
SOFTWARE REQUIREMENTS SPECIFICATION

for

EVA - Educational Voice
Assistant

Version 1.0

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1 Introduction

1.1 Purpose

The purpose of a college voice assistant is to provide support to college students in various aspects of their academic and personal lives. A college voice assistant can serve as a virtual assistant that uses artificial intelligence and natural language processing technologies to answer students' questions and provide guidance on a range of topics, including academic support, campus resources, and personal wellness.

1.2 Intended Audience and Reading Suggestions

This SRS is for developers, project managers, users, and testers. Further, the discussion will provide all the internal, external, functional, and also non-functional information about "EVA".

1.3 Project Scope

EVA voice assistant project includes providing students with information about their college through a mobile application that utilizes speech recognition and natural language processing.

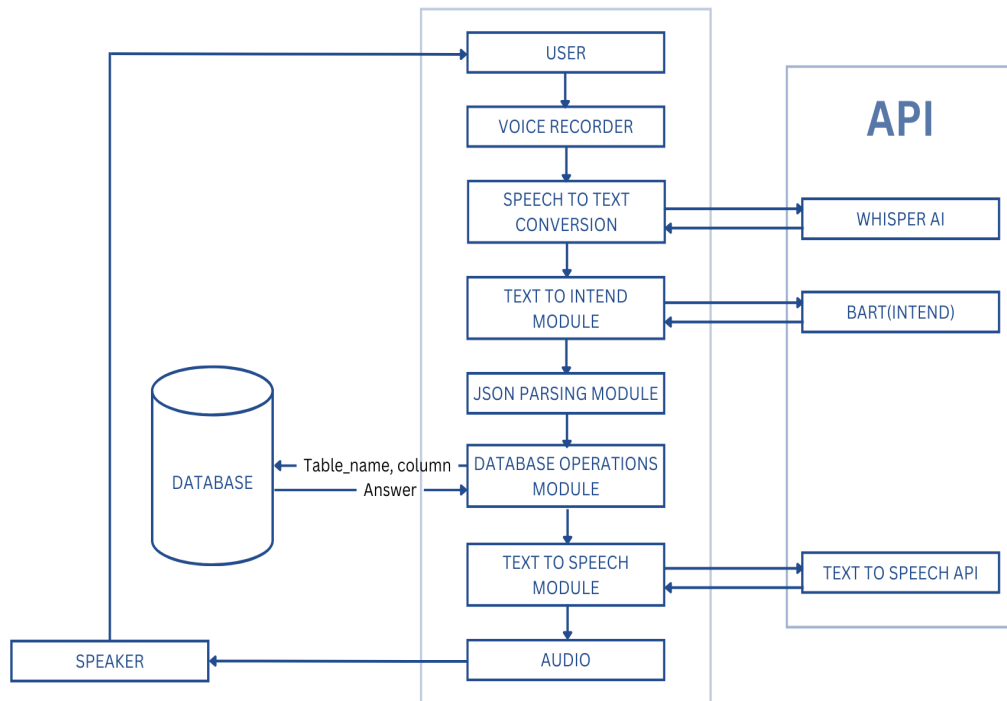
The application will allow users to ask EVA questions about their course schedule, faculty profiles, campus maps, and weather information. Additionally, the application will provide personalized reminders and recommendations based on user preferences.

The scope also includes ensuring that the application is intuitive and easy-to-use, with a natural and conversational language processing system. The application should be compatible with Android devices running Android.

Furthermore, the scope includes integrating with external APIs to provide accurate and relevant information to the user, and using an SQLite database to store and retrieve relevant information.

In summary, the scope of the EVA voice assistant project is to provide students with a mobile application that utilizes speech recognition and natural language processing to provide relevant information about their college. The application should be intuitive and easy to use, with accurate and reliable responses to user queries.

1.4 Architecture



2 Overall Description

2.1 Product Perspective

The product perspective of the EVA voice assistant project is to provide a cutting-edge mobile application that utilizes the latest technologies to provide an interactive and conversational interface for users to access information about their college. The product aims to be intuitive, user-friendly, and convenient for users, making it an essential tool for managing their daily activities and staying informed about their college.

2.2 User Classes and Characteristics

"EVA" has basically 4 types of users.

- Students - These users are college students who want to access information about their course schedules, faculty profiles, campus maps, and weather information. They may also use the application to set reminders and receive personalized recommendations based on their preferences.

Characteristics:

Age group: 18-25 years old

Familiarity with technology: High

Goals: To access relevant information about their college and manage their daily activities efficiently.

- Faculties - These users are college faculty members who want to access information about their course schedules, departmental events, and faculty profiles.

Characteristics:

Age group: 25-60 years old

Familiarity with technology: Moderate to high

Goals: To access relevant information about their course schedules and departmental events and manage their tasks efficiently.

- Staff - These users are administrative staff who want to access information about student schedules, departmental events, and campus maps. Characteristics:

Age group: 25-60 years old

Familiarity with technology: Moderate to high

Goals: To access relevant information about student schedules, departmental events, and campus maps to manage their tasks efficiently.

- Outsiders - These users may want to access information about the college, such as campus maps, directions to specific buildings, information about upcoming events, and other relevant information.

Characteristics:

Age group: Varies

Familiarity with technology: Varies

Goals: To access relevant information about the college, its programs, and events to plan their visit and make the most of their time on campus.

The EVA voice assistant project could cater to this user class by providing access to campus maps, directions to specific buildings, and information about upcoming events. The application could also provide recommendations for local restaurants, hotels, and attractions in the area to enhance the visitor's experience.

2.3 Product Functions

The product functions of the EVA voice assistant project must include Speech Recognition, Natural Language Processing, Information Retrieval, Event Management.

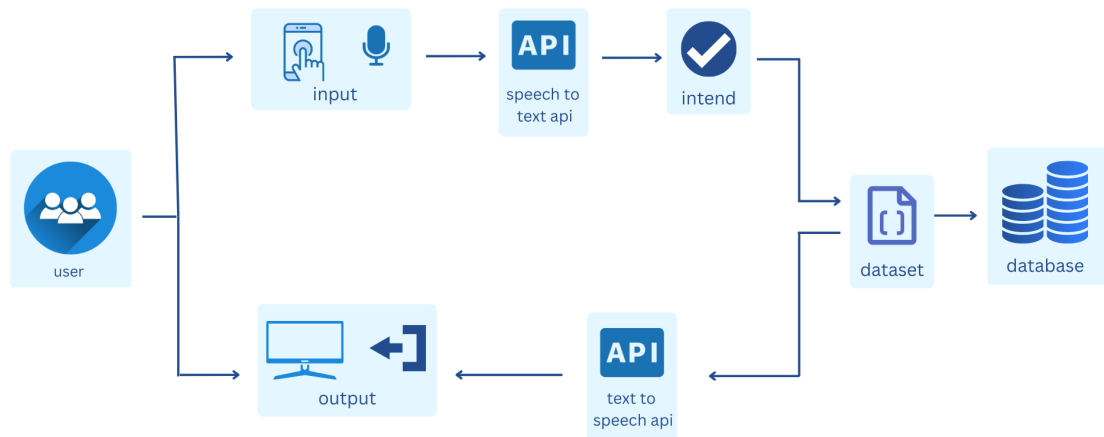


Figure 2.1: Data Flow Diagram

2.4 Data Flow

The data flow of the EVA voice assistant project involves capturing user voice input, using speech recognition and natural language processing to analyze the input, accessing an SQLite database to retrieve relevant information, and generating a response for the user through text and audio output.

2.5 Design



Figure 2.2: Student Activities

2.6 API Integration

Whisper is a pre-trained model for automatic speech recognition (ASR) and speech translation. Trained on 680k hours of labelled data, Whisper models demonstrate a strong ability to generalise to many datasets and domains without the need for fine-tuning.

bart-large-mnli is the checkpoint for bart-large after being trained on the MultiNLI (MNLI) dataset(NLI-based Zero Shot Text Classification).

3 System Features

3.1 Description and Priority

"EVA" has features that are main and also some are sub. But all the feature is necessary for this software.

The features with priority up to down -

1. Voice Recognition and Response: The system should be able to recognize voice commands from users and provide audible responses. This is the core functionality of the system and should be implemented with a high level of accuracy and reliability.
-Information Retrieval: The system should be able to retrieve information from a database and present it to the user in a clear and concise manner. This includes information about events, programs, courses, and other relevant topics.
2. Database Management: The system may require manual input to add or update information in the database. For example, if a new event is added to the college calendar, a staff member may need to manually enter the details into the system.

3.2 Functional Requirements

Back-End - Natural Language Processing: The system should be able to understand natural language queries from users and provide relevant responses.

-Database Integration: The system should retrieve information from a database and present it to the user in a user-friendly manner.

Font-End - User Interface Design using Flutter: The system should have an intuitive and user-friendly interface design that allows users to navigate the system easily.

-Voice Input and Output: The system should allow users to interact with the system using voice commands and receive audible responses.

Database - SQFlite.

4 Other Nonfunctional Requirements

4.1 Performance Requirements

The system should be able to respond to user queries and requests quickly and efficiently, without significant delays or lags.

4.2 Software Quality Attributes

In the development phase also testing and conferences of users is been continued. So that the quality of the software is been maintained and all the requirements are been fulfilled.

Database, logical and also UI test is required.

4.3 Usability

The system should be easy to use and navigate, with a clear and intuitive user interface that allows users to perform tasks quickly and efficiently.

Basically save working time and pressure.

5 Other Requirements

1. Wake word detection: A wake word is a specific phrase or keyword that triggers the voice assistant to start listening. You will need to implement a wake word detector to recognize when the user is addressing the voice assistant and activate the speech recognition module.
2. Text-to-speech (TTS) synthesis: Once the voice assistant has processed the user's command and determined the appropriate response, it needs to be able to generate a spoken response back to the user. You can use TTS synthesis to convert text responses into spoken audio that can be played through the app.
3. Integration with external APIs: Depending on the features you want to include in your voice assistant, you may need to integrate with external APIs to access additional data or services. For example, you could integrate with a weather API to provide current weather conditions for the user's location.
4. Error handling: The voice assistant should be able to handle errors and exceptions gracefully to provide a smooth user experience. This could include handling situations where the user's command is unclear or cannot be processed, or when external services are unavailable.