PROJECT TARA

(Personal AI Assistant)

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report **"PROJECT TARA"** is the bonafide work of **"DAVID VEDHA JEROME A(715522104013) ,DHRUV R (715522104018) ,CHERAN U(715522104011) "** who carried out the project work under my supervision.

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Submitted for the project viva-voce Examination held on _________________

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INTERNAL EXAMINER	**EXTERNAL EXAMINER**

ABSTRACT

Tara stands as a groundbreaking AI assistant meticulously crafted to elevate daily productivity through seamless voice interaction and automation. At its core, Tara harnesses cutting-edge AI technologies and Python libraries to execute an extensive array of tasks. These encompass managing emails, navigating the web, system administration, and delivering real-time updates on weather, news, and beyond. By exemplifying how AI can seamlessly integrate into everyday life, this project demonstrates the potential of Tara as a reliable, efficient, and indispensable personal assistant .falls under the category of Natural Language Processing (NLP) in the broader field of Artificial Intelligence (AI).

Natural Language Processing involves the interaction between computers and human (natural) languages. In the case of pyttsx3, it is specifically concerned with the generation of human-like speech from text. This process typically involves the use of machine learning algorithms and linguistic rules to convert written text into spoken words, mimicking the way humans speak .Within NLP, text-to-speech (TTS) conversion is an important area that enables various applications such as virtual assistants, accessibility tools for visually impaired individuals, language learning platforms, and more.So, while itself is not an AI algorithm, it provides a useful tool for developers working in the field of NLP to incorporate speech synthesis capabilities into their AI applications.

FRAMEWORK :

The framework for AI_ASSISTANT is designed to be modular and scalable, consisting of several key components:

- **Voice Processing Module**: Handles speech recognition and synthesis using the pyttsx3 and speech_recognition libraries.
- **Task Automation Module**: Automates routine tasks such as taking screenshots, monitoring CPU usage, and fetching the weather.
- **Information Retrieval Module**: Integrates with APIs to provide real-time information like news updates and Wikipedia summaries.
- **User Interface Module**: Provides a graphical interface using tkinter, allowing users to interact with the assistant via text input or voice commands.

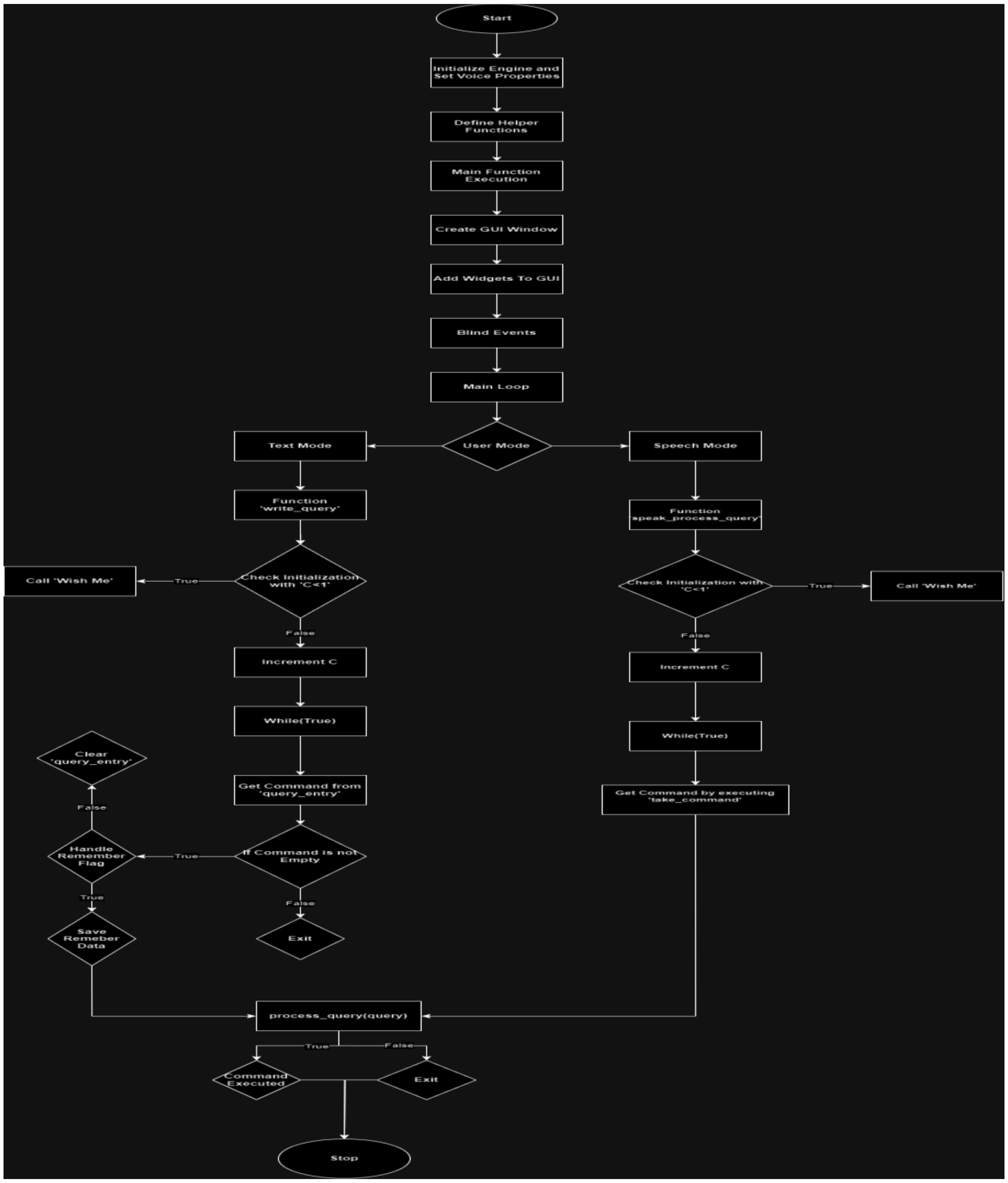
ARTIFICIAL INTELLIGENCE IN AI_ASSISTANT :

AI_ASSISTANT utilizes cutting-edge artificial intelligence techniques to provide a seamless user experience. Leveraging natural language processing (NLP), speech recognition, and machine learning, AI_ASSISTANT can understand and respond to user queries in real-time. Its core functionalities include voice interaction, task automation, information retrieval, and personalized user support. By continuously learning from user interactions, AI_ASSISTANT improves its accuracy and efficiency over time.

HARDWARE REQUIREMENTS :

- Processor: Intel Core i5 or equivalent
- RAM: Minimum 4 GB (8 GB recommended)
- Storage: At least 500 MB of free disk space
- Microphone: For voice command input
- Speakers: For audio output

FLOWCHART :



SOFTWARE REQUIREMENTS :

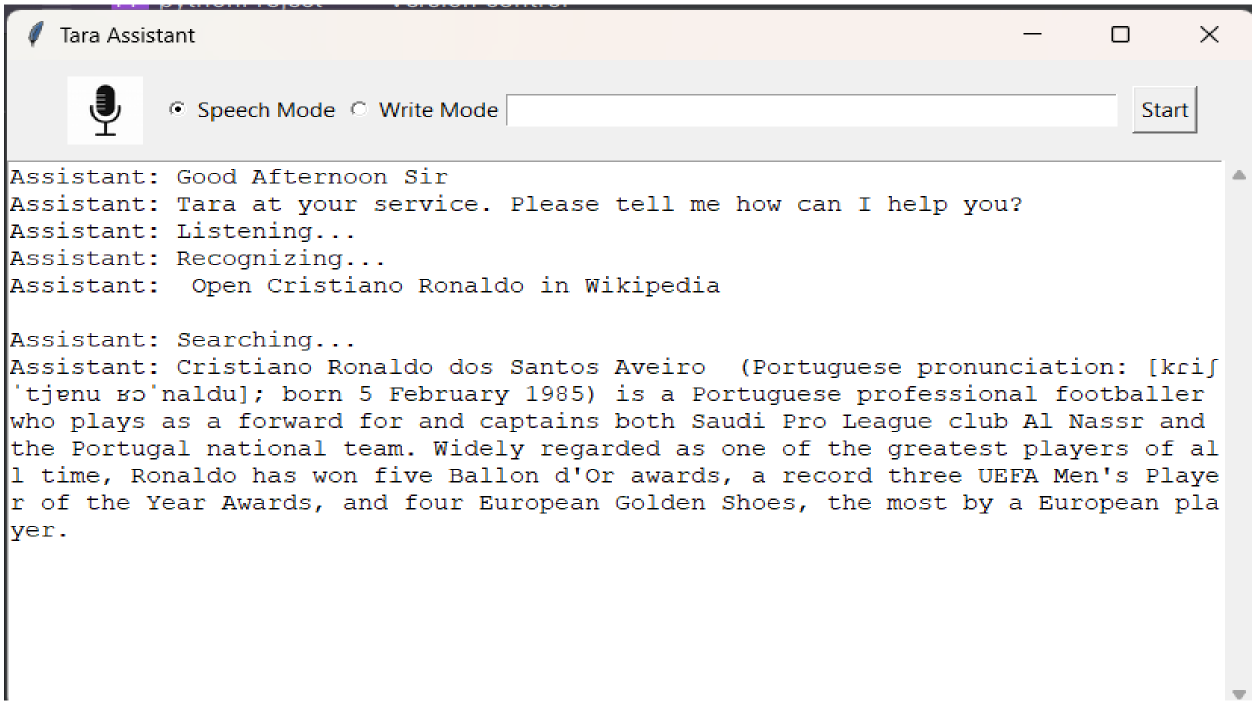
- Operating System: Windows 10 or later
- Python: Version 3.7 or later
- Internet Connection: Required for web-based functionalities like email, weather updates, and news retrieval.

CODE :

```
import pyttsx3
import datetime
import speech_recognition as sr
import wikipedia
import time
import webbrowser as wb
import os
import pyautogui
import psutil
import pyjokes
import requests
import subprocess
from tkinter import  filedialog
import tkinter as tk
from tkinter import scrolledtext
from PIL import Image, ImageTk
import threading
open_app_flag = False
engine = pyttsx3.init()
newVoiceRate = 130
engine.setProperty('rate', newVoiceRate)
voices = engine.getProperty('voices')
engine.setProperty('voice', voices[1].id)
def wishme():
    hour = datetime.datetime.now().hour
    if hour >= 0 and hour < 12:
        speak_and_append("Good Morning Sir")
    elif hour >= 12 and hour < 18:
        speak_and_append("Good Afternoon Sir")
    elif hour >= 18 and hour < 24:
        speak_and_append("Good Evening Sir")
    else:
        speak_and_append("Good Night Sir")
    speak_and_append("Tara at your service. Please tell me how can I help you?")
def screenshot():
    file_path = filedialog.asksaveasfilename(defaultextension=".png",
                                              filetypes=[("PNG files", "*.png"), ("All files", "*.*")])
    if file_path:
        img = pyautogui.screenshot()
        img.save(file_path)
        append_output(f"Screenshot saved to {file_path}")
def cpu():
    usage = str(psutil.cpu_percent())
    speak_and_append('CPU is at ' + usage + ' percent')
    battery = psutil.sensors_battery()
    speak_and_append('Battery is at ' + str(battery.percent) + ' percent')
def speak(audio):
    engine.say(audio)
    engine.runAndWait()
def speak_and_append(audio):
    speak(audio)
    append_output(audio)
def time():
    Time = datetime.datetime.now().strftime("%I:%M %p")
    speak_and_append("The current time is " + Time)
def date():
    Date = datetime.datetime.now().strftime("%A, %B %d, %Y")
    speak_and_append("Today's date is " + Date)
def joke():
    joke = pyjokes.get_joke()
    speak_and_append(joke)
def takeCommand():
    r = sr.Recognizer()
    with sr.Microphone() as source:
        append_output("Listening...")
        r.pause_threshold = 1
        audio = r.listen(source)
    try:
        append_output("Recognizing...")
        query = r.recognize_google(audio, language='en-in')
        append_output(f" {query}\n")
    except Exception as e:
        append_output("Error: " + str(e))
        speak_and_append("Say that again please...")
        return "None"
    return query
def weather(city):
    api_key = "b52c66bcd330f1661de28426f176faac"
    base_url = "http://api.openweathermap.org/data/2.5/weather?"
    complete_url = base_url + "appid=" + api_key + "&q=" + city
    response = requests.get(complete_url)
    data = response.json()
    if data["cod"] != "404":
        main = data["main"]
        weather_desc = data["weather"][0]["description"]
        temp = main["temp"]
        temp_celsius = temp - 273.15
        result = f"The temperature in {city} is {temp_celsius:.2f} degrees Celsius with
{weather_desc}."
        speak_and_append(result)
    else:
        speak_and_append("City not found")
def get_news():
    api_key = "81a16fa94dc54006bd497762913c248a"
    base_url = "https://newsapi.org/v2/top-headlines"
    params = {
        "apiKey": api_key,
        "country": "us",
        "pageSize": 5
    }
    response = requests.get(base_url, params=params)
    if response.status_code == 200:
        news_data = response.json()
        articles = news_data.get("articles", [])
        if articles:
            speak_and_append("Here are the top news headlines")
            for article in articles[:5]:
                title = article["title"]
                description = article["description"]
                news = f"{title}\n{description}\n"
                speak_and_append(news)
        else:
            speak_and_append("No articles found")
    else:
        speak_and_append("Failed to fetch news data")
def open_application(app_name):
    app_mapping = {
        'notepad': 'notepad.exe',
        'calculator': 'calc.exe',
        'chrome': 'C:\\Program Files\\Google\\Chrome\\Application\\chrome.exe',
        'word': 'C:\\Program Files\\Microsoft Office\\root\\Office16\\WINWORD.EXE',
        'excel': 'C:\\Program Files\\Microsoft Office\\root\\Office16\\EXCEL.EXE',
        'powerpoint': 'C:\\Program Files\\Microsoft Office\\root\\Office16\\POWERPNT.EXE',
        'paint': 'mspaint.exe',
        'file explorer': 'explorer.exe',
        'task manager': 'taskmgr.exe',
        'photos': 'C:\\Program Files\\Windows Photo Viewer\\PhotoViewer.dll',
        'calendar': 'C:\\Program Files\\Windows Calendar\\wincal.exe',
        'media player': 'C:\\Program Files\\Windows Media Player\\wmplayer.exe',
        'edge': 'C:\\Program Files (x86)\\Microsoft\\Edge\\Application\\msedge.exe',
        'firefox': 'C:\\Program Files\\Mozilla Firefox\\firefox.exe',
        'vlc': 'C:\\Program Files\\VideoLAN\\VLC\\vlc.exe',
    }
    try:
        if app_name in app_mapping:
            subprocess.Popen(app_mapping[app_name])
            speak_and_append(f"Opening {app_name}")
        else:
            speak_and_append(f"Application {app_name} not found in predefined list.")
    except Exception as e:
        speak_and_append(f"Failed to open {app_name}: {e}")
def process_query(query):
    if 'time' in query:
        time()
    elif 'wikipedia' in query:
        speak_and_append("Searching...")
        query = query.replace("wikipedia", "")
        results = wikipedia.summary(query, sentences=2)
        append_output(results)
        speak(results)
    elif 'date' in query:
        date()
    elif 'offline' in query:
        quit()
    elif 'open in chrome' in query:
        speak_and_append("What should I open?")
        chrome = 'C:/Program Files/Google/Chrome/Application/chrome.exe %s'
        search = takeCommand().lower()
        wb.get(chrome).open_new_tab(search + '.com')
    elif 'search in chrome' in query:
        speak_and_append("What should I search?")
        search = takeCommand().lower()
        wb.get('windows-default').open_new_tab(f"https://www.google.com/search?q={search}")
    elif 'logout' in query:
        os.system("shutdown -l")
    elif 'shutdown' in query:
        os.system("shutdown /s /t 1")
    elif 'restart' in query:
        os.system("shutdown /r /t 1")
    elif 'play songs' in query:
        song_dir = "C:\\Users\\LENOVO\\Music"
        songs = os.listdir(song_dir)
        os.startfile(os.path.join(song_dir, songs[0]))
        speak_and_append("Playing Songs")
    elif 'remember' in query:
        speak_and_append("What should I remember?")
        data = takeCommand().lower()
        speak_and_append("You told me to remember " + data)
        file_path = filedialog.asksaveasfilename(defaultextension=".txt",
                                                 filetypes=[("Text files", "*.txt"), ("All files", "*.*")])


        if file_path:
            with open(file_path, "w") as remember_file:
                remember_file.write(data)
    elif 'do you know' in query:
        file_path = filedialog.askopenfilename(filetypes=[("Text files", "*.txt"), ("All files",
"*.*")])
        if file_path:
            with open(file_path, "r") as remember_file:
                remember_data = remember_file.read()
                speak_and_append("You told me to remember " + remember_data)
    elif 'screenshot' in query:
        screenshot()
    elif 'cpu' in query:
        cpu()
    elif 'joke' in query:
        joke()
    elif 'weather' in query:
        speak_and_append("Please tell me the city name")
        city = takeCommand().lower()
        weather(city)
    elif 'news' in query:
        get_news()
    elif 'open application' in query:
        speak_and_append("Which application should I open?")
        app_name = takeCommand().lower()
        open_application(app_name)

def start_thread(mode):
    thread = threading.Thread(target=mode)
    thread.start()

def on_enter(event=None):
    mode = mode_var.get()
    if mode == "speech":
        start_thread(speak_process_query)
    elif mode == "text":
        start_thread(write_query)
C = 0
def speak_process_query():
    global C
    if C < 1:
        wishme()
    C += 1
    while True:
        query = takeCommand().lower()
        process_query(query)


def reset_app():
    global remember_flag, open_app_flag
    remember_flag = False
    open_app_flag = False
    query_entry.delete(0, tk.END)
def append_output(text):
    text_area.insert(tk.END, "Assistant: " + text + "\n")
    text_area.see(tk.END)
if __name__ == "__main__":
    root = tk.Tk()
    root.title("Tara AI Assistant")
    frame = tk.Frame(root)
    frame.pack(pady=10)
    microphone_image = Image.open("Mic.png")
    microphone_image = microphone_image.resize((50, 50), Image.LANCZOS)
    microphone_icon = ImageTk.PhotoImage(microphone_image)
    microphone_label = tk.Label(frame, image=microphone_icon)
    microphone_label.pack(side=tk.LEFT, padx=10)
    mode_var = tk.StringVar(value="speech")
    speech_mode_button = tk.Radiobutton(frame, text="Speech Mode", variable=mode_var,
value="speech")
    speech_mode_button.pack(side=tk.LEFT)
    write_mode_button = tk.Radiobutton(frame, text="Write Mode", variable=mode_var,
value="text")
    write_mode_button.pack(side=tk.LEFT)
    query_entry = tk.Entry(frame, width=50)
    query_entry.pack(side=tk.LEFT)
    button = tk.Button(frame, text="Start", command=on_enter)
    button.pack(side=tk.RIGHT, padx=10)
    root.bind("<Return>", on_enter)
    text_area = scrolledtext.ScrolledText(root, height=20, width=80)
    text_area.pack()
    root.mainloop()
```

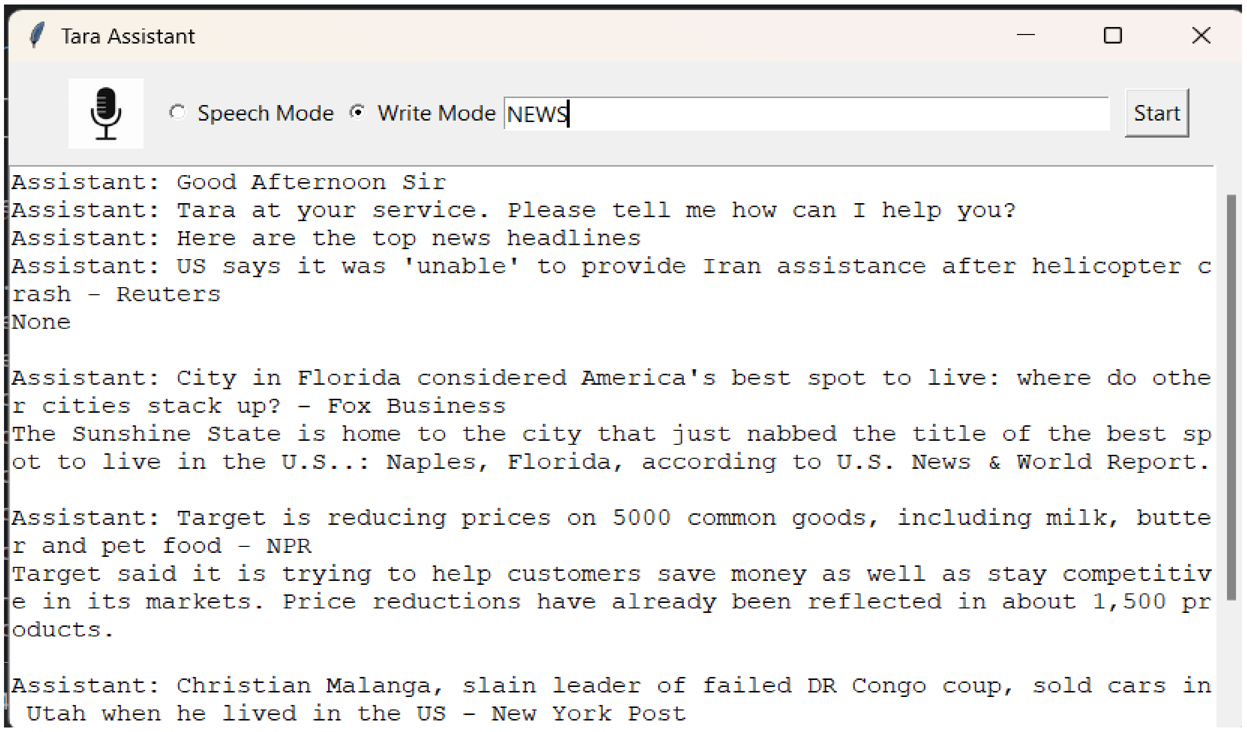
OUTPUT(SCREEN SHOTS):

SPEECH MODE :



```
Assistant: Good Afternoon Sir
Assistant: Tara at your service. Please tell me how can I help you?
Assistant: Listening...
Assistant: Recognizing...
Assistant:  Open Cristiano Ronaldo in Wikipedia

Assistant: Searching...
Assistant: Cristiano Ronaldo dos Santos Aveiro  (Portuguese pronunciation: [kɾiʃ
ˈtjɐnu ʁɔˈnaldu]; born 5 February 1985) is a Portuguese professional footballer
who plays as a forward for and captains both Saudi Pro League club Al Nassr and
the Portugal national team. Widely regarded as one of the greatest players of al
l time, Ronaldo has won five Ballon d'Or awards, a record three UEFA Men's Playe
r of the Year Awards, and four European Golden Shoes, the most by a European pla
yer.
```

WRITE MODE :



```
Assistant: Good Afternoon Sir
Assistant: Tara at your service. Please tell me how can I help you?
Assistant: Here are the top news headlines
Assistant: US says it was 'unable' to provide Iran assistance after helicopter c
rash - Reuters
None

Assistant: City in Florida considered America's best spot to live: where do othe
r cities stack up? - Fox Business
The Sunshine State is home to the city that just nabbed the title of the best sp
ot to live in the U.S..: Naples, Florida, according to U.S. News & World Report.

Assistant: Target is reducing prices on 5000 common goods, including milk, butte
r and pet food - NPR
Target said it is trying to help customers save money as well as stay competitiv
e in its markets. Price reductions have already been reflected in about 1,500 pr
oducts.

Assistant: Christian Malanga, slain leader of failed DR Congo coup, sold cars in
 Utah when he lived in the US - New York Post
```

CONCLUSION :

This significant advancement in AI-driven communication and task automation represents a new era of technological capabilities. As AI technology continues to advance, future improvements may include deeper natural language understanding, broader integration with diverse data sources, and more personalized user experiences. With the aid of advanced machine learning algorithms, these systems will achieve greater context awareness and predictive accuracy, enhancing their value in various applications. These developments promise to provide smarter, more intuitive support, streamline workflows, and empower users in both personal and professional settings.