Voice Assistant Project Report

Introduction

Voice assistants like Siri, Alexa, and Google Assistant have revolutionized the way we interact with technology. This project aims to create a basic voice assistant using Python that can recognize speech, process commands, and provide spoken responses.

Objective

The objective of this project is to develop a simple voice-controlled assistant capable of performing basic tasks such as telling the time and searching the web.

System Requirements

Hardware:

- Microphone

- Speaker

Software:

- Python

- Libraries: SpeechRecognition, pyttsx3, pyaudio

Project Architecture

1. Voice Input

2. Speech-to-Text Processing

3. Command Interpretation

4. Action Execution

5. Voice Output

Modules Used

- speech_recognition
- pyttsx3
- datetime
- webbrowser
- os

Implementation (Code Overview)

```
import speech_recognition as sr
import pyttsx3
import datetime
import webbrowser

engine = pyttsx3.init()

def speak(text):
    engine.say(text)
    engine.runAndWait()

def take_command():
    r = sr.Recognizer()
    with sr.Microphone() as source:
```

```
        print("Listening...")
        audio = r.listen(source)
    try:
        command = r.recognize_google(audio)
        return command.lower()
    except:
        return "Sorry, I didn't catch that."

def run_assistant():
    command = take_command()
    if 'time' in command:
        time = datetime.datetime.now().strftime('%I:%M %p')
        speak(f"The time is {time}")
    elif 'search' in command:
        speak("What should I search?")
        query = take_command()
        webbrowser.open(f"https://www.google.com/search?q={query}")
```

Results

The voice assistant was tested successfully. It was able to recognize commands, respond with the current time, and perform web searches based on voice input.

Conclusion

This project demonstrates the feasibility of building a basic voice assistant using Python. Future

improvements could include adding natural language processing and a graphical user interface.

References

- Python documentation (https://docs.python.org/3/)

- SpeechRecognition library documentation

- pyttsx3 documentation