Vishwa Singh
PA10 (1032170273)
CCNLP 1

Cognitive Computing
and
Natural Language Processing

Problem Statement : Use Watson/NLTK api for:

- User dictates a paragraph that is converted to text
- Word Speller
- Simple Calculator with voice Commands

Objectives :

1) To study and upload IBM watson apis.
2) To learn the concept of Text to speech and Speech to Text

Theory :

IBM Watson API : IBM watson is a "question-answer" computer system capable of answering question posed in natural language, which is developed by IBMs deepQA project.

The watson API allows the programmers to use watson capabilities in their application without having to create any model.

Speech Recognition : It is a domain which is crucial in cognitive computing. It deals with identifying and interpreting human speech in order to interact interact with them in a more natural manner.

Speech to Text & Text To Speech : Both are crucial parts of speech recognition system that allow a computer to convert data into into either format.
Both then concept work based on LSTM & CNNs.

LSTM : Long - Short Term Memory cells are neural network architecture with the capabilities of holding memory. Then are improved variants of Recurrent Neural Networks.

<u>TTS</u> : Convert ASCII text into Audio

<u>STT</u> : Converts audio into ASCII text

<u>Platform</u> : IBM watson cloud and JSON; Jupyter Notebook

<u>Input</u> : Voice Speech

<u>Output</u> : Text ; Text & Audio ; Calculation Task.

<u>Conclusion</u> : Hence, learned the concept of STT & TTS using IBM watson.

<u>FAQ</u>

<u>Question 1</u>

<u>Python modules used in speech recognition:</u>
- scipy.io.wavfile : To write .wav files
- SoundDevice : To record sound
- SimpleAudio : To play sound
- ibm-watson : To get the API modules
- os : To read & locate audio files.

Question 2

=> <u>For Authentication :</u>

<u>Ibm-cloud-sdh-core : IAM Authenticator</u>

=> <u>For TTS :</u>

Ibm-watson : Text to Speech V1

function : .synthesize()

=> <u>For STT :</u>

Ibm-watson : Speech To Text V1

function : .recognize()