

PROMPT & SPEAK AI CHATBOT

A PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this project report “**PROMPT & SPEAK AI CHATBOT**” is the bonafide work of “**SUPRIYO MAITY**” who carried out the project work under my supervision.

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List of Symbols

- HTML: HyperText Markup Language
- CSS: Cascading Style Sheets
- JS: JavaScript
- AI: Artificial Intelligence
- NLP: Natural Language Processing
- API: Application Programming Interface

Abstract

This project report presents "Prompt & Speak AI," an innovative chatbot designed to facilitate interactive user experiences through both voice and text interfaces. Leveraging advanced AI technologies, including, GoogleGenerativeAI and GoogleSearchAPIWrapper, the chatbot provides accurate, real-time responses to user queries. The project aims to integrate seamless voice recognition and response capabilities, making the chatbot a versatile tool for various applications. This report details the development process, the technology stack used, and the system architecture, highlighting the project's contributions to the field of interactive AI solutions.

Chapters

9.1 Introduction

Welcome to the presentation on our Prompt & Speak AI Chatbot project. This innovative chatbot supports both voice and text interactions, providing users with a versatile and intuitive experience. Our chatbot is designed to assist users by answering questions, fetching real-time information, and engaging in meaningful conversations.

9.2 Major Objectives

The objectives of this project are:

- To develop an AI chatbot that can understand and process user inputs delivered via both voice and text.
- To ensure the chatbot provides accurate and timely responses by integrating real-time information retrieval capabilities.
- To design a user-friendly and responsive interface that works seamlessly across various devices.
- To gain practical experience in the application of web development and AI technologies.

By achieving these goals, the project aims to create a tool that not only meets current interactive AI expectations but also provides a robust foundation for future technological developments.

9.3 Project Overview

"Prompt & Speak AI" is a chatbot system designed to interact with users using both voice and text inputs. Built using Flask for backend processing, it employs GoogleGenerativeAI for conversational responses and GoogleSearchAPIWrapper for real-time information retrieval. The system is divided into three primary components:

1. **User Interface (UI):** The front-end interface where users can input their queries and receive responses.
2. **Backend Processing:** The server-side logic that handles requests, processes queries, and integrates various APIs.
3. **Conversational AI and Information Retrieval:** The core functionalities that generate meaningful responses and fetch real-time data.

The chatbot's architecture is designed to ensure scalability and efficiency, allowing it to handle a wide range of queries and provide quick, accurate responses.

9.4 Key Features

The key features of "Prompt & Speak AI Chatbot" include:

- **Voice and Text Interactions:** Users can choose to interact with the chatbot using natural speech or text input, providing flexibility in different environments.
- **Real-time Data Access:** Through integration with GoogleSearchAPIWrapper, the chatbot can retrieve up-to-date information on various topics, enhancing its utility.
- **Conversational AI:** Using GoogleGenerativeAI, the chatbot can engage in context-aware conversations, making interactions more natural and engaging.
- **Responsive Design:** The user interface is designed to be adaptable, ensuring a consistent user experience across devices.

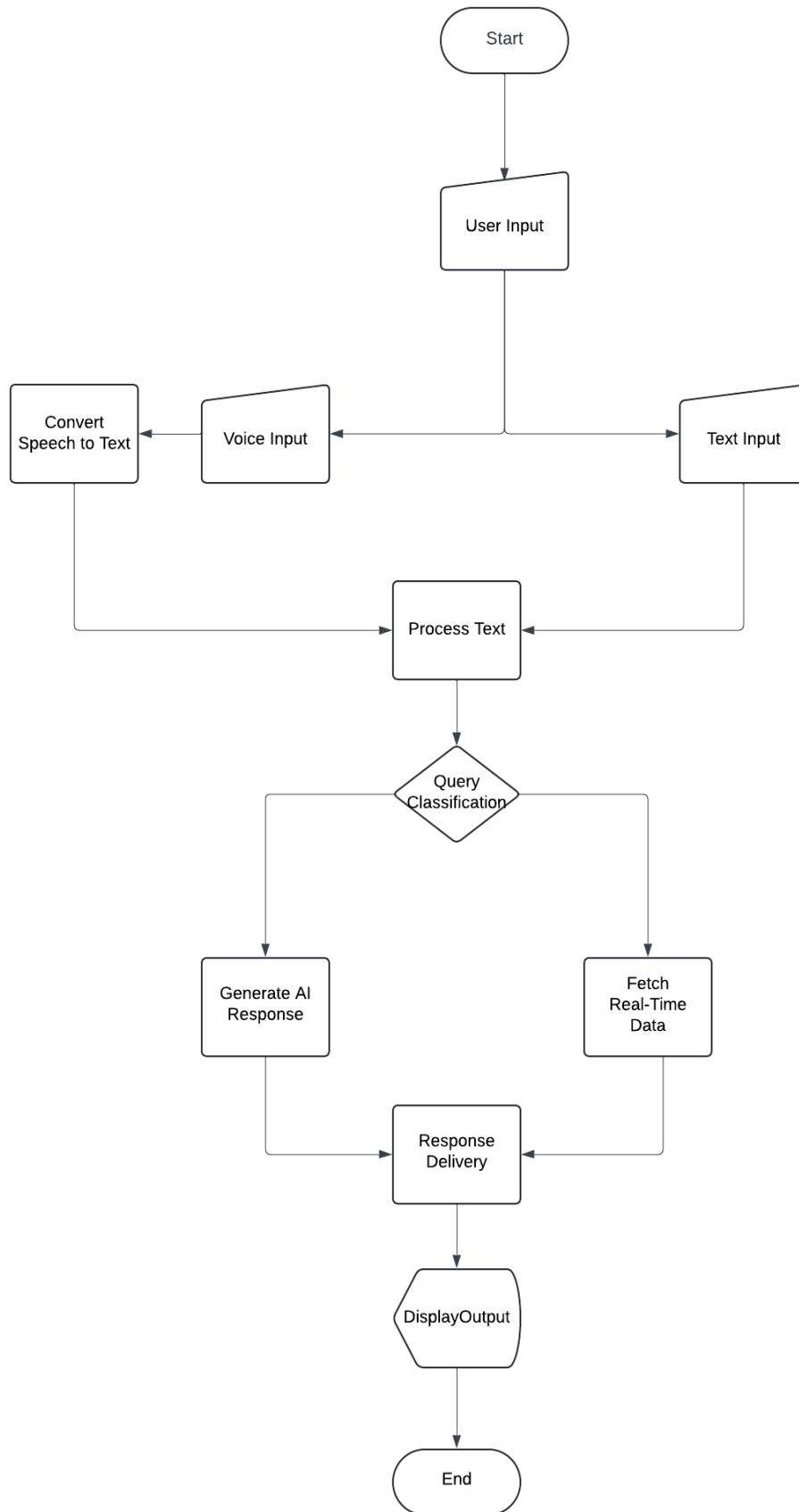
9.5 Proposed Method

The development of "Prompt & Speak AI Chatbot " utilizes a comprehensive technology stack to ensure functionality, performance, and user engagement. The stack includes:

HTML, CSS, JS	Front-end development for user interface
Flask	Backend framework for server-side processing
GoogleGenerativeAI	AI model for generating conversational responses
GoogleSearchAPIWrapper	API for real-time data retrieval from the web
LangChain	Facilitates the connection between components

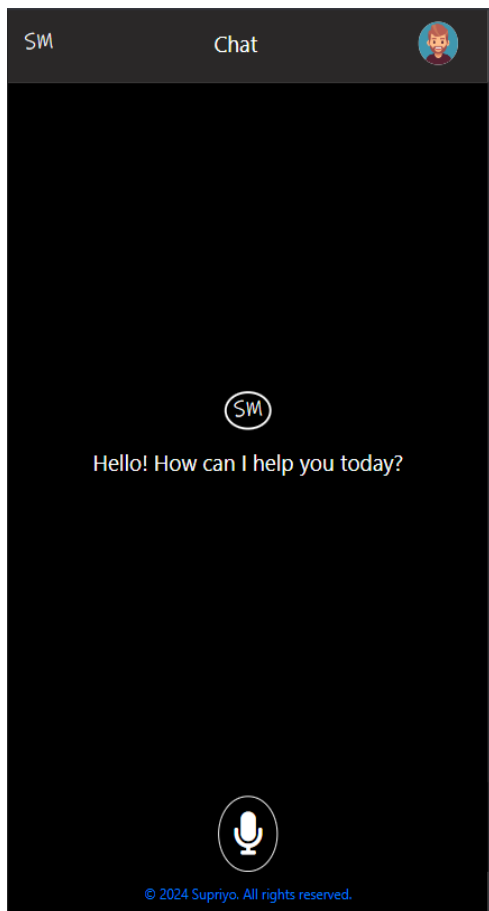
9.6 Workflow Diagram:

1. **User Input:** The user submits a query via voice or text.
2. **Query Classification:** The system determines the nature of the query and decides whether to use the AI model or the search API.
3. **Processing:** The appropriate module processes the query to generate a response.
4. **Response Delivery:** The response is then displayed or spoken back to the user.

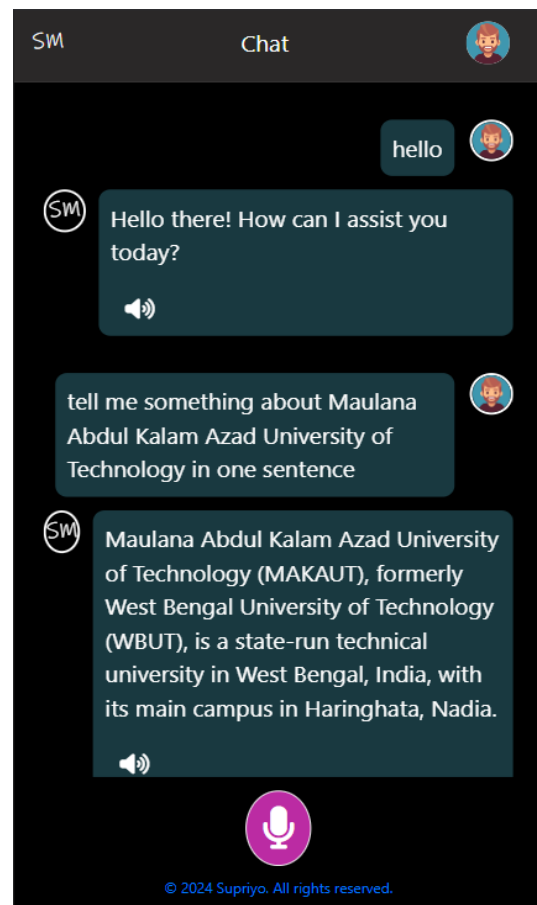


9.7 Experimental Results

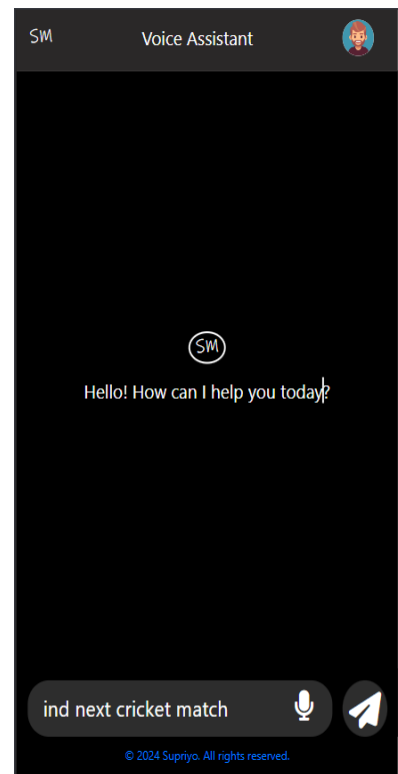
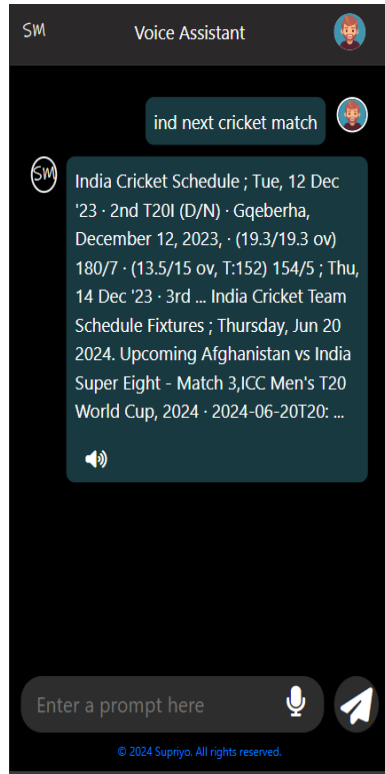
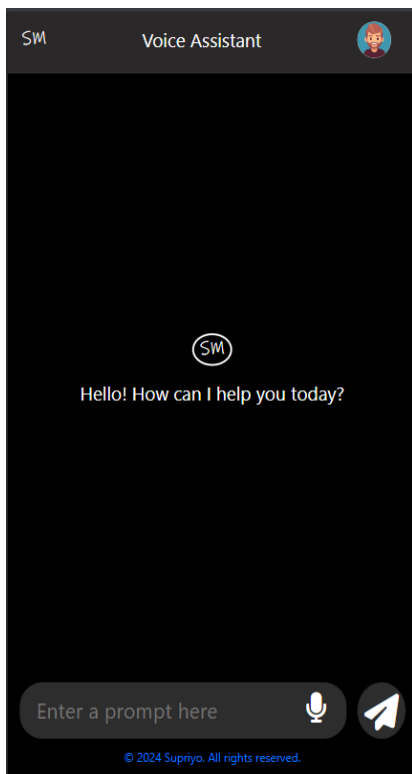
Voice Assistant



Voice input interface



Results display for a sample query



Chat Page

9.8 Conclusion

The Prompt & Speak AI Chatbot successfully combines voice and text interactions using cutting-edge AI. It provides accurate, timely responses and showcases its potential across various applications. Future enhancements will focus on improving response accuracy, multi-language support, and expanding query capabilities. We also plan to offer custom voice options and fine-tune our AI models for more nuanced conversations. Additionally, we aim to develop industry-specific solutions, making the chatbot a versatile tool for diverse needs. Join us as we continue to innovate and expand the capabilities of this revolutionary interactive AI technology.

Appendices

Appendix 1: Tech Stack Details

Frontend: HTML, CSS, JavaScript

Backend: Flask

Conversational AI: LangChain, GoogleGenerativeAI

Real-Time Data: GoogleSearchAPIWrapper

References

Flask Documentation: <https://flask.palletsprojects.com/en/3.0.x/tutorial/>

LangChain: <https://www.langchain.com/>

GoogleGenerativeAI: <https://ai.google.dev/gemini-api/docs/api-key>

GoogleSearchAPIWrapper: <https://console.cloud.google.com/apis/credentials>

Web Speech API: https://developer.mozilla.org/enUS/docs/Web/API/Web_Speech_API