

FROM SIRI TO SMARTYPANTS

Abstract:

"From Siri to Smartypants: Building Your Personalized AI Assistant" introduces a transformative project aimed at empowering users with a customized AI assistant to enhance their daily lives. By leveraging cutting-edge technologies, including speech recognition, text-to-speech conversion, and integration with external APIs, the project delivers Smartypants, a versatile assistant capable of providing seamless assistance and boosting productivity.

Smartypants offers a range of functionalities, including retrieving information from Wikipedia, performing Google searches, providing real-time weather updates, playing music on YouTube, setting reminders, telling jokes, and answering basic questions. Users interact with Smartypants through voice commands, allowing for natural and intuitive communication.

The project's core technologies, such as Python libraries for speech recognition and text-to-speech conversion, ensure efficient and accurate processing of user queries. Additionally, integration with external APIs like Wikipedia, Google, and YouTube enables Smartypants to access vast repositories of information and deliver relevant responses promptly.

By developing Smartypants, the project aims to streamline daily tasks and provide users with a reliable assistant to simplify their lives. With its robust functionality and user-friendly interface, Smartypants represents a significant step towards personalized AI assistance tailored to individual needs.

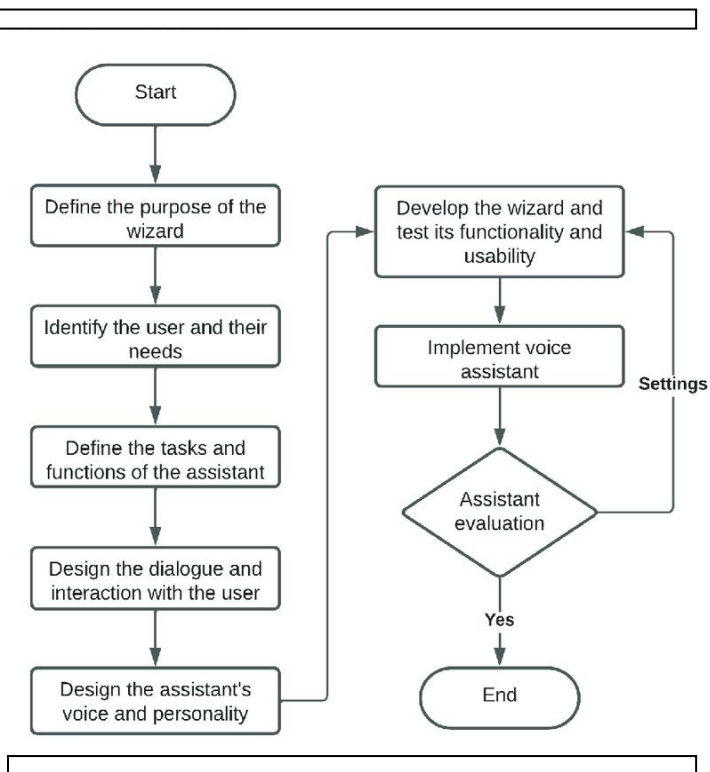
System Requirements:

- Operating System: Windows 10 / macOS Mojave / Ubuntu 18.04 LTS or later
- Processor: Intel Core i5 or equivalent
- RAM: 8 GB
- Storage: 500 MB of available space
- Additional Requirements: Internet connection for API calls, Microphone for voice input, Speaker for audio output.

Tools and Versions:

- Python: 3.8
- Pyttsx3: 2.90
- Wikipedia-API: 0.5.4
- Requests: 2.25.1
- SpeechRecognition: 3.8.1
- Google Search Python: Latest version
- Webbrowser module: Default with Python
- Pytube: 12.0.0
- Dateutil: 2.8.1

Flow Chart:



Source code:

```
import pyttsx3

import datetime

import requests

import speech_recognition as sr

import wikipedia

import webbrowser

import time

import pyjokes

from newsapi import NewsApiClient

from pytube import Search

from dateutil import parser


engine = pyttsx3.init()

def speak(text):

    engine.say(text)

    engine.runAndWait()

def perform_google_search(query):

    speak("Performing Google search...")

    search_url = f"https://www.google.com/search?q={query}"

    webbrowser.open(search_url)

def get_weather(api_key, city):

    url = f"http://api.openweathermap.org/data/2.5/weather?q={city}&appid={api_key}&units=metric"

    try:

        response = requests.get(url)

        response.raise_for_status()
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data = response.json()

weather_info = {
    "city": data["name"],
    "temperature": data["main"]["temp"],
    "description": data["weather"][0]["description"],
    "humidity": data["main"]["humidity"],
    "wind_speed": data["wind"]["speed"]
}

return weather_info

except requests.RequestException:

    return None

def recognize_speech():

    recognizer = sr.Recognizer()

    with sr.Microphone() as source:

        speak("Listening...")

        recognizer.adjust_for_ambient_noise(source)

        audio = recognizer.listen(source)

    try:

        query = recognizer.recognize_google(audio)

        print(f"You said: {query}")

        return query.lower()

    except sr.UnknownValueError:

        return "Sorry, I didn't understand that."

    except sr.RequestError:

        return "Sorry, the service is unavailable."

def set_reminder(reminder_time, reminder_message):

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now = datetime.datetime.now()

try:
    reminder_time = parser.parse(reminder_time)
    delay = (reminder_time - now).total_seconds()
    if delay > 0:
        speak(f"Reminder set for {reminder_time}.")
        time.sleep(delay)
        speak(f"Reminder: {reminder_message}")
    else:
        speak("The time you entered has already passed.")
except ValueError:
    speak("The time format is incorrect. Please use a recognizable date and time format.")

def handle_reminder_query(query):
    query = query.replace("set reminder", "").strip()
    parts = query.split(" at ")
    if len(parts) == 2:
        reminder_message = parts[0].strip()
        reminder_time = parts[1].strip()
        set_reminder(reminder_time, reminder_message)
        return f"Reminder set for {reminder_time} to {reminder_message}."
    else:
        speak("Please provide the reminder in the format 'set reminder [your reminder message] at [YYYY-MM-DD HH:MM:SS]' or a recognizable date and time format.")
        return "Sorry, I couldn't understand the reminder time."

def play_music_on_youtube(song_name):
    speak(f"Searching for {song_name} on YouTube.")
    search = Search(song_name)

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result = search.results[0]

webbrowser.open(result.watch_url)

speak(f"Playing {song_name} on YouTube.")

def handle_music_query(query):

    if 'play music' in query:

        song_name = query.replace('play music', '').strip()

        if song_name:

            play_music_on_youtube(song_name)

            return f"Playing {song_name} on YouTube."

        else:

            return "Sorry, I couldn't understand the song name."

    return "No music command detected."

def tell_joke():

    joke = pyjokes.get_joke()

    speak(joke)

    return joke

def handle_joke_query(query):

    if 'joke' in query:

        return tell_joke()

def get_news(api_key, query):

    newsapi = NewsApiClient(api_key=api_key)

    top_headlines = newsapi.get_top_headlines(q=query, language='en', country='us')

    articles = top_headlines['articles']

    if articles:

        news = [article['title'] for article in articles[:5]]

        news_str = ". ".join(news)

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        speak(news_str)

    return news_str

else:

    return "Sorry, no news found for that topic."

def handle_news_query(query, api_key):

    query = query.replace("news about", "").strip()

    return get_news(api_key, query)

def handle_query(query, api_keys):

    if 'wikipedia' in query:

        return handle_wikipedia_query(query)

    elif 'google search' in query:

        query = query.replace("google search", "").strip()

        perform_google_search(query)

        return "I have performed the Google search."

    elif 'weather' in query:

        query = query.replace("weather", "").strip()

        return handle_weather_query(query, api_keys['weather'])

    elif 'time' in query:

        return datetime.datetime.now().strftime("The current time is %H:%M")

    elif 'date' in query:

        return datetime.datetime.now().strftime("Today's date is %B %d, %Y")

    elif 'how are you' in query:

        response = "I'm fine, thank you"

        speak(response)

        return response

    elif 'what is your name' in query:
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    response = "My name is Smartypants, your personal AI assistant."
    speak(response)
    return response

elif 'who am i' in query:
    response = "You are my boss"
    speak(response)
    return response

elif 'set reminder' in query:
    return handle_reminder_query(query)

elif 'play music' in query:
    return handle_music_query(query)

elif 'joke' in query:
    return handle_joke_query(query)

elif 'news about' in query:
    return handle_news_query(query, api_keys['news'])

else:
    response = "I'm sorry, I can't help with that right now."
    speak(response)
    return response

def handle_wikipedia_query(query):
    speak("Searching Wikipedia...")
    query = query.replace("wikipedia", "").strip()
    try:
        result = wikipedia.summary(query, sentences=2)
        speak("According to Wikipedia:")
        speak(result)
```



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    return result

except wikipedia.exceptions.DisambiguationError as e:
    return f"Too many results for {query}, please be more specific."

except wikipedia.exceptions.PageError:
    return "Sorry, I couldn't find any information on that topic."

def handle_weather_query(query, api_key):
    speak("Getting weather information...")

    weather_data = get_weather(api_key, query)

    if weather_data:
        result = (f"Weather in {weather_data['city']}: "
                  f"Temperature: {weather_data['temperature']}°C, "
                  f"Description: {weather_data['description']}, "
                  f"Humidity: {weather_data['humidity']}%, "
                  f"Wind Speed: {weather_data['wind_speed']} m/s.")

        speak(result)

        return result

    else:
        result = "Sorry, I couldn't find the weather information for that location."

        speak(result)

        return result

def main():
    weather_api_key = "6e6f9659fef62e5c5d1103979100d281"
    news_api_key = "dbe57b028aeb41e285a226a94865f7a7"
    api_keys = {'weather': weather_api_key, 'news': news_api_key}

    while True:
        query = recognize_speech()

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if "stop" in query:

    speak("Goodbye! Have a nice day!")

    break

response = handle_query(query, api_keys)

print(response)

speak(response)

if __name__ == '__main__':

    main()

```

Project Hurdles:

- Speech recognition accuracy: Ensure clear voice input and reduce background noise.
- Handling Wikipedia disambiguation errors: Prompt users to be more specific.
- Managing API request limits and errors: Implement rate limiting and error handling.
- Ensuring reliable internet connectivity: Make sure the system is connected to the internet.
- Improving user interaction and response clarity: Refine responses for better user experience.
- Addressing microphone and speaker compatibility issues: Ensure proper hardware setup and driver installation.
- Optimizing response time for user queries: Enhance processing speed and minimize delays.

OUTPUT:

```

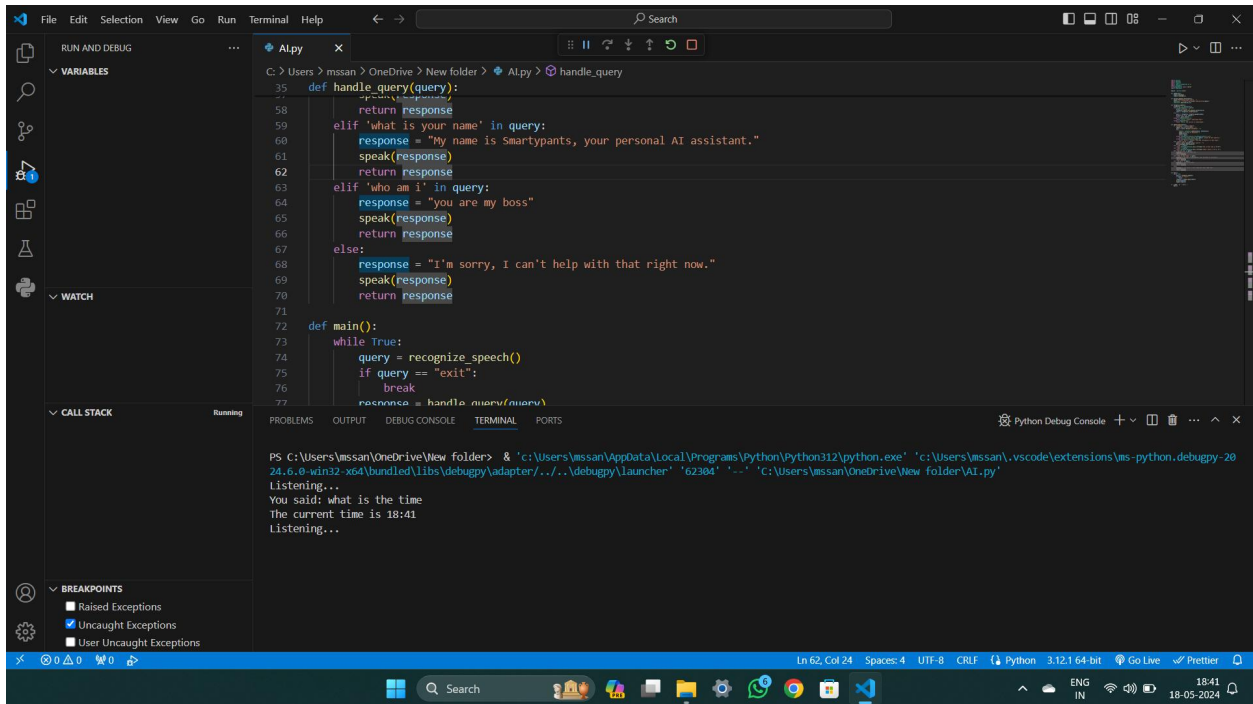
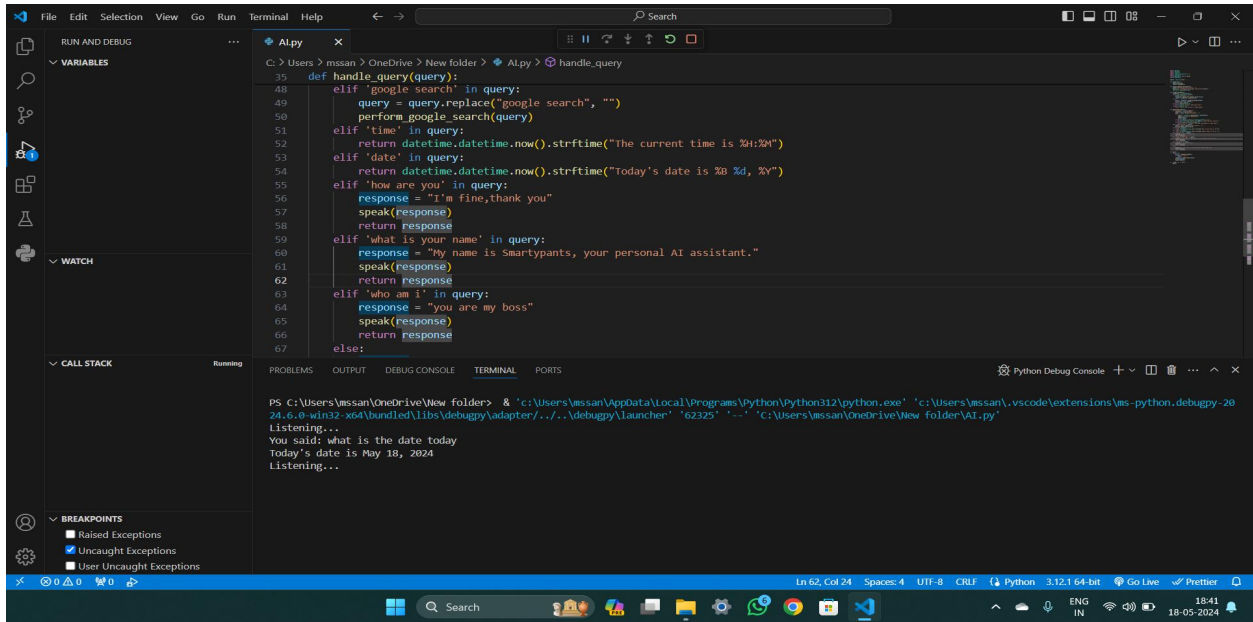
C:\Users\msan > OneDrive > New folder > Al.py > handle_query
34
35 def handle_query(query):
36     if 'wikipedia' in query.lower():
37         speak("Searching wikipedia...")
38         query = query.replace("wikipedia", "")
39         try:
40             result = wikipedia.summary(query, sentences=2)
41             speak("According to Wikipedia:")
42             speak(result)
43             return result
44         except wikipedia.exceptions.DisambiguationError as e:
45             return f"Too many results for {query}, please be more specific."
46         except wikipedia.exceptions.PageError:
47             return "Sorry, I couldn't find any information on that topic."
48     elif 'google search' in query:
49         query = query.replace("google search", "")
50         perform_google_search(query)
51     elif 'time' in query:
52         return datetime.datetime.now().strftime("The current time is %H:%M")
53     elif 'date' in query:
54         return datetime.datetime.now().strftime("Today's date is %d %d, %Y")

```

```

PS C:\Users\msan\OneDrive\New folder> & 'c:\Users\msan\AppData\Local\Programs\Python\Python312\python.exe' 'c:\Users\msan\.vscode\extensions\ms-python.debugpy-2024.6.0-win32-x64\bundled\Lib\debugpy\adapter\..\debugpy\launcher' '62325' '-' 'c:\Users\msan\OneDrive\New folder\Al.py'
Listening...
You said: what is the date today
Today's date is May 18, 2024
Listening...
You said: artificial intelligence Wikipedia
Artificial intelligence (AI), in its broadest sense, is intelligence exhibited by machines, particularly computer systems. It is a field of research in computer science that develops and studies methods and software that enable machines to perceive their environment and uses learning and intelligence to take actions that maximize their chances of achieving defined goals.

```



```
File Edit Selection View Go Run Terminal Help
C:\Users\mssan> OneDrive > New folder > Alpy > handle_query

34
35 def handle_query(query):
36     if 'wikipedia' in query.lower():
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PS C:\Users\mssan\OneDrive\New folder> & 'c:\Users\mssan\AppData\Local\Programs\Python\Python312\python.exe' 'c:\Users\mssan\.vscode\extensions\ms-python.debugpy-2024.6.6-win32-x64\buried\libs\debugpy\adapter\..\..\debugpy\launcher' '62365' '-.' 'C:\Users\mssan\OneDrive\New folder\AI.py'
Listening...
You said: artificial intelligence Google search
None
Listening...
```

