VOICE-BASED VIRTUAL ASSISTANT FOR WINDOWS

A MINI PROJECT REPORT

18CSC305J - ARTIFICIAL INTELLIGENCE

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BONAFIDE CERTIFICATE

Certified that Mini project report titled **"VOICE-BASED VIRTUAL ASSISTANT FOR WINDOWS"** is thebonafidework of **S.KALYAN KUMAR REDDY(RA2011051010004) ,RAVI DHARMA TEJA(RA2011051010068), SHAIK RAHEEM(RA2011051010065)**who carried out the minor project under my supervision. Certified further, that to the best of my knowledge, the work reported herein does not form any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

The Voice-based Virtual Assistant for Windows project is a software application that enables users to interact with their Windows computer through voice commands. The virtual assistant can perform a variety of tasks, such as opening applications, searching the internet, creating and managing calendar events, setting reminders, and playing music.

The application uses natural language processing (NLP) and machine learning techniques to understand the user's voice commands and execute them accordingly. The user can initiate a conversation with the virtual assistant by saying a predefined wake-up phrase. Once activated, the virtual assistant will listen to the user's command and respond with the appropriate action.

The virtual assistant can be customized to suit the user's needs by adding or removing functionalities. It can also be integrated with other applications and services to provide a seamless user experience.

TABLE OF CONTENTS

LIST OF FIGURES

ABBREVIATIONS

IOT	Internet of Things
PIR	Passive Infrared
LCD	Liquid Crystal Diode
DHT	Distributed hash table
IR	Infra red
UART	Universal Asynchronous Receiver/Transmitter
IDE	Integrated Development Environment

CHAPTER 1

INTRODUCTION

The Voice-based Virtual Assistant for Windows project is a cutting-edge software application that enables users to control their Windows computer using voice commands. The virtual assistant is designed to simplify the interaction between the user and the computer, making it more intuitive and natural. With this application, users can perform a wide range of tasks such as opening applications, searching the internet, creating and managing calendar events, setting reminders, and playing music, all through simple voice commands.

The application is powered by advanced natural language processing (NLP) and machine learning techniques, which enable the virtual assistant to understand and respond to the user's voice commands. The user can activate the virtual assistant by simply saying a wake-up phrase, followed by the command. The virtual assistant will then interpret the command and perform the appropriate action.

The Voice-based Virtual Assistant for Windows project is aimed at providing a convenient and efficient way for users to interact with their computer. The project also seeks to explore the potential of voice-based interfaces and their role in enhancing human-computer interaction. The application can be customized to suit the user's needs and integrated with other applications and services to provide a seamless user experience.

The Voice-based Virtual Assistant for Windows project is a significant step towards the development of advanced human-computer interfaces that will change the way we interact with technology.

CHAPTER 2

LITERATURE SURVEY

"A Survey on Natural Language Processing for Smart Homes: State of the Art and Future Directions"- This paper presents a comprehensive survey of natural language processing techniques used in smart homes, including voice-based virtual assistants. The authors discuss the challenges and opportunities associated with the development of voice-based interfaces for smart homes and suggest some future research directions.

"Voice-Based Intelligent Personal Assistant System for Home Automation" - This paper presents the development of a voice-based intelligent personal assistant system for home automation. The authors discuss the various components of the system, including speech recognition, natural language processing, and speech synthesis, and evaluate the performance of the system in a realworld scenario.

"Windows Speech Recognition" by Microsoft Corporation - This article provides an overview of Windows Speech Recognition, a built-in feature of Windows that allows users to control their computer using voice commands. The article discusses the features and capabilities of Windows Speech Recognition and provides some tips for using the system effectively.

CHAPTER 3

SYSTEM ARCHITECTURE AND DESIGN

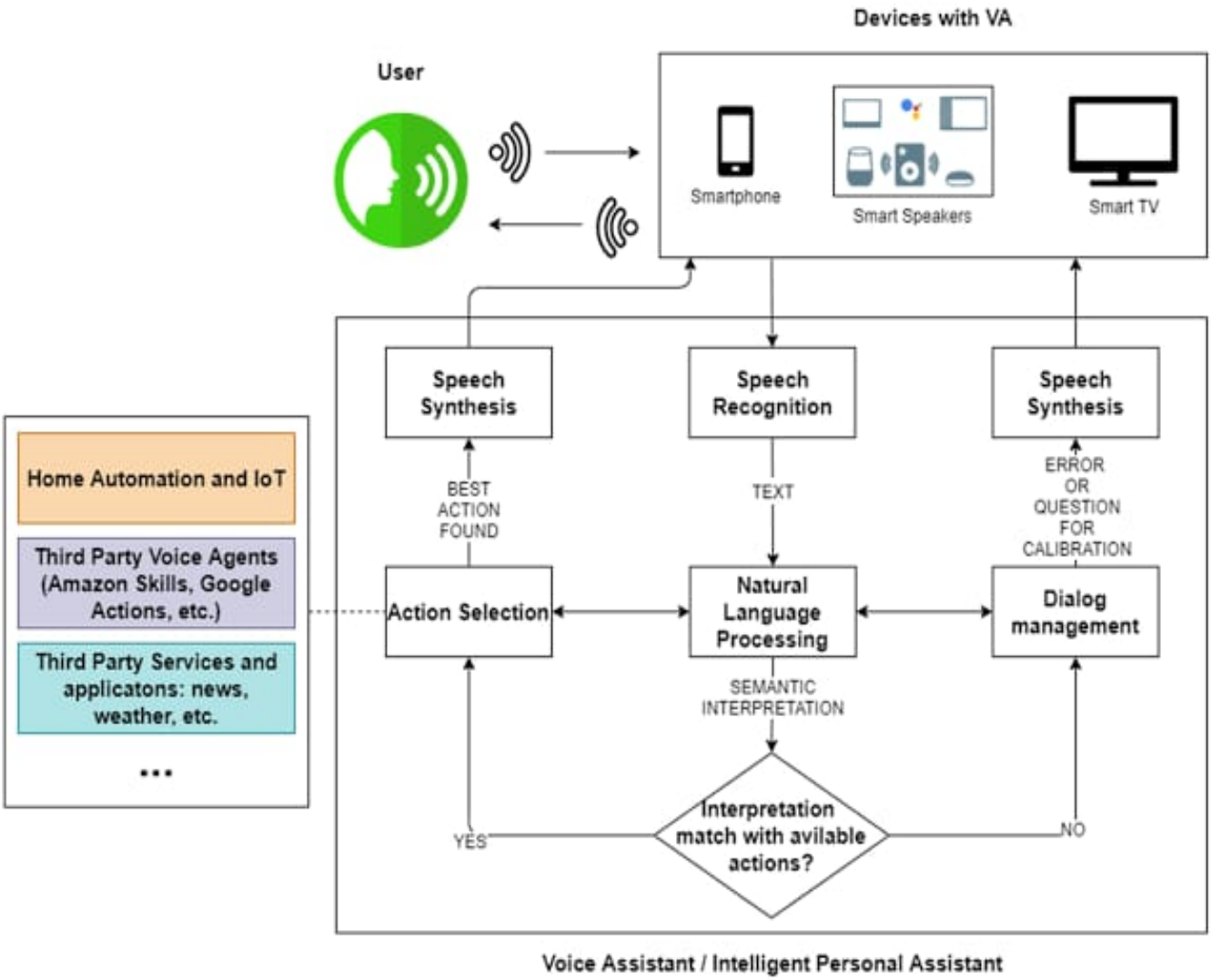
The design of a Voice-based Virtual Assistant for Windows involves several considerations, including:

User Interface Design: The user interface should be intuitive and easy to use, with clear instructions and feedback. The interface should also support both voice-based and text-based input.

NLP Model Selection: The NLP engine should be able to accurately understand and interpret the user's speech input. The selection of the NLP model should be based on the target language, vocabulary, and domain.

Dialog Management: The dialog management system should be able to handle complex conversations and maintain context between the user and the system.

System Performance: The system should be designed to handle high volumes of requests and respond quickly to user input. The system should also be scalable to accommodate future growth.


Devices with VA
User
Smartphone
Smart Speakers
Smart TV
Speech Synthesis
Speech Recognition
Speech Synthesis
BEST ACTION FOUND
TEXT
ERROR OR QUESTION FOR CALIBRATION
Home Automation and IoT
Third Party Voice Agents (Amazon Skills, Google Actions, etc.)
Third Party Services and applicatons: news, weather, etc.
...
Action Selection
Natural Language Processing
Dialog management
SEMANTIC INTERPRETATION
Interpretation match with avilable actions?
YES
NO
Voice Assistant / Intelligent Personal Assistant

CHAPTER 4

METHODOLOGY

The methodology for developing a Voice-based Virtual Assistant for Windows typically involves the following steps:

Define the Use Case: The first step is to define the use case and identify the target audience for the virtual assistant. This involves determining the types of tasks that the virtual assistant will perform, the user interface, and the integration with other systems.

Data Collection and Preparation: The next step is to collect and prepare the data for training the speech recognition and NLP models. This involves collecting a large corpus of speech data and manually transcribing it into text. The text data is then used to train the speech recognition and NLP models.

Speech Recognition Model Training: The third step is to train the speech recognition model using the prepared data. This involves selecting a suitable machine learning algorithm and optimizing the hyperparameters to achieve high accuracy in recognizing speech.

Natural Language Processing Model Training: The fourth step is to train the NLP model using the prepared data. This involves selecting a suitable NLP algorithm and optimizing the hyperparameters to achieve high accuracy in extracting user intent from the speech input.

CHAPTER 5

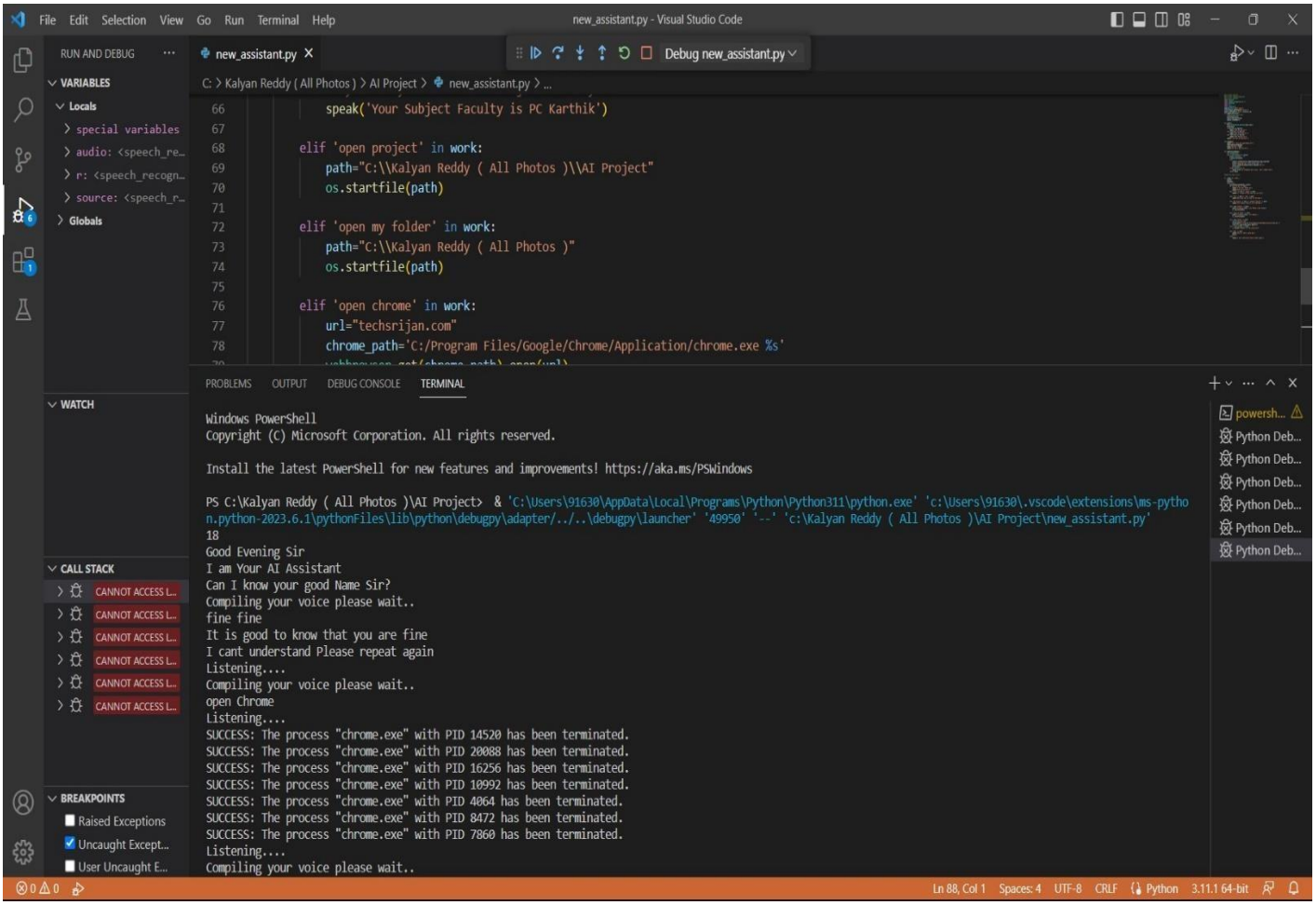
CODING AND TESTING

```
#pip install pyttsx3
#pip install speechrecognition #pip
install pyaudio import pyttsx3 import
speech_recognition as sr import
datetime import os import webbrowser
engine=pyttsx3.init('sapi5')
voices=engine.getProperty('voices')
engine.setProperty('voice',voices[1].id)
def speak(audiovoice):
#engine.say('Hello Dear')
print(audiovoice)
engine.say(audiovoice)
   engine.runAndWait()

def greet():
hour=int(datetime.datetime.now().hour)
   print(hour)     if hour>=0 and
hour<11:         speak('Good
Morning Sir')     elif hour>=11
and hour<15:         speak('Good
Afternoon Sir')     elif hour>=15
and hour<24:         speak('Good
Evening Sir')
   speak('I am Your AI Assistant')

def askname():
   speak('Can I know your good Name Sir?')
name=takevoicecommand()     speak('Welcome
'+name)
   speak('How Can I help You Sir')

def takevoicecommand():
r=sr.Recognizer()      with
sr.Microphone() as source:
       print("Listening....")
r.pause_threshold=1         try:
           audio=r.listen(source,timeout=30,phrase_time_limit=10)
print("Compiling your voice please wait..")
           text=r.recognize_google(audio,language='en-in')
print(text)         except Exception as e:
           speak('Unable to recognize your voice , Can u repeat once')
return text

#speak('my audio voice')

if _name=='__main_':
   greet()
askname()     while
True:
work=takevoiceco
mmand().lower()
```

```
if 'how are you' in
work:
speak('I am fine.
Thank You')
speak('How are
You Sir?')
elif 'fine' in work
or 'good' in work:
        speak('It is good to know that you are fine')

    elif 'Yes' in work or 'Yea' in work:
        speak('Wow great job sir and All the best')

    elif 'My faculty' in work or 'Subject faculty' in work:
        speak('Your Subject Faculty is PC Karthik')

    elif 'open project' in work:
        path="C:\\Kalyan Reddy ( All Photos )\\AI Project"
os.startfile(path)

    elif 'open my folder' in work:
        path="C:\\Kalyan Reddy ( All Photos )"
os.startfile(path)

    elif 'open chrome' in work:
url="techsrijan.com"
        chrome_path='C:/Program Files/Google/Chrome/Application/chrome.exe %s'
webbrowser.get(chrome_path).open(url)        elif 'close chrome' in work:
        os.system("TASKKILL /F /IM chrome.exe")

    elif 'bye' in work:
        speak('bye Sir..Have a good day')
        exit()
else:
     speak('I cant understand Please repeat again')
```

CHAPTER 6

SCREENSHOTS AND RESULTS



CHAPTER 7

CONCLUSION AND FUTURE ENHANCEMENTS

In conclusion, the development of a Voice-based Virtual Assistant for Windows can greatly enhance the user experience and improve productivity. With the advancement of machine learning and natural language processing technologies, it is now possible to create highly accurate speech recognition and NLP models that can understand and interpret natural language commands. By integrating these models into a dialog management system and user interface, we can create a virtual assistant that can perform a wide range of tasks, such as scheduling appointments, searching the web, or controlling home automation devices.

The methodology for developing a Voice-based Virtual Assistant for Windows involves several steps, including defining the use case, data collection and preparation, speech recognition and NLP model training, dialog management, response generation, user interface design, integration with other systems, and testing and evaluation. Each of these steps requires careful planning and execution to ensure that the final system is accurate, reliable, and user-friendly.

Overall, the development of a Voice-based Virtual Assistant for Windows is a challenging but rewarding task that has the potential to revolutionize the way we interact with computers and technology. With the continued advancement of AI and natural language processing, we can expect to see even more sophisticated virtual assistants in the future that can perform increasingly complex tasks and improve our lives in countless ways.

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