Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur

FACULTY KIT

Objective –

The purpose of this faculty kit is to outline the responsibilities, resources, and process involved in the successful development and deployment of the project **"Multilingual Chatbot for Airport Authority of India (AAI)."** This project aims to provide a user-friendly, language-diverse chatbot system that can address queries of travelers and airport visitors in multiple Indian languages. This kit is designed to help faculty oversee and guide students through all phases of the project including planning, design, development, testing, and evaluation.

Requirements Specification –

The multilingual chatbot system will include:

- **Multilingual Chatbot**: Users can chat in their preferred language (English, Hindi, Tamil, etc.) for quick assistance.
- **Flight Updates**: Real-time flight status accessible through the interface.
- **Crowd Status Monitoring**: Displays estimated crowd levels at terminals using sensor/API data.
- **Interactive Navigation Map**: Helps users locate key points like gates, restrooms, food stalls, and more using markers on an indoor map.
- **Language Toggle Dropdown**: Allows users to switch between languages dynamically.

Technology Familiarization –

The project will be developed using:

- **Frontend**: HTML, CSS, JavaScript
- **Backend & AI**:
  - Dialogflow or Rasa for NLU and intent recognition.
  - Google Translate API
- **Database**: Firebase or MongoDB to store logs, user feedback, and content data.
- **APIs**: Integration with Google Map Api for Navigation.

Database Creation –

The chatbot system uses a structured database to maintain the following:

- **Users**: Session logs, preferred language, query history.
- **Admin**: Credentials, system settings, language update logs.
- **Conversations**: Input queries, detected intents, responses, language used.
- **Knowledge Base**: Static content related to airport facilities, FAQs, service guidelines.

High-Level and Detailed Design – System

Overview:

The system architecture includes:

- **Frontend**: Web UI for users to interact in their preferred language.
- **Backend Services**: Chat engine powered by Dialogflow or custom NLU handling input processing and response generation.
- **Database**: Cloud-based NoSQL database to store interaction data and chatbot logs.

Detailed Design:

- **Frontend**: Clean interface for multilingual text input .
- **Backend**:
  - Language detection and translation modules.
  - Intent classification and entity extraction.
  - Response generator based on pre-trained or rule-based models.

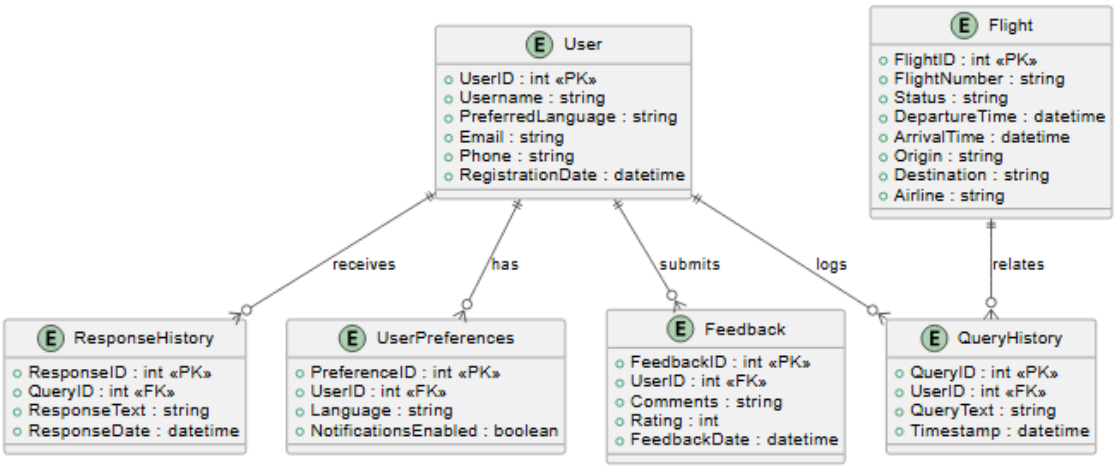

Fig-1

Frontend Implementation –

- **Users**: Ask queries in their preferred language and receive appropriate, instant responses.
- **Admins (AAI Staff)**: View conversation logs, manage FAQs, update service data, view analytics on language and query trends.

Integrating the Frontend with the Database –

- Chat interface is connected to the backend through APIs or SDKs.
- Real-time language processing and response delivery is ensured.
- Query results and chatbot logs are saved to Firebase/MongoDB for analysis and feedback.Test Plan Review -

  Testing phases include:

  - **Unit Testing**: Validate individual modules like translation, intent matching, and response accuracy.
  - **Integration Testing**: Ensure seamless interaction between NLU engine, database, and frontend.
  - **Language Testing**: Accuracy of multilingual understanding and translation.
  - **Performance Testing**: Evaluate chatbot under high user traffic.
  - **UX Testing**: Validate user-friendliness and accessibility.

Final Review -

- **"Navigation" Button**: Loads indoor airport map with markers and directions.
- **"Crowd Status"**: Displays real-time density using data visualization (color codes or heatmap).
- **"Flight Updates"**: Pulls real-time information via airport APIs.

Documents/References that May Aid the Process of Evaluation-

- Dialogflow / Rasa Documentation
- Google Cloud Translate or Bhashini APIs
- Android/Web Development Guides
- NLP and chatbot architecture resources

Conclusion –

This Faculty Kit serves as a comprehensive guide for supervising and evaluating the **"Multilingual Chatbot for Airport Authority of India"** student project. It outlines technical and functional requirements, ensures clarity in role distribution, and supports successful project execution. By adopting modern AI and multilingual technologies, this chatbot enhances public interaction and accessibility for AAI services