجلالة؟

تفخم لام لفظ الجلالة تبعًا لما قبلها في حالتين:

الحالة الأولى: إذا سبقت لام الجلالة بضمة:

﴿قَالَ إِنِّي عَبْدُ اللَّهِ﴾ (مريم 30)

﴿قُلْ يَا أَيُّهَا النَّاسُ إِنِّي رَسُولُ اللهِ إِلَيْكُمْ جَمِيعًا﴾ (الأعراف 158)

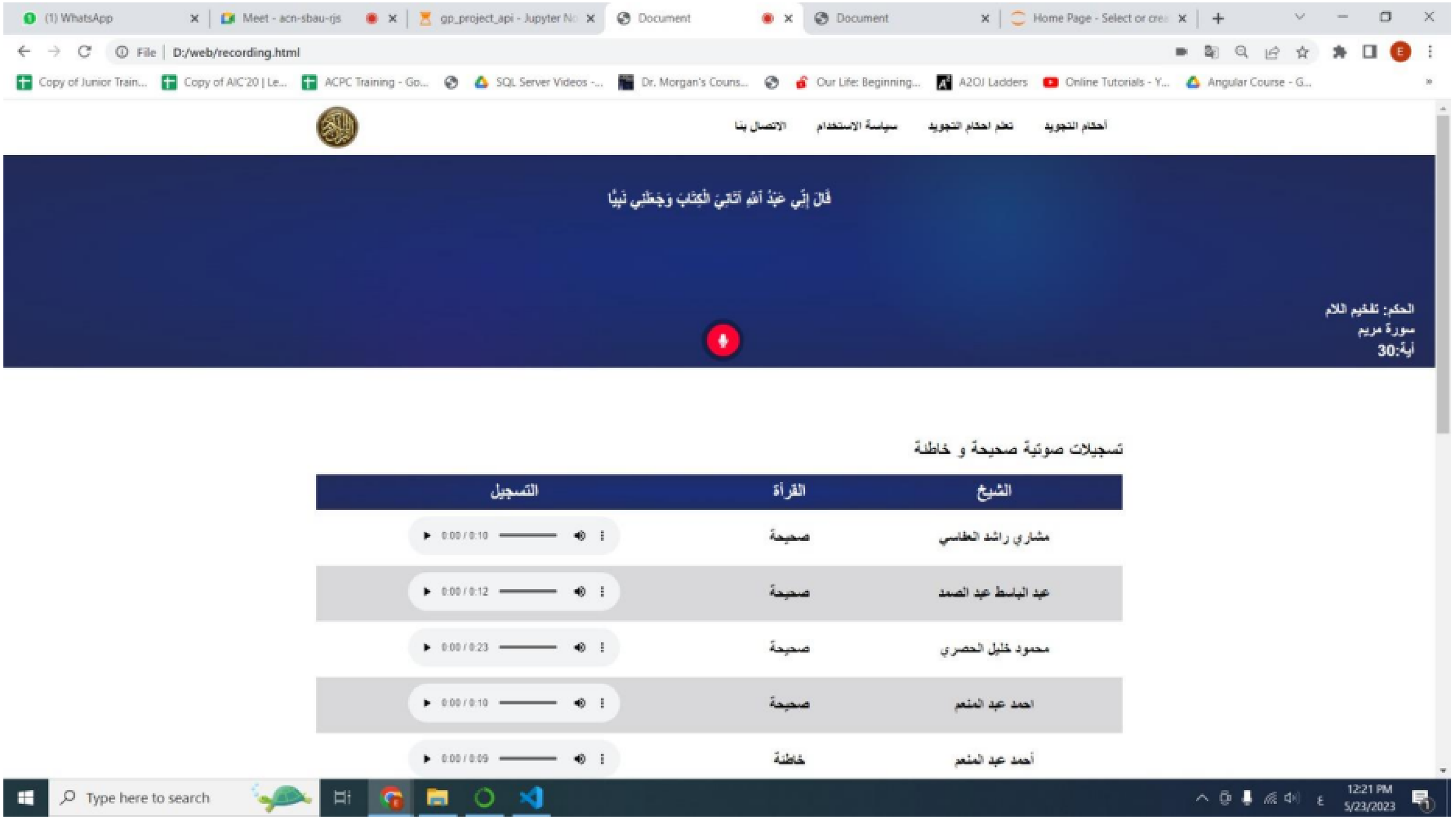
﴿أَنِ اعْبُدُوا اللهَ وَاتَّقُوهُ وَأَطِيعُونِ﴾ (نوح 20)

الحالة الثانية: إذا سبقت لام الجلالة بفتحة:

﴿وَقَالَ اللهُ لَا تَتَّخِذُوا إِلَٰهَيْنِ اثْنَيْنِ﴾ (النحل 51)

﴿شَهِدَ اللَّهُ أَنَّهُ لَا إِلَٰهَ إِلَّا هُوَ﴾ (ال عمران 18)

1 سورة مريم اية:30	2 سورة الانفال اية:34	3 سورة نوح اية:3	4 سورة التوبة اية:59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Copy of AIC'20 | Le...
ACPC Training - Go...
SQL Server Videos -...
Dr. Morgan's Couns...
Our Life: Beginning...
A2OJ Ladders
Online Tutorials - Y...
Angular Course - G...
أحكام التجويد
تعلم احكام التجويد
سياسة الإستخدام
الإتصال بنا
قَالَ إِنِّي عَبْدُ ٱللَّهِ ءَاتَانِيَ ٱلْكِتَٰبَ وَجَعَلَنِي نَبِيًّا
الحكم: تفخيم اللام
سورة مريم
آية:30
تسجيلات صوتية صحيحة و خاطئة
الشيخ
القرأة
التسجيل
مشاري راشد العفاسي
صحيحة
0:00 / 0:10
عبد الباسط عبد الصمد
صحيحة
0:00 / 0:12
محمود خليل الحصري
صحيحة
0:00 / 0:23
احمد عبد المنعم
صحيحة
0:00 / 0:10
أحمد عبد المنعم
خاطئة
0:00 / 0:09
Type here to search
12:21 PM
5/23/2023

معلومات عنا

تم تنفيذ موقع القرأن الكريم عام 2023 هدف الموقع هو تعلم كيفية قرأة القرأن بشكل صحيح من خلال تعلم احكام التجويد من المتخصصين و تجربة القرأة والحصول علي نتائج فورية لمتابعة تقدمك في تعلم التجويد كما انه تم الاستعانة ببعض الشيوخ المتخصصين لبناء الموقع

الانشاء

تم الانشاء بالاستعانة ببعض الشيوخ امثال الشيخ:احمد عبد المنعم كما انه تم الاستعانة بمشروع سابق للمهندس طارق الديب و هو لتحويل قرأة القرأن الي كلمات

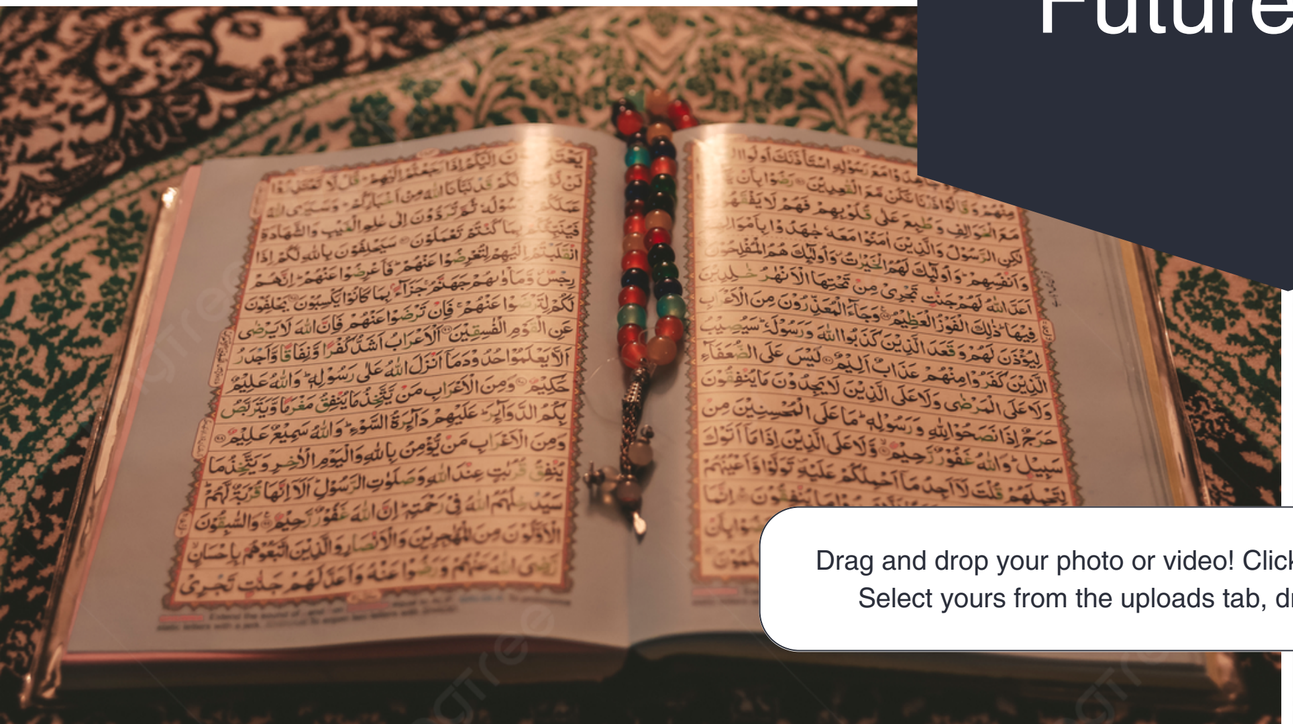
تم استخدام الاتي:

jquery javascript css3 html5 python

تم الاستعانة ببعض المكتبات مثل

numpy keras librosa pydub flask denoiser json

Future Work



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Future Work

01 Mobile Application

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Future Work

01 Mobile Application

02 New Dataset

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Future Work

01 Mobile Application

02 New Dataset

03 More Quranic Recitation Rules

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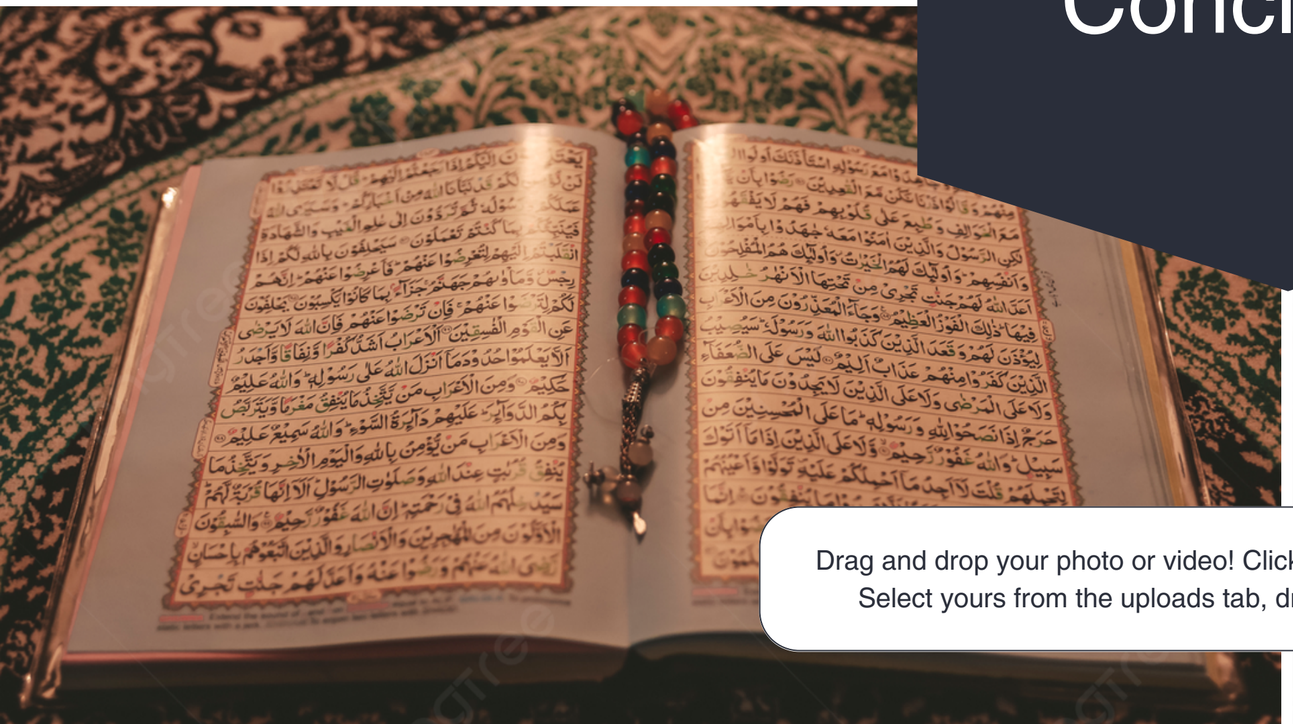
Conclusion



Drag and drop your photo or video! Click the sample photo or video and delete.
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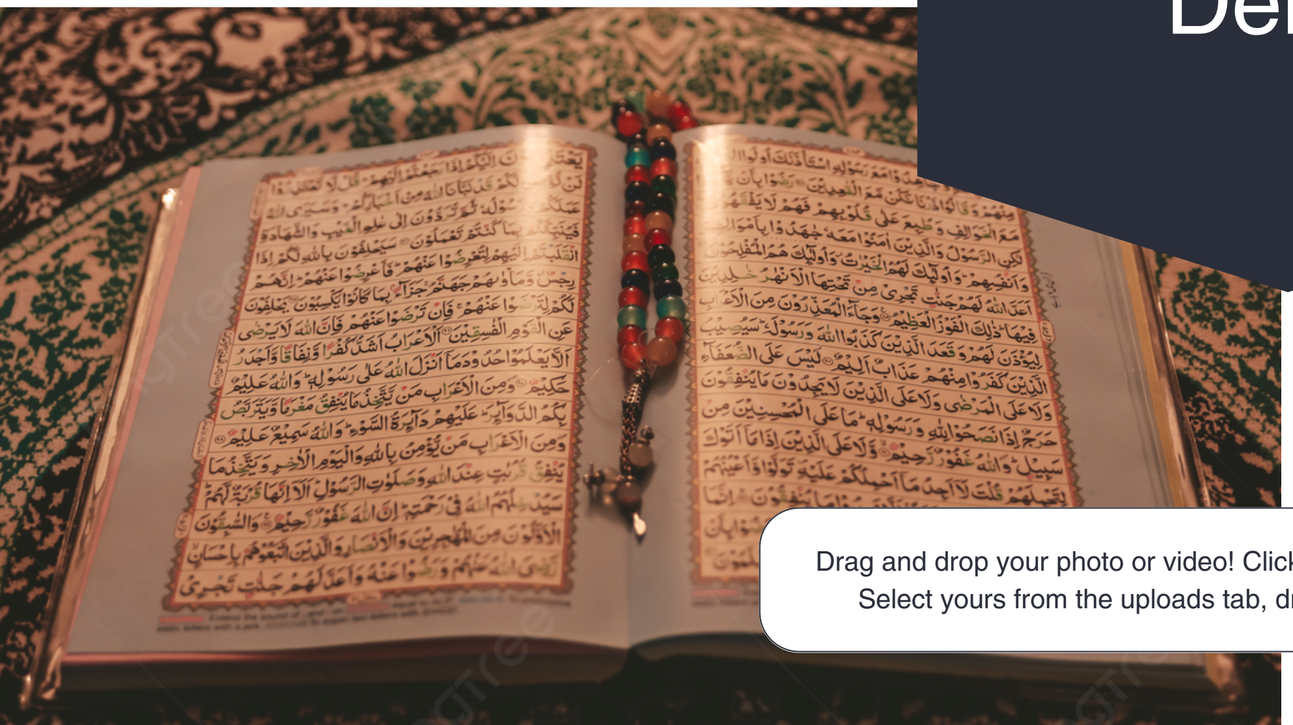
HOW THE IMPLEMENTED SYSTEM SOLVED THE PROBLEM ?

OUR SYSTEM SOLVED THE PROBLEM BY PROVIDING A USER-FRIENDLY WEB APPLICATION THAT ENHANCE THE LEARNING PROCESS OF QURANIC RECITATION RULES IN ADDITION TO ENHANCING THE INTEGRATING OF MACHINE LEARNING TECHNIQUES AND SPEECH RECOGNITION TECHNIQUE IN THE LEARNING PROCESS. THE SYSTEM PROVIDE A SET OF RECITATION RULES THAT ARE ESSENTIAL FOR READING THE QURAN AND ANYONE SHOULD START WITH IN THEIR LEARNING JOURNEY. THE SYSTEM ALSO, ENABLE THE LEARNERS TO READ AND KNOW MORE ABOUT EACH RULE, LISTEN TO MANY VERSES TO HELP RECOGNIZE THE CORRECT PRONUNCIATION OF THE RULE AND ALSO USERS CAN CHECK THEIR PRONUNCIATION BY THE USE OF MACHINE LEARNING MODEL.

Demo



Drag and drop your photo or video! Click the sample photo or video and delete.
Select yours from the uploads tab, drag, and then drop inside the frame!

THANK YOU