

# English Learning for Hindi Users

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**Abstract:** *This project introduces an innovative English learning platform designed for Hindi-speaking users. It leverages a generative AI chatbot to simulate real-life conversations, helping users improve their English-speaking skills through interactive learning. Users can select AI characters with distinct personalities, such as a lion symbolizing leadership, to engage in meaningful conversations. Built using Django for the backend and MIT App Inventor for mobile access, the platform ensures a seamless experience. With SQLite for data management and Replit for hosting, the app provides a cost-effective and efficient solution for language learning. This user-friendly platform eliminates the need for traditional methods, allowing users to learn naturally by speaking with AI, making English education engaging and practical.*

**Keywords:** AI chatbot

## I. INTRODUCTION

Language learning is a crucial skill, especially for non-native speakers striving to communicate fluently in English. Many Hindi-speaking individuals struggle with mastering English due to a lack of real-world conversation practice. Traditional methods, such as textbooks, grammar drills, and vocabulary memorization, often fail to engage learners effectively. To bridge this gap, our project introduces an AI-powered conversational learning platform that transforms language education.

Our approach involves integrating a generative AI chatbot that enables users to learn English through interactive and dynamic conversations. Unlike conventional methods, this platform allows users to select AI characters with unique personalities, making learning both engaging and practical. For instance, a lion character teaches leadership communication, while a storyteller enhances narrative skills. This approach provides users with an immersive learning experience where they practice speaking English naturally and confidently.

We have built the platform using Django for backend development, ensuring robust data handling and user management. The front end is designed using MIT App Inventor, making it accessible across mobile devices while maintaining an intuitive interface. The AI chatbot, powered by the Gemini API, generates meaningful conversations tailored to each user's learning needs. Additionally, SQLite serves as our database, offering efficient data storage and retrieval, while Replit hosting provides a cost-effective deployment solution.

Our platform is designed to be user-friendly and accessible to individuals of all ages. Users simply log in, select an AI character, and start conversing to improve their English skills. With an emphasis on natural conversation, the AI adapts to the user's proficiency level, ensuring continuous progress. By eliminating traditional language barriers and fostering real-world communication skills, our project aims to revolutionize English learning for Hindi speakers.

## II. LITERATURE SURVEY

The literature survey highlights various advancements in multilingual communication, accessibility, and sentiment analysis. Key studies emphasize the effectiveness of multilingual language models for improved sentiment analysis accuracy, demonstrating the potential of cross-linguistic data in enhancing classification outcomes. Research on Google Cloud APIs showcases successful multilingual speech recognition and translation systems, improving accessibility for diverse users. Transformer-based models like mT5 have proven efficient in translating Indian languages, while voice-enabled systems offer hands-free access to digital content for visually impaired users. Studies exploring code-switching techniques reveal enhanced translation quality through lexico-semantic enrichment, while voice-based form-filling



systems simplify data entry for visually challenged individuals. Furthermore, research on gesture-based controls, motion recognition, and voice command activation highlights innovative methods to assist physically disabled users in interacting with devices. Sentiment analysis research integrating emoji-based features and WhatsApp message preprocessing offers improved emotion detection in social networking contexts. Lastly, studies on abstractive text summarization demonstrate enhanced readability and coherence in presenting large volumes of online data. Collectively, these advancements offer valuable insights for developing inclusive platforms like Sahana, ensuring seamless communication and accessibility for individuals with disabilities.

### **III. PROBLEM STATEMENT**

In India, English is often seen as a key to success, especially in academic, professional, and social environments. However, for many Hindi speakers, learning English can be a daunting task due to the stark differences between the two languages in terms of grammar, syntax, and vocabulary. Traditional learning methods, such as classroom instruction and textbooks, often fail to provide the interactive and practical experience needed to master conversational English. These methods typically focus on rote memorization of grammar rules and vocabulary, which can be disengaging and ineffective when it comes to real-world application.

Furthermore, many existing language learning applications are either too generic, not tailored to Hindi speakers, or do not provide the necessary scaffolding for users to build strong foundational skills in English. They often lack proper guidance for sentence formation, conversational practice, and real-time feedback, leaving users without clear direction on how to improve. For Hindi speakers, there is also the added challenge of translating concepts from English into their native language, which can slow down learning and lead to confusion.

There is a need for an English learning application specifically designed for Hindi speakers that not only provides them with the ability to form correct sentences but also empowers them to hold conversations in everyday situations. Additionally, learners require personalized feedback on their grammar and language use to help them improve at a faster pace.

The primary problem to be addressed by this project is the lack of accessible and interactive language learning tools that cater to the specific needs of Hindi speakers, providing contextual learning experiences that focus on conversational English and sentence formation. The solution must be interactive, provide immediate feedback, and adapt to different proficiency levels, making the learning process engaging and effective for a diverse range of users.

### **IV. PROPOSED SYSTEM**

#### **A. System Architecture**

The proposed system is an English learning application for Hindi users that integrates AI-driven interactive features to help users improve their conversational and grammatical skills. The system is designed with three main levels of learning: Beginner, Intermediate, and Advanced, each tailored to enhance the user's understanding of the English language in a structured manner. The primary goal of this system is to facilitate practical, real-world language usage with the help of AI-based conversation and feedback mechanisms.

#### **1. Basic Sentence Formation**

Users will learn and practice forming sentences in different contexts such as daily life, work, or social settings. This feature will cater to various scenarios like casual conversations, formal meetings, and academic environments

#### **2. Conversation Starter**

Users will engage in guided practice sessions on how to initiate and maintain conversations. This includes key phrases and vocabulary to help users start conversations confidently in English.



### 3. AI Character Interaction

The system includes an AI-based storytelling mode where users interact with characters in different story settings. These characters respond to user queries, offering corrections and feedback on grammar, sentence structure, and context.

### 4. Grammar and Contextual Feedback

When users interact with the system, especially during conversations or storytelling interactions, the AI analyzes their input and provides real-time feedback, correcting grammatical errors and offering suggestions for improvement.

### B. System design flowchart

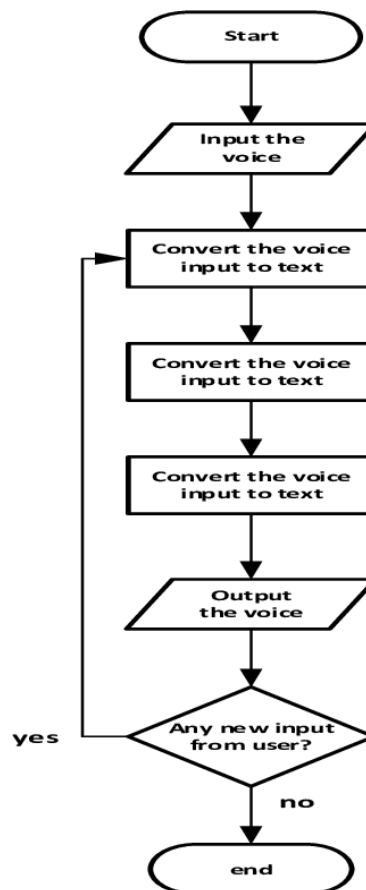


Fig 1 System Design Flowchart

## IV. IMPLEMENTATION

### A. Pseudocode

Step 1-Authenticate user credentials and initialize the user session, ensuring secure access to the chat application

Step 2- Users compose and send messages, while the system processes and delivers incoming messages in real-time

Step 3- For visually impaired users, text messages are converted to speech using the text-to-speech module and played back.

Step 4- Capture spoken words from users and transcribe them into text using the speech-to- text module, ensuring bidirectional communication



Step 5- Enable real-time messaging using Web-Sockets, updating the interface dynamically as new messages are received or sent.

### B. Important implementation tools and techniques

The Sahana project leverages the Django framework as its backend, utilizing Django ORM to manage interactions with the PostgreSQL database, which securely stores user data, chat history, accessibility settings, and multilingual content. To facilitate real-time messaging, the project employs the ASGI server (Daphne) alongside the WebSocket protocol, ensuring seamless and instant communication. Accessibility features include gTTS (Google Text-to-Speech) for converting text-based chat messages into speech and the Speech-Recognition library for transcribing spoken input into text, enabling inclusive interaction. Additionally, gesture-based and voice control integration enhances usability for individuals with disabilities. The project also incorporates an emoji picker to enrich user interaction, making communication more expressive and engaging. Furthermore, Django's built-in security mechanisms protect against SQL injection, cross-site scripting (XSS), and other vulnerabilities, ensuring data integrity and privacy. A responsive and adaptive user interface (UI) design ensures accessibility, providing an intuitive experience for all users

## V. RESULT ANALYSIS

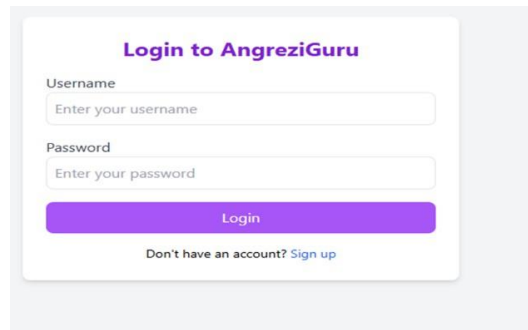


Fig 2. Login page

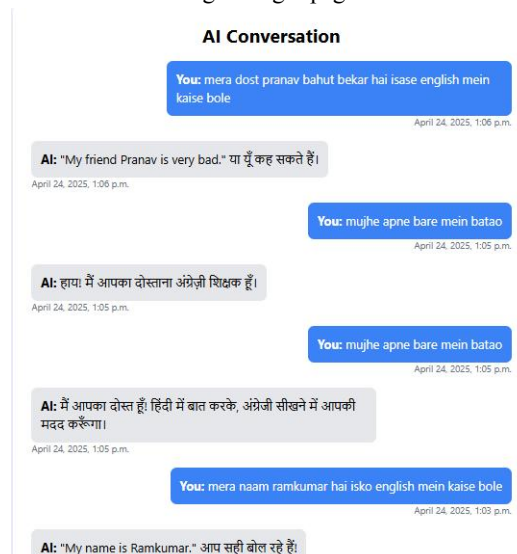


Fig 3. AI Conversation



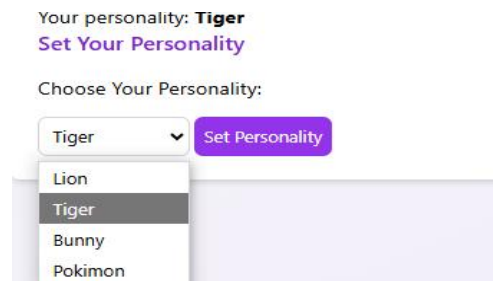


Fig 3. AI Personality

## VI. CONCLUSION

Our proposed AI-powered English learning application holds immense potential for empowering Hindi-speaking users to achieve greater fluency in English. By leveraging advanced technologies such as NLP and speech recognition, the system provides real-time feedback and personalized learning experiences, helping users improve their grammar, sentence formation, and conversational skills. Despite initial limitations, such as adapting to diverse learning paces and accent variations, the system offers significant opportunities for enhancement. Future improvements, including refining the AI's accuracy, expanding conversation scenarios, and enhancing user engagement through adaptive learning, can further increase the app's effectiveness.

By integrating user feedback mechanisms and multilingual support, the application can cater to a wider audience and ensure inclusivity for learners from different backgrounds. The system's ability to track user progress and adjust lessons dynamically based on individual performance offers a highly personalized learning experience. With continued research and development, this app has the potential to become an indispensable tool for Hindi speakers seeking to navigate the English language with greater confidence and fluency, ultimately bridging the language barrier and promoting personal and professional growth.

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