AI DIGITAL ASSISTANT - NOVA

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ABSTRACT

An intelligent digital assistant is a software agent that performs tasks or services for privately supported commands or questions. Sometimes the term "chatbot" is employed to ask virtual assistants generally or accessed explicitly by online chat. In some cases, online chat programs are exclusively used for entertainment purposes. Some virtual assistants are ready to interpret human speech and respond via synthesized voices. Users can ask their assistant questions, control home automation devices and media playback via voice, and manage other basic tasks like email, to-do lists, and calendars with verbal commands.

Keywords: Digital Assistant, Chatbot, Automation, Integration.

I. INTRODUCTION

NOVA (Neoteric Organized Virtual Assistant) is an AI digital assistant designed to assist users with various tasks and automate routine processes. The system includes several managers, such as the task manager, calendar manager, and email manager, which allows users to schedule events, manage their to-do lists, and stay on top of their email communications.

Furthermore, NOVA offers website automation, allowing users to automate repetitive website tasks and workflows. This feature lets users streamline their online activities, including filling out forms, completing purchases, and scraping data from web pages.

NOVA is powered by natural language understanding and machine learning technologies, enabling it to accurately understand and interpret user requests. The system also learns from user interactions, becoming more personalized and intelligent over time.

What NOVA strives for, is the automation of repetitive and otherwise mundane tasks that consume a large chunk of time, the automation of which would not only save this precious resource but also create opportunities for its better utilization.

Overall, NOVA offers a comprehensive digital assistant solution for users looking to streamline their daily activities and automate routine processes. With the continued development of AI technologies, the potential for NOVA to become even more sophisticated and effective in its role as a personal assistant is promising.

II. LITERATURE SURVEY

[1] Mekni, M. states that conversational agents are natural language interaction interfaces designed to simulate human conversations using AI, and his paper provides a platform to help universities provide continuous and instant assistance to their student, staff, and faculty communities.[2] A Velmurugan et al proposed that mobile applications provide a comprehensive view of personal and group expenses, eliminating sticky notes, spreadsheets, and data handling inconsistencies.[3] Ami Doshi created Donna, which is an artificial intelligence-based personal assistant that can be used by the simplest of individuals to get their daily tasks and upcoming schedules fixed according to their own convenience. It is automated and has a task manager, chatbot, and text-to-speech feature to make it more user-friendly.[4] Aliv Faizal Muhammad developed an English conversation chatbot using speech recognition and artificial intelligence technology with the Dialogflow platform as the artificial intelligence engine, with an accuracy rate of 100%. It is expected to help students improve their conversation skills.[5] Siddharth Konak states that the chatbots using Google Dialogflow are an efficient and cost-effective solution for businesses and organizations to provide personalized and engaging interactions with customers.[6] Michael Fellmann worked on an intelligent to-do list that can help personal tasks and time

management by automatically collecting and resubmitting tasks, providing context-sensitive reminders, and tracking activities to provide insights.

III. METHODOLOGY

The key technologies used for creating NOVA have been discussed:

1. Dialogflow:

a. Dialogflow is a natural language understanding engine that sits in the middle of the stack, above a product or service, and facilitates a rich conversational experience. It is an end-to-end tool that a user can communicate with via text, voice, or other communication channels.

b. The Dialogflow agent maps an intent from a user utterance and then takes an action on it as per the phrases it has been trained with and then provides the user with a response. If it's unable to find a match, slot filling is used. A fallback intent helps catch exceptions.

c. The working of Dialogflow can be understood with the help of the following diagram:
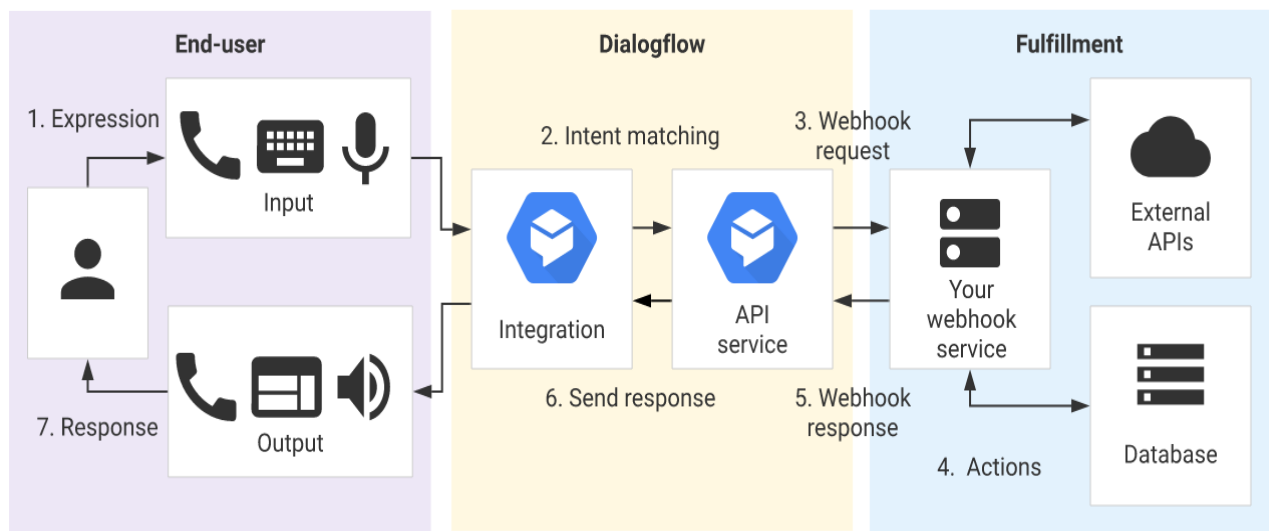

Figure 1: Working of DialogFlow..

d. NOVA has been built using Dialogflow. We have specified different intents for the agent to provide a personalized experience to the user.

e. Furthermore, Dialogflow fulfillments are used to provide integration services such as with Google Calendar.

2. ChatGPT:

a. ChatGPT (Chat Generative Pre-trained Transformer) is an Artificial Intelligence chatbot developed by OpenAI. It is a transformer-based neural network that is capable of generating human-like responses.

b. In our project, we have used ChatGPT as part of a fallback mechanism. If the Dialogflow agent is unable to provide a response to the user-asked question, ChatGPT will instead do so.

3. Kommunicate:

a. Kommunicate is a customer support automation platform that provides a human-like chatbot experience. It supports the creation of NLP-based chatbots and integration across different services and applications.

b. We have used Kommunicate to deploy our Dialogflow chatbot on our website.

4. BigQuery:

a. BigQuery is a PaaS provided by Google. It is a serverless data warehouse that supports ANSI SQL querying and also provides machine learning capabilities.

b. The data from user and NOVA interactions is stored using BigQuery. This enables analytics and insight generation.

IV.   SYSTEM ARCHITECTURE

The functionality of NOVA can be divided into 2 major modules:
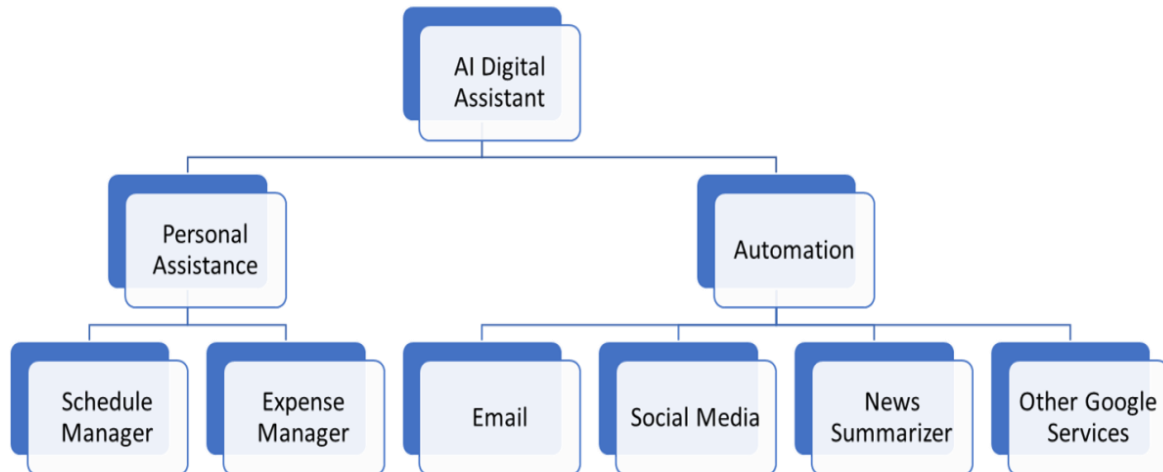
1. Personal Assistance
2. Website Automation

Figure 2: High-Level System Architecture.

Each module governs tasks related to a different service domain.

1. Personal Assistance:

a. The personal assistance module as the name suggests aims to provide assistance on a personal level. Various schedulers are assigned the task to cater to different needs such as

- A scheduler for meetings.
- A scheduler for events such as trips, vacations, meals, outings, etc.
- A scheduler for student classes.
- A scheduler for doctor's appointments.

b. The scheduled events are added to the user's Google Calendar.

2. Website automation:

a. We aim to automate different services. This includes

- Social media sites like Facebook, Whatsapp, Twitter, etc.
- Google services like Calendar, Gmail, etc.

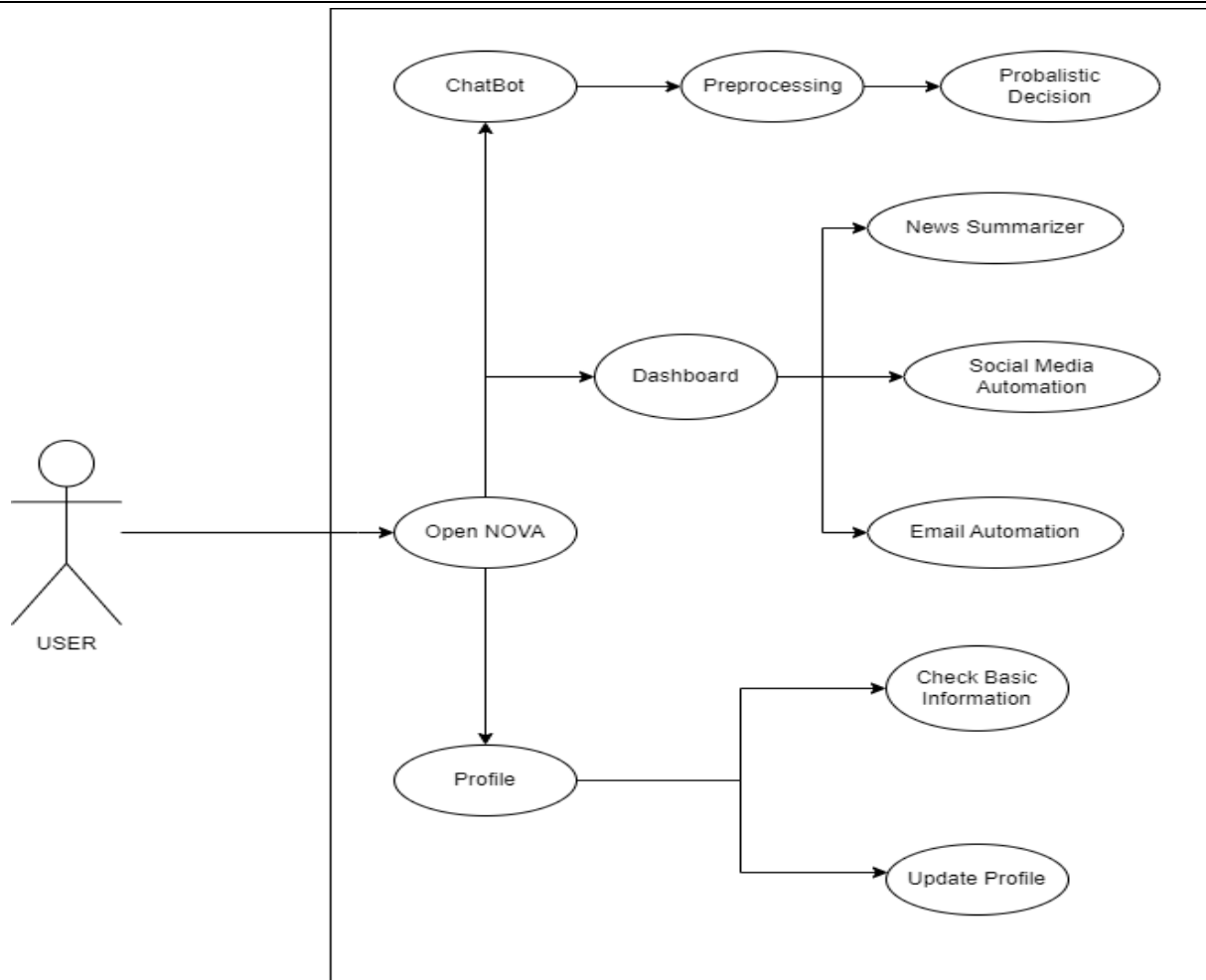The overall flow of NOVA's work can be understood with the following diagram.

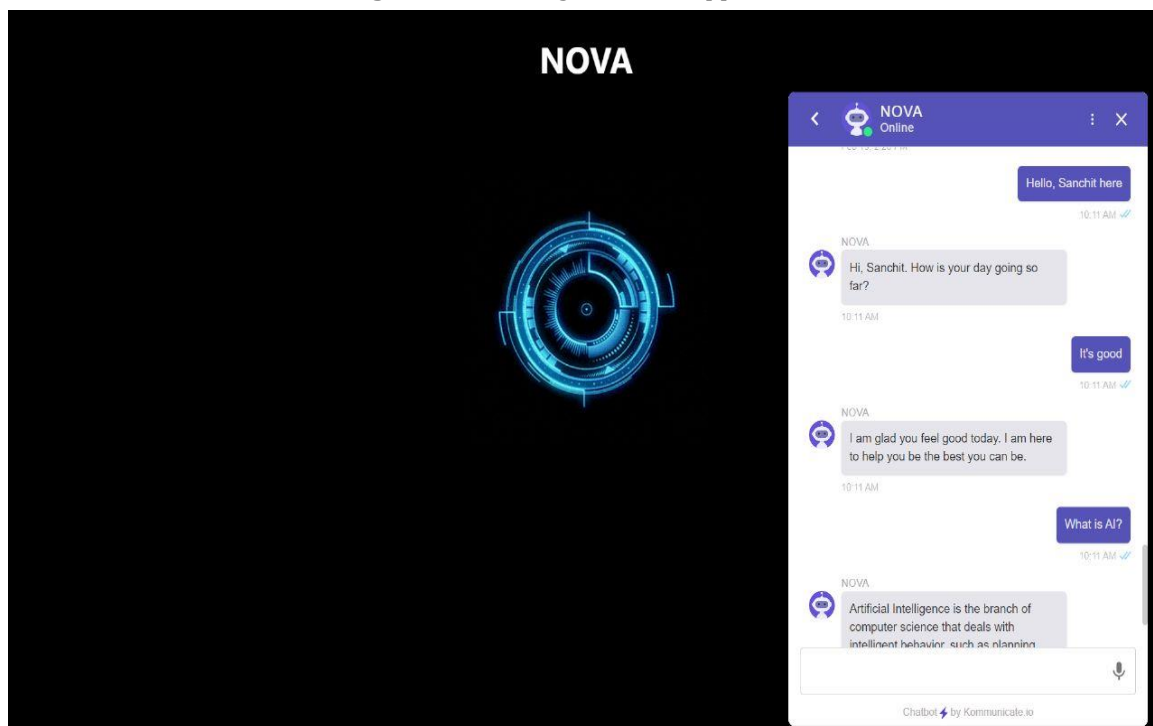**Figure 3:** UML diagram of the application.

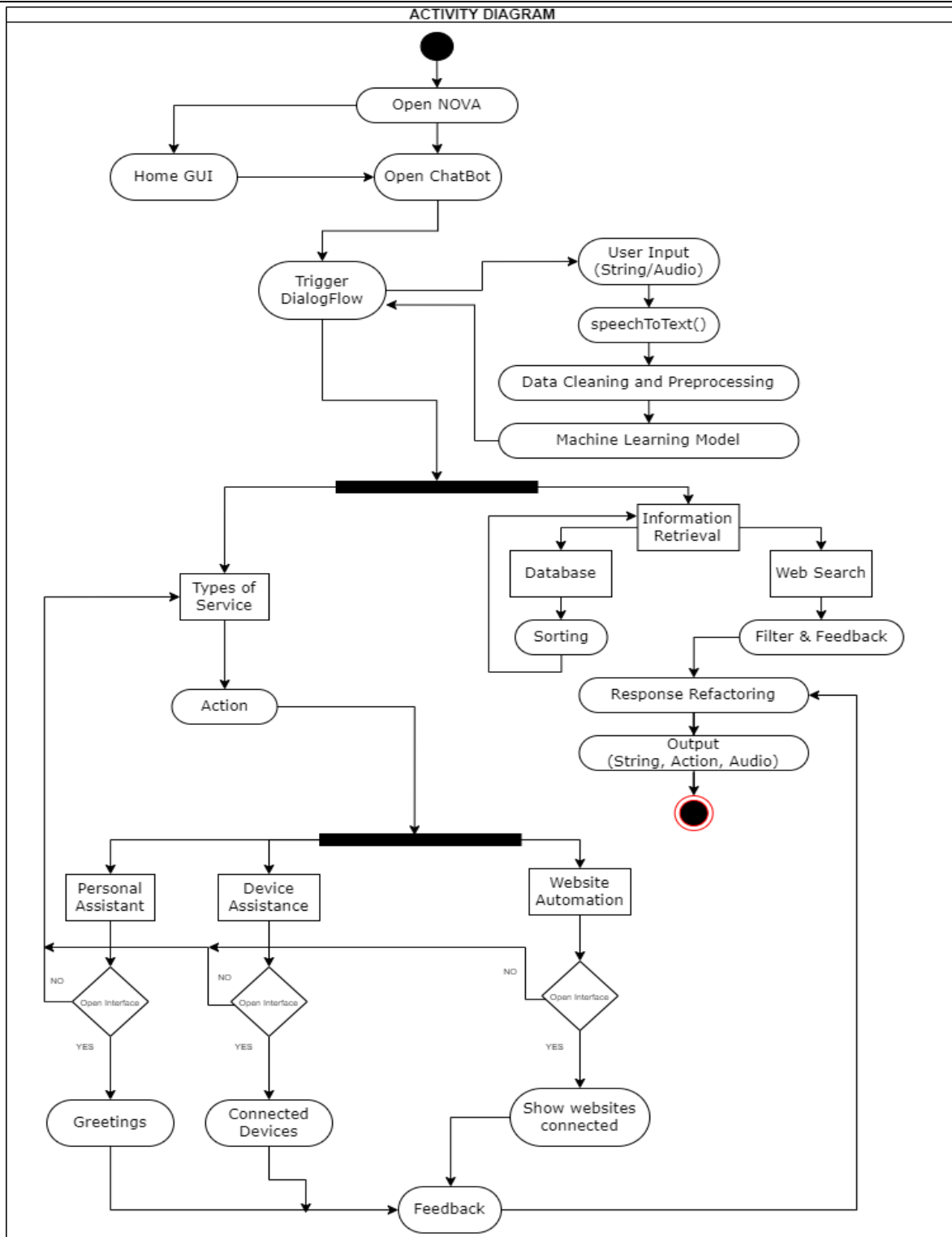**Figure 4:** User Interactive website for NOVA.

Figure 5: Activity Diagram.

V.   CONCLUSION

In conclusion, NOVA is an innovative AI digital assistant that offers a wide range of features to help users automate and streamline their daily activities. With its task, calendar, email, and website automation managers, NOVA is designed to make repetitive and mundane tasks more efficient, saving users valuable time that can be better utilized elsewhere. NOVA's natural language understanding and machine learning technologies allow it to learn from user interactions and become more intelligent and personalized over time. As AI technology continues to evolve, the potential for NOVA to become even more advanced and effective as a personal assistant

is exciting. Overall, NOVA offers a comprehensive solution for users looking to simplify their lives and increase their productivity.

VI.   REFERENCES

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