AN AI POWERED DESKTOP ASSISTANT THAT TALKS LIKE A HUMAN

PROJECT SYNOPSIS

OF MAJOR PROJECT

BACHELOR OF TECHNOLOGY

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SUBMITTEDBY

MANREET KAUR — URN-2104142

DILPREET KAUR — URN-2104091

ARSHDEEP SINGH — URN-2104075

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GURU NANAK DEV ENGINEERING COLLEGE,

LUDHIANA

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INTRODUCTION

As a personal desktop assistant, it helps the end-user with daily tasks like having casual conversations, searching, looking up word definitions, finding information about medications, making health recommendations based on symptoms, looking up weather,open various desktop applications (e.g., FaceTime, browsers) based on verbal instruction also, to play music, tell time, and provide weather updates based on user requests.Machine learning is used to assess user commands and statements in order to provide the best possible outcome. Today, practically all tasks are done digitally. With a smartphone in our hands, the entire world is literally at our fingers. We no longer even use our fingers anymore. We only mention the work, and it is completed. There are programs that allow us to search for terms like "machine learning" and the desktop assistant will provide the results. The job of a virtual assistant is to do that. The foundation of this project is the idea that there is enough freely accessible data and information on the internet to create a virtual desktop assistant capable of making judgements for common user tasks. Virtual assistant helps us save our time. Virtual assistant provides us the flexibility for a user to modify us functionalities. For creating virtual assistant for your computer has to go from basics python to complex programming, accordingly. Virtual assistant has an ability to understand and perform requests. Overall, virtual assistants offer a useful tool to streamline and enhance computer-based activities, making it easier for individuals to interact with technology and achieve their daily goals in a more efficient and natural way.

RATIONALE

We are all familiar with virtual assistants like Cortana, Siri, Google Assistant, and many others that can perform or aid in our daily virtual tasks. the goal of Desktop Assistant is to lessen workload and assist students with their everyday tasks, homework, practicals, assignments and as well as to answer all of their questions.

The rationale for developing a desktop assistant with the objectives of implementing robust speech recognition, enabling application control, and providing AI-driven responses is centered around enhancing user convenience, efficiency, and interaction. By incorporating accurate speech recognition, the assistant offers a natural and accessible way to interact with the computer, reducing reliance on manual input. The ability to automate routine tasks like opening applications, playing music, and retrieving information streamlines workflows, saving time and improving productivity. Additionally, integrating AI to deliver relevant and informative responses enriches the user experience, transforming the assistant into a versatile tool that not only simplifies tasks but also supports learning and decision-making, ultimately increasing its overall utility and value. The integration of AI-driven analytics can also help in monitoring academic performance and suggesting areas of improvement. Furthermore, the assistant's ability to control various applications ensures a unified user experience, reducing the need to switch between different tools and platforms. Overall, this multifaceted approach not only optimizes daily operations but also fosters a more engaging and supportive educational environment, empowering.

OBJECTIVES

Following objectives will be achieved for the fulfillment of this project:

1. Implement a robust speech recognition engine capable of accurately transcribing spoken commands.
2. Open various desktop applications (e.g., FaceTime, browsers) , play music, tell time, and provide weather updates based on verbal instruction and user requests.
3. Develop assistant that can provide informative and relevant responses on a wide range of topics, enhancing user interaction and support using artificial intelligence.

LITERATURE REVIEW

Desktop Assistants represent the next step in mobile and smart user network services. They are designed to provide a wide range of information in response to user requests, making it easier for users to manage their tasks, as well as control Desktop using voice commands. This enables users to optimize their time management and improve their overall performance by reducing distractions.

Overall, Desktop Assistants are a convenient and time-saving tool that enable users to access information and complete tasks quickly and easily using only their voice. As technology continues to evolve, they are expected to become even more advanced and useful for a variety of tasks and applications.

The article "On the track of Artificial Intelligence: Learning with Intelligent Personal Assistants" by Nil Goksel and Mehmet Emin Mutlu explores how intelligent personal assistants (IPAs) can revolutionize the way we learn and interact with information. They highlight the advanced computing technologies and natural language processing (NLP) capabilities of IPAs that enable personalized and collaborative learning experiences. The authors make a compelling case for the use of IPAs in education and training, emphasizing their potential to transform how we acquire and interact with information.

J.B. Allen et al have emphasized the significance of language and speech as a means of communication, and the importance of speech technology in enabling machines to understand human speech. Their study focuses on the identification of speech, its basic model, applications, and techniques for the speech recognition system. The research highlights that speech recognition technology is growing in importance and has diverse applications in different fields.

FEASIBILITY STUDY

A feasibility study evaluates the practicality of developing a desktop assistant for students to aid with daily tasks, homework, practical, assignments, and answering questions.

1. Technical Feasibility:
    - Speech Recognition: Advanced algorithms like Google's Speech-to-Text or Microsoft Azure Cognitive Services.
    - Application Control: Scripting and automation tools like AutoHotkey or Windows PowerShell.
    - Database Management: SQL or NoSQL databases to store user data and preferences.
2. Development Tools:
    - Programming languages: Python.
    - Development frameworks: TensorFlow, PyTorch, and Electron for a cross-platform desktop application.
3. Economic Feasibility:
    - Hardware: High-performance servers for processing AI models.
    - Software: Licensing fees for AI and speech recognition APIs.
    - Maintenance and updates.
    - Server hosting and data storage.

FACILITIES REQUIRED FOR PROPOSED WORK

1. Hardware:

   High-Performance Computers: Powerful desktops or laptops for developers, capable of handling complex AI computations and large datasets.

   Backup Storage: Reliable backup systems to ensure data integrity and disaster recovery.

2. Software:

   Development Tools: IDEs like PyCharm, Visual Studio Code, and version control systems like Git.

   Database Management Systems: SQL (e.g., MySQL, PostgreSQL) or NoSQL (e.g., MongoDB) databases to store user data and preferences.

   Speech Recognition APIs: Access to advanced APIs like Google's Speech-to-Text or Microsoft Azure Cognitive Services

3. Network:

   High-speed internet, GitHub/GitLab for version control, and communication tools (Slack, Teams).

4. Workspace:

   Dedicated workstations, quiet environment.

METHODOLOGY/ PLANNING OF WORK

Natural Language Processing is used by virtual assistants to translate user text or voice input into actionable commands. Natural language audio signals are transformed into executable commands or digital data that may be processed by the software when a user requests the Desktop Assistant to carry out a task. To find an acceptable response, this data is then compared to the software's data. Machines can be operated using your own commands by using a virtual assistant. Certain Python installation packages, such as, are used to create virtual assistants.

1) Speech Recognition: To transform speech input to text, the system makes advantage of Google's online speech recognition system. By using this, customers can talk into a microphone, which is momentarily stored in the system before being sent to the Google.

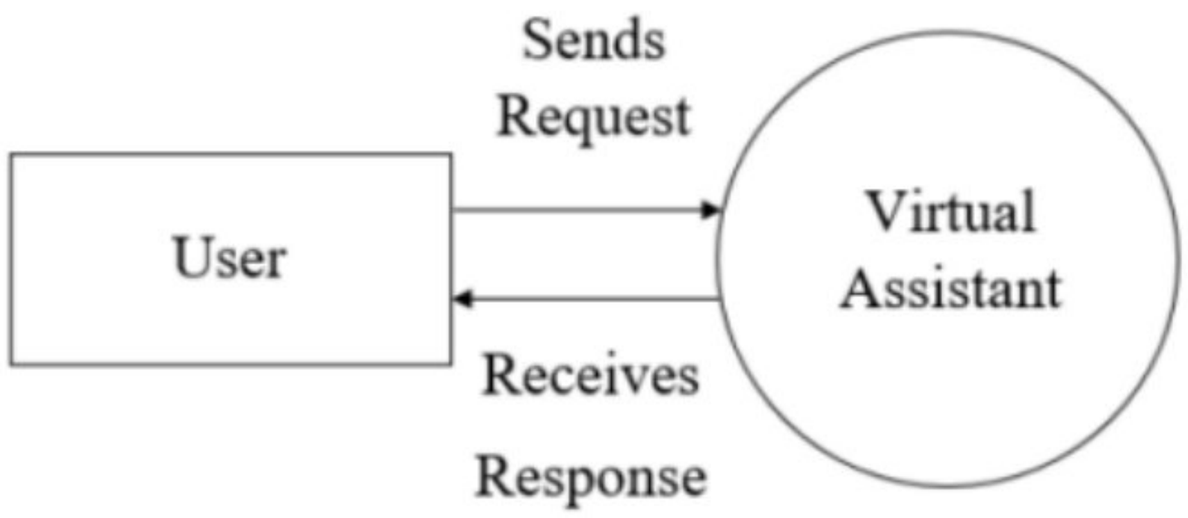
2) Python Back-end: Python is used throughout the program's back end. The speech recognition module's voice input is exchanged into output by the Python back-end, which then determines whether the given instruction is a Context Extraction, API Call, or System Call.

3) API Calls: Application Programming Interface (API) is a type of software intermediary that facilitates communication between two applications. In other words, API acts as a communication relay, sending users' requests to providers and returning users' responses.

4) Google-Text-to-Speech: Basically, Text-To-Speech is used to turn user-provided Text into Speech. In other words, a Text To Speech Engine transforms written text into phonetic representation, which is subsequently transformed into waveforms, producing sound.

METHODOLOGY/ PLANNING OF WORK

5) Content Extraction: Machine-readable documents that are unstructured or semi-structured can automatically extract structured information via context extraction. Natural language processing (NLP) is used in this activity to process texts written in human languages. Content extraction could be defined as processes like automatic annotation and content extraction from various photos, videos, and audio files.



EXPECTED OUTCOMES

The goal of our project is to create a voice assistant that can help users efficiently perform various tasks on their personal computers. The assistant will operate through voice commands, minimizing the need for physical hardware. It will be able to open applications and websites, play media, tell the time and date, and even greet users based on the current time. We are also working on integrating AI technology to make the assistant more interactive and engaging for users. With a wide range of possible tasks that can be programmed, the potential uses for the assistant are virtually limitless. As we continue to develop and improve the system, we hope to make it a valuable tool for users to streamline their computer use and maximize productivity.

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