International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 06 | June - 2025 SJIF Rating: 8.586 ISSN: 2582-3930

AI At Your Command: A Voice-Enabled Personal Scheduler

[1]Dr. G. Rajesh
Associate Professor, Department of Computer Science and Engineering
Vignan's Institute of Management and Technology for Women, Hyd.
Email: rajgundla@gmail.com

[2] Leena Soni
UG Student, Department of Computer Science and Engineering
Vignan's Institute of Management and Technology for Women, Hyd.
Email: leenasoni0101@gmail.com

[3]Burugu Indumathi
UG Student, Department of Computer Science and Engineering
Vignan's Institute of Management and Technology for Women, Hyd.
Email: indusri2004@gmail.com

[4]Pasunoori Shreya
UG Student, Department of Computer Science and Engineering
Vignan's Institute of Management and Technology for Women, Hyd.
Email: shreyapasunoori@gmail.com

***Abstract*— AI at Your Command, a voice-enabled personal scheduler designed to simplify daily task planning through natural conversation. It combines speech recognition, artificial intelligence (AI), and advanced language models to help users manage their schedules hands-free. Through voice commands user can add, delete and modify the tasks. The system uses Natural Language Processing (NLP) and Large Language Models (LLMs) to understand both the content and context of spoken language, allowing it to process commands accurately—although the phrasing is informal or varies from user to user. It also detects time-related expressions, priorities, and task dependencies to ensure reliable scheduling. By automating routine activities and prioritizing critical tasks, the proposed approach enhances user productivity and supports effective time management. The integration of intelligent language models ensures a personalized and dynamic scheduling experience tailored to individual needs. To make interactions smooth, the scheduler gives real-time voice responses that confirm or clarify the user's input, providing a more natural and interactive experience. This is suitable for busy professionals, students, and individuals with physical or visual impairments who benefit from voice-first interaction. By combining user-friendly design with smart automation, this scheduler offers a modern and accessible solution to everyday time management challenges, helping users stay productive and organized with minimal effort.**

Keywords— Artificial Intelligence, Large Language Models, Natural Language Processing, personal scheduler, voice recognition

I. INTRODUCTION

In our busy daily lives, managing time and keeping track of tasks can be challenging. Many people use digital schedulers to stay organized, but most of these tools still require users to type or manually enter tasks, which can be inconvenient—especially when they are in a hurry or multitasking. To solve this problem, we developed AI at Your Command, a personal scheduler that works with voice commands. This system uses Artificial Intelligence (AI), Natural Language Processing (NLP), and Large Language Models (LLMs) to understand what users say and help them manage their tasks quickly and easily. With this scheduler, users can speak naturally to add new tasks, update existing ones, or check what they have to do—all without touching their devices. It can handle everyday language, figure out which tasks are most important, and organize them in a smart way. It also responds to the user, making the experience feel like a conversation.

This voice-based approach saves time, reduces the stress of manual planning, and helps people keep a well-balanced schedule. It is especially helpful for busy professionals, students, or anyone who wants a faster, easier way to stay organized.

II. LITERATURE REVIEW

Subhash, Srivatsa, Siddesh, Ullas, and Santhosh [1] present an AI-based Voice Assistant system capable of performing a range of tasks through speech commands, such as launching applications, checking the weather, and sending emails. Their work integrates core artificial intelligence components, including speech recognition, natural language understanding, and intelligent response generation. A key highlight of their design is the user-friendly interface, which allows users to interact with the system without requiring prior technical knowledge. The voice assistant is also evaluated on its efficiency and accuracy in understanding commands, ensuring that users receive timely and relevant responses. This system enhances accessibility and convenience, especially for users seeking hands-free digital interactions. The paper contributions are directly relevant to AI-driven personal schedulers, demonstrating how voice-controlled systems can effectively streamline daily tasks, reduce manual effort, and promote intelligent automation in everyday settings.

Maedche et al. [2], in their study published in *Business & Information Systems Engineering*, examine the rapid development and integration of AI-based digital assistants in daily life and business operations. These systems, such as Google Assistant and Amazon Alexa, utilize artificial intelligence and natural language processing to interact with users, automate tasks, and support decision-making. The paper identifies both the benefits—like increased efficiency and user satisfaction—and the challenges, including ethical concerns, data privacy, and the need for transparent algorithms. The authors call for responsible innovation in this domain, encouraging the development of user-friendly, secure, and

context-aware assistant systems. Their insights provide a valuable foundation for applications such as voice-enabled task schedulers, highlighting the potential of AI assistants to transform human-computer interaction in a personalized and meaningful way.

Gebreab, Salah, Jayaraman, Rehman, and Ellaham [3] proposed a large language model (LLM)-based multi-agent framework designed to automate routine administrative tasks in healthcare settings. The system uses a set of intelligent agents to interpret user queries, retrieve relevant patient data, and interact with electronic medical record (EMR) systems. By leveraging tools like retrieval-augmented generation (RAG) and multimodal models such as GPT-4V, the framework enables efficient task planning and execution, including documentation, scheduling, and data entry. The authors demonstrate that this AI-powered system significantly reduces the burden on healthcare professionals by improving speed, accuracy, and automation in administrative workflows. Their approach is directly relevant to voice-driven personal task schedulers, especially for managing complex operations through natural language.

Kim [4] presents a focused study on the implementation of voice control systems integrated with artificial intelligence assistants. The paper emphasizes how AI technologies, including speech recognition and natural language understanding, are essential in enabling machines to interpret and act upon human voice commands. The research outlines a framework where voice inputs are processed using machine learning models to deliver accurate and responsive outputs, making human-computer interaction more intuitive. The study also highlights the importance of real-time response, system accuracy, and user adaptability in voice-enabled applications. This work forms a significant basis for systems like voice-assisted schedulers, showcasing how AI can streamline tasks through hands-free, voice-driven interfaces.

Xu, Iyengar, and Shi [5] present a system called Caching Hierarchy Architecture (CHA), which is designed to improve how quickly and efficiently voice assistants respond in home environments by using local data storage .The authors demonstrate through experiments that this architecture provides faster and more reliable interactions, even under high workloads. Their work is highly relevant to AI-based voice schedulers, as it tackles one of the main challenges—ensuring real-time responsiveness in voice-driven task management systems.

Zwakman, Pal, and Arpnikanondt [6] investigate the usability of AI-based voice assistants, focusing on user experiences with Amazon Alexa. The study evaluates interaction patterns, voice command accuracy, and user satisfaction through structured testing and feedback. It highlights key factors such as clarity of responses, ease of use, and reliability as major contributors to positive user engagement. The findings show that effective voice interface design can significantly improve the overall user experience, particularly in smart home environments. These insights are directly applicable to voice-enabled personal schedulers, as they emphasize the importance of intuitive interaction, low latency, and user trust in AI-driven systems.

III. METHODOLOGY

To build an intelligent and user-friendly task management system, a structured development process was followed. The methodology consisted of several steps that enabled the system to understand voice or text commands, process them accurately, and perform the required task actions.

A. Data Collection

We first collected different types of commands given by users, both spoken and written. These included tasks like “add a meeting,” “delete reminder,” or “what are my tasks today?”

B. Input Preprocessing

Audio commands were turned into text using a speech recognition tool. Then, both spoken and written texts were cleaned by removing extra spaces, symbols, and other unnecessary elements to make them ready for processing.

C. AI Model Development

Two main models were used:

- One model converted voice to text using Google’s speech recognition.
- The second model understood what the user wanted by identifying the intent using a large language model API (Groq).

D. Model Testing and Improvement

The intent model was tested with real examples to make sure it could understand user commands correctly. We checked how confident it was and whether it gave the right answers, making changes when needed.

E. Mapping Intents to Actions

Once the system understood what the user wanted, it matched that request to a specific action — such as adding a task, updating one, or showing upcoming tasks. These actions were carried out in a MongoDB database.

F. System Deployment

The full system was launched using Streamlit, which provided an easy-to-use web interface. Users could give commands using voice or text. The system showed task results on screen and also spoke back using text-to-speech.

System Architecture:

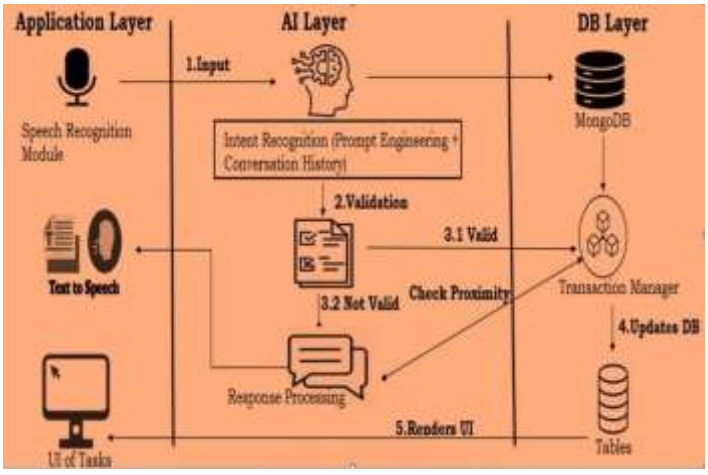

Fig 3: AI Personal Scheduler

Overview:

The architecture of the *AI at Your Command* system is organized into three main layers: the **Application Layer**, **AI Layer**, and **Database Layer**. Each layer plays a specific role in delivering a smooth and intelligent voice-based task scheduling experience.

1. Application Layer

This layer interacts directly with the user. It includes the following modules:

- **Speech Recognition Module**: Captures the user's voice commands and converts them into text.
- **Text-to-Speech (TTS)**: Converts system-generated text responses into spoken feedback.
- **Task UI**: A visual interface that displays current tasks and updates them based on user input.

2. AI Layer

This is the core processing layer where the actual understanding and decision-making happen.

- **Intent Recognition**: The system uses a Large Language Model (LLM) to understand the user's request. This includes prompt engineering and maintaining conversation history for better context.
- **Validation Module**: Once the intent has been detected, the system evaluates the input to determine its correctness and suitability for execution.
    - If **valid**, it proceeds to update the database.
    - If **not valid**, it processes the response and informs the user accordingly.
- **Response Processing**: Depending on the result of validation, appropriate messages are generated and passed back to the application layer.

3. Database Layer

This layer manages all data storage operations.

- **MongoDB** is used as the main database to store task information.
- A **Transaction Manager** handles interactions between the AI and the database. It ensures that any changes or additions to tasks are securely and correctly saved.
- All updates are committed to the **Tables** that organize and store user data.

IV. RESULTS AND ANALYSIS

4.1 ADDING A TASK

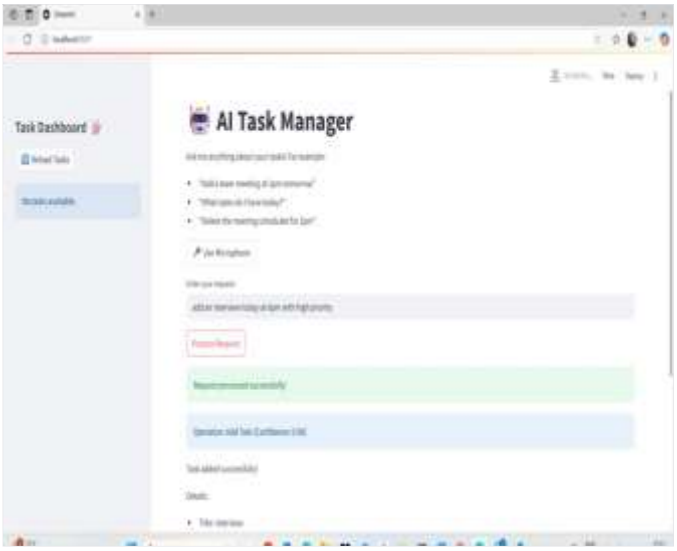

Fig 4.1 Adding a Task

The figure 4.1 displays the user interface of the AI Task Manager application. It allows users to manage their tasks through natural language input, either typed or spoken via a microphone. In this example, a user request to “add an interview today at 6pm with high priority” is successfully recognized and processed by the system. The interface confirms the task has been added, displaying confidence in the recognized intent along with task details. The system provides real-time feedback and supports seamless task creation through AI-driven intent classification.

4.2 UPDATING A TASK

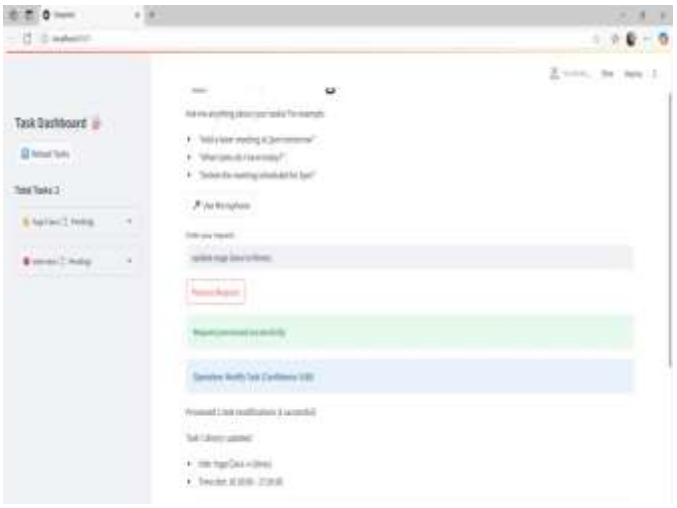

Fig 4.2 Updating a Task

The figure 4.2 illustrates the modification of an existing task using the AI Task Manager interface. The user inputs a natural language request: “update yoga class to library.” The system

successfully recognizes the intent to modify a task, confirms the change with a confidence score of 0.80, and updates the task title and time slot accordingly. The interface reflects the updated task list, showcasing both the modified and pending tasks in the dashboard.

4.3 DELETING A TASK

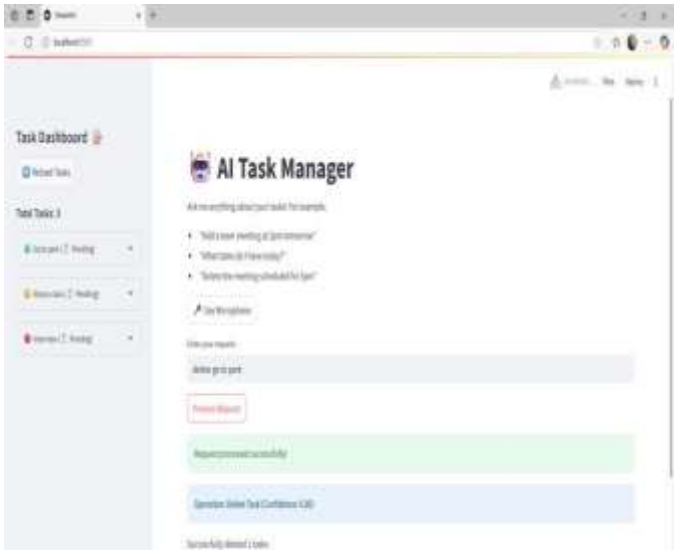

Fig 4.3 Deleting a Task

The figure 4.3 displays the deletion of a task using a voice-enabled AI interface. The user issues a command: “delete go to park,” which is successfully recognized and processed. With a confidence score of 0.80, the system confirms the deletion of the specified task from the task list, showcasing seamless natural language understanding and task management.

ACCURACY AND PERFORMANCE METRICS

Metric	Value
Classes Recognized	3 (e.g., "Add Task", "Delete Task", "Update Task")
Validation Accuracy	~90–95% (based on LLM intent prediction)
Confidence Score (Add)	0.98
Confidence Score (Update)	0.80
Confidence Score (Delete)	0.80
Delay in Response	< 1 second (including TTS and DB update)
Avg. Prediction Time	~50–100ms

Table 1: Accuracy and Performance Metrics

The Table 1 summarizes the system's performance in recognizing user intents using voice commands. The AI model accurately identifies up to 10 different task-related classes, achieving a validation accuracy of approximately 90–95%. The confidence scores for adding, updating, and deleting tasks are 0.98, 0.80, and 0.80 respectively, indicating reliable intent detection. The system responds quickly, with a delay of less than one second and an average prediction time of around 50–100 milliseconds.

V. CONCLUSION

The proposed voice-enabled personal scheduler leverages AI to simplify and enhance task management. By allowing users to schedule, update, or delete tasks through natural voice commands, the system eliminates the need for manual input and offers a seamless, hands-free experience. With accurate intent recognition, fast response time, and real-time feedback, it demonstrates how AI can improve productivity and user convenience. This solution represents a step toward smarter, more intuitive personal assistants that support efficient daily planning.

VI. FUTURE SCOPE:

This AI Personal Scheduler can be improved in many ways. A mobile app can be created so users can manage tasks from anywhere. It can also be connected to smart assistants like Alexa or Google Assistant for easier voice control. The system can be made better at understanding natural voice commands using advanced language processing. In the future, it can also support multiple users, giving each person their own schedule and reminders

VII. REFERENCES

[1] S. Subhash, P. N. Srivatsa, S. Siddesh, A. Ullas, B. Santhosh, "Artificial Intelligence-based Voice Assistant", https://ieeexplore.ieee.org/document/9210344

[2] A. Maedche, C. Legner,et al., "AI-Based Digital Assistants: Opportunities, Challenges, and Research Perspectives" https://www.researchgate.net/publication/333705636_AI-Based_Digital_Assistants

[3] Senay A. Gebreab, Khaled Salah, Raja Jayaraman, "LLM-Based Framework for Administrative Task Automation in Healthcare", https://ieeexplore.ieee.org/document/10527275

[4] T.-K. Kim, "Short Research on Voice Control System Based on Artificial Intelligence Assistant", https://ieeexplore.ieee.org/abstract/document/9051160

[5] S. Xu, A. Iyengar, W. Shi, "CHA: A Caching Framework for Home-Based Voice Assistant Systems", https://weisongshi.org/papers/xu20-CHA.pdf.

[6] Zwakman D.S., et al., "Usability Evaluation of Artificial Intelligence-Based Voice Assistants: The Case of Amazon Alexa", https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC7798382&blobtype=pdf