

Intelligent Signal Processing - Mini projects - Midterm

Please note that each project must be opened individually.

Table of Contents

1. [EX1 Midterm - If you can dream...](#)
2. [EX2 Midterm - Voice Recognition of Colors and Shapes](#)
3. [EX3 Midterm - Decoding and Encoding Messages](#)
4. [EX4 Midterm - Speech Recognition Systems](#)
 - [Project Setup and Installation](#)
 - [Imported Libraries](#)
 - [Credit](#)

EX1 Midterm - If you can dream...

- Open project in VS Code (must be opened separately from other projects)
- Select **sketch.js**
- Press **Go Live** at the bottom of the screen. You will be re-directed to browser to view the project.

EX2 Midterm - Voice Recognition of Colors and Shapes

- Open project in VS Code (must be opened separately from other projects)
- Select **sketch.js**
- Press **Go Live** at the bottom of the screen. You will be re-directed to browser to view the project.

EX3 Midterm - Decoding and Encoding Messages

- Please use Jupyter Notebooks to run the project.

EX4 Midterm - Speech Recognition Systems

Models

```
DeepSpeech English Model
DeepSpeech Spanish Model
DeepSpeech Italian Model

Google Speech-to-Text English Model

PocketSphinx English Model
```

Project Setup and Installation

- The project was developed on MacOS and tested in Terminal.

- The ASR Comparison File takes a long time to load due to PocketSphinx.

1. Unzip the project folder
2. Navigate to the project directory

```
cd [file name]
```

3. Create a virtual environment

```
python3.8 -m venv env
```

4. Activate the virtual environment

```
source env/bin/activate
```

5. Check version 3.8

```
python --version
```

6. Install the dependencies

```
pip install -r requirements.txt
```

7. Start individual files

DeepSpeech English Model

```
python deepspeech_en.py
```

DeepSpeech Spanish Model

```
python deepspeech_es.py
```

DeepSpeech Italian Model

```
python deepspeech_it.py
```

DeepSpeech Statistics for All Models

```
python results_statistics.py
```

Further Development: comparing DeepSpeech, Google Speech-to-Text and PocketSphinx

```
python asr_evaluation.py
```

Imported Libraries

```
from google.cloud import speech
from pocketsphinx import LiveSpeech
from scipy.io import wavfile
from scipy.signal import butter, lfilter
from tabulate import tabulate
import deepspeech
import noisereduce as nr
import numpy as np
import string
import wave
```

Credit

- Sentence 1 quote by Norman Vincent Peale: [BrainyQuote](#)
- Sentence 2 quote by Lily Tomlin: [Philosiblog](#)

Author: <https://github.com/randomoi/>