**Experiment-No.10**

**Objective:** Write a program to Implement pattern recognition problems of speech recognition

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| **Scheduled Date:** | **Compiled Date:** | **Submitted Date:** |
| 19 Dec 2024 | 19 Dec 2024 | 27 Nov 2024 |

**Description of Speech Recognition:**

Speech recognition refers to the ability of a machine to interpret and process spoken language. Using Python, this is achieved through libraries like SpeechRecognition and Pyaudio. The Google Speech API provides robust support for converting speech to text.

**Packages Required:**

* Pyaudio: For accessing the microphone and recording audio. Install it using:

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pip install pyaudio

* SpeechRecognition: A Python library for speech recognition. Install it using:

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pip install SpeechRecognition

* Google-Speech-API: For accessing Google's Speech API functionalities. Install it using:

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pip install google-api-python-client

**Algorithm for Speech Recognition:**

1. **Initialize Libraries:**
   * Import the speech\_recognition and pyaudio libraries.
2. **Setup Microphone:**
   * Use sr.Microphone() to access the system's microphone.
3. **Record Audio:**
   * Record input from the user using the listen() method.
4. **Recognize Speech:**
   * Process the recorded audio using recognize\_google() to convert speech to text.
5. **Handle Errors:**
   * Use exception handling to manage cases where the speech is unclear or not recognized.

Python Code for pattern recognition problems of speech recognition:

import speech\_recognition as sr

import pyaudio

def record\_audio():

    r = sr.Recognizer()

    mic = sr.Microphone()

    with mic as source:

        print("Please say something:")

        audio = r.listen(source)

        try:

            text = r.recognize\_google(audio)

            print("You said: {} ".format(text))

            return text

        except:

            print("Could not understand audio")

            return None

record\_audio()

import pyttsx3

engine = pyttsx3.init()

rate = engine.getProperty('rate')

engine.setProperty('rate', 150)

voices = engine.getProperty('voices')

engine.setProperty('voice', voices[1].id)

def speak(text):

    engine.say(text)

    engine.runAndWait()

def read\_file(file\_path):

    """Read text from a file."""

    try:

        with open(file\_path, 'r') as file:

            return file.read()

    except Exception as e:

        print("An error occurred: {e}")

        return None

file\_path = 'New.txt'

text = read\_file(file\_path)

if text:

    speak(text)