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Division of Electronics and Communication Engineering
2023-2024 (EVEN SEM)

III IA EVALUATION REPORT

for

DIGITAL SIGNAL PROCESSING-PROJECT BASED COURSE

Title of the project: VOICE-ASSISTED WIKIPEDIA SUMMARIZER

A report submitted by

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Subject Name	***DIGITAL SIGNAL PROCESSING***
Subject Code	***18EC2015***
Date of Report submission	

Project Rubrics for Evaluation

First Review: Project title selection - PPT should have four slides (Title page, Introduction, Circuit/Block Diagram, and Description of Project).

Second Review: PPT should have three slides (Description of Concept, implementation, outputs, results and discussion)

Rubrics for project (III IA - 40 Marks):
Content - 4 marks (based on Project)
Clarity - 3 marks (based on viva during presentation)
Feasibility - 3 marks (based on project)
Presentation - 10 marks
Project Report - 10 marks
On-time submission - 5 marks (before the due date)
Online submission-GCR - 5 marks

Total marks: _____/ 40 Marks

Signature of Faculty with date:

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CHAPTER 1

INTRODUCTION

The "Voice Assisted Wikipedia Summarizer" is a Python script designed to provide users with quick and concise summaries of topics sourced from Wikipedia, all with the convenience of voice assistance. Leveraging the capabilities of the Wikipedia API and the pyttsx3 library for text-to-speech synthesis, this script allows users to input their desired topic and receive a summarized overview read aloud by their computer's voice.

With the proliferation of vast information available on Wikipedia, navigating through lengthy articles to extract key insights can be time-consuming. This script aims to streamline the process by fetching condensed summaries directly from Wikipedia, enabling users to access essential information efficiently. Moreover, by incorporating voice assistance, it enhances accessibility for users with visual impairments or those who prefer auditory learning methods.

In addition to its functionality, the script integrates error handling mechanisms to gracefully manage ambiguous search terms or cases where specific pages are not found on Wikipedia. This ensures a smooth user experience, reducing frustration and enhancing usability.

Whether users seek quick insights on various topics or prefer hands-free access to information, the "Voice Assisted Wikipedia Summarizer" offers a versatile and user-friendly solution. By combining the power of Wikipedia's extensive knowledge base with the convenience of voice assistance, this script empowers users to explore and learn in a seamless manner.

CHAPTER 2

DESCRIPTION OF THE PROJECT

1 . Efficient Information Access: The script provides users with a quick and efficient way to access summarized information from Wikipedia. By leveraging the Wikipedia API, it fetches concise overviews of requested topics, saving users time and effort

2 . Voice Assistance: Incorporating text-to-speech synthesis through the pyttsx3 library, the script offers voice assistance, allowing users to listen to the retrieved summaries rather than reading them manually. This feature enhances accessibility and convenience, particularly for individuals with visual impairments or those preferring auditory learning methods.

3 . Customizable Summary Length: Users have the flexibility to customize the length of the summaries according to their preferences. Whether they prefer a brief overview or a more detailed summary, the script accommodates their needs, enhancing the user experience.

4 . Robust Error Handling: The script integrates robust error handling mechanisms to manage ambiguous search terms or cases where specific pages are not found on Wikipedia. This ensures a smooth and uninterrupted user experience, reducing frustration and enhancing usability.

5 . Versatile Use Cases: The "Voice Assisted Wikipedia Summarizer" caters to a wide range of use cases, including academic research, casual exploration of topics, and everyday knowledge acquisition. It serves as a valuable tool for students, researchers, enthusiasts, and anyone seeking quick access to information on diverse subjects.

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CHAPTER 3

CONCEPT INVOLVED

1 . Natural Language Processing (NLP): The script utilizes NLP techniques to interpret user input, whether it is provided through text or speech. NLP allows the script to understand and process the user's request to fetch the relevant Wikipedia summary.

2 . Wikipedia API: The script interacts with the Wikipedia API to retrieve information. The API provides programmatic access to Wikipedia's vast repository of articles, enabling the script to fetch summaries based on user queries.

3 . Text-to-Speech (TTS) Synthesis: The pyttsx3 library is used for text-to-speech synthesis. This technology converts the retrieved text summaries into spoken words, allowing the script to provide information audibly to users.

4 . Error Handling: The script incorporates error handling mechanisms to manage potential issues, such as ambiguous search terms or pages not found on Wikipedia. Proper error handling ensures a smooth user experience and prevents the script from crashing.

5 . User Interface (UI): Although not explicitly mentioned in the description, a user interface is involved in accepting input from users. Whether it's a command-line interface or a graphical user interface (GUI), the UI facilitates interaction with the script.

6 . API Integration: The script integrates with external APIs, such as the Wikipedia API, to fetch data. This involves making HTTP requests, handling responses, and parsing data to extract the relevant information.

7 . Voice Interaction: The script supports voice interaction, enabling users to input their queries through speech. This involves speech recognition to convert spoken words into text, which is then processed by the script

CHAPTER 4

TOOLS

1 . Python: The script is written in Python, a versatile and popular programming language known for its simplicity and readability.

2 . pyttsx3: This is a Python library for text-to-speech conversion. It allows the script to convert the retrieved Wikipedia summaries into spoken words, enabling voice assistance for users.

3 . wikipedia: The wikipedia library provides an easy-to-use interface for accessing Wikipedia articles and information. It allows the script to fetch summarized overviews of requested topics from Wikipedia.

4 . Natural Language Processing (NLP) Tools: While not explicitly mentioned, the script may utilize NLP tools or techniques to process user input and extract relevant keywords or topics for searching Wikipedia.

5 . Speech Recognition (Optional): If the script supports voice input, it may use a speech recognition library or service to convert spoken words into text for processing. Popular options include the SpeechRecognition library in Python or cloud-based speech recognition APIs like Google Cloud Speech-to-Text.

6 . Development Environment: Tools such as IDEs (Integrated Development Environments) like PyCharm, VSCode, or text editors like Sublime Text or Atom may be used for writing and debugging the script.

CHAPTER 5

IMPLEMENTATION

1 . User Input Handling:

- The script prompts the user to input a topic of interest, either through text input or voice input.
- If using text input, the script reads the user's input from the command line or a graphical user interface (GUI).
- If using voice input, the script utilizes a speech recognition library or service to convert spoken words into text.

2 . Querying Wikipedia:

- Once the user provides the input topic, the script queries the Wikipedia API to retrieve relevant information.
- The script uses the `wikipedia` library to make requests to the Wikipedia API, specifying the desired topic for summarization.

3 . Summarization:

- After fetching the Wikipedia page corresponding to the user's input topic, the script extracts a summary from the page.
- The summary is typically a concise overview of the topic, often limited to a certain number of sentences or paragraphs.
- The `wikipedia` library may provide methods for retrieving summaries directly, or the script may extract the summary from the full article text.

4 . Text-to-Speech Conversion:

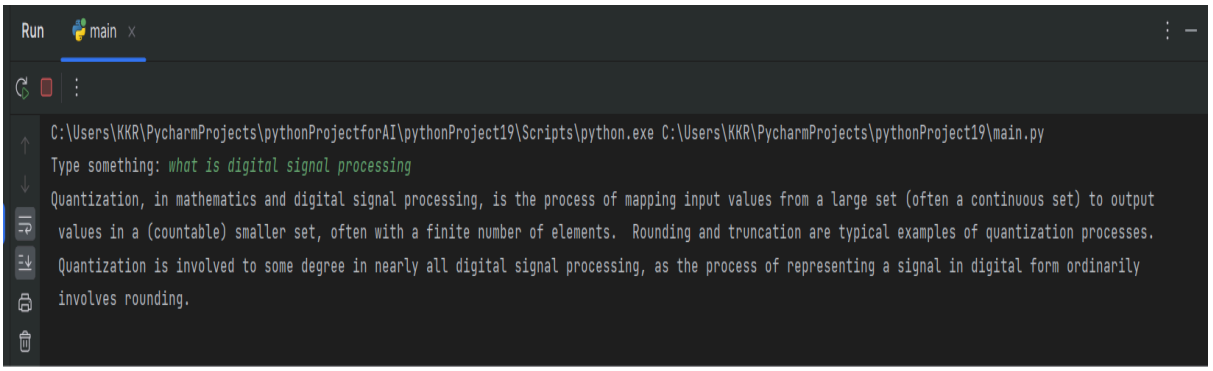
- Once the summary is obtained, the script uses the `pyttsx3` library for text-to-speech conversion.
- The summary text is passed to the `pyttsx3` engine, which synthesizes the text into spoken words.
- The synthesized speech is then played back to the user through their computer's audio output.

5 . Error Handling:

- The script incorporates error handling mechanisms to manage potential issues, such as ambiguous search terms, unavailable Wikipedia pages, or errors in text-to-speech synthesis.
- Error handling ensures a smooth user experience and prevents the script from crashing or providing inaccurate information.

CHAPTER 6

RESULTS WITH GRAPH/SIMULATION



CHAPTER 7

INFERENCES

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https://www.geeksforgeeks.org/voice-search-wikipedia-using-python/

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https://www.geeksforgeeks.org/voice-assistant-using-python/

CHAPTER 8

CONCLUSION

In conclusion, the provided Python script demonstrates the integration of text-to-speech functionality with the Wikipedia API, enabling users to access and listen to summarized information from Wikipedia articles. The script showcases interactive capabilities by soliciting user input and dynamically fetching relevant content. By limiting the summary length and converting it into speech, the script prioritizes concise and accessible information delivery, potentially catering to a diverse range of users, including those with visual impairments. Moreover, the script hints at educational or informative applications, suggesting utility in scenarios where spoken summaries of topics are desired. Overall, this script serves as a basic yet effective tool for retrieving and presenting Wikipedia information audibly, offering convenience and accessibility to users seeking quick access to summarized knowledge.