A Presentation on Topic

BaatchitBot : GenAI Language Bridge for Bharat's Migrant Workforce

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Abstract

India is home to a large population of migrant workers who move across states in search of better employment opportunities. These workers often face language barriers when they migrate from their native region to a different linguistic region of the country. This communication gap limits their access to crucial services such as healthcare, employment, banking, and legal aid.

To address this, BaatchitBot is proposed as a Generative AI-based multilingual chatbot that acts as a language bridge for Bharat's diverse migrant workforce. The chatbot can understand, translate, and generate real-time conversational responses in multiple Indian languages—via both voice and text. It uses natural language processing (NLP), machine translation, speech-to-text, and text-to-speech technologies to ensure seamless interaction between users and service providers across language boundaries.

Introduction and Motivation

- Millions of internal migrants move across states for work.
- Migrants face language barriers in unfamiliar regions.
- These barriers affect access to jobs, healthcare, housing, and legal aid.
- BaatchitBot is a GenAI chatbot designed to bridge language gaps for migrant workers.

- Migrants face miscommunication and exclusion due to language issues.
- Tools like Google Translate aren't suitable for real-time, regional conversations.
- Generative AI and multilingual NLP now enable smart, context-aware chatbots.
- BaatchitBot supports inclusion, accessibility, and the Digital India vision.

Problem Statement

India's internal migrant workforce frequently moves across states for employment, often facing significant language barriers when interacting with locals, employers, or service providers in unfamiliar linguistic regions. This communication gap limits their access to essential services such as healthcare, housing, and legal aid, leading to exploitation and exclusion. Existing tools like Google Translate are not built for contextual, real-time, two-way conversations in Indian regional languages, especially for voice-based or low-literate users. There is a critical need for an AI-driven, multilingual communication system that can bridge this gap and enable seamless interaction for migrant workers across Bharat.

Objective

- To integrate speech-to-text and text-to-speech functionalities for smooth interaction with users who may have low literacy or typing skills.
- To implement Generative AI and NLP models capable of understanding user intent and generating context-aware, meaningful responses.
- To ensure the system is mobile-friendly, lightweight, and accessible, especially for users with low-end smartphones and limited internet access.
- To create domain-specific dialogue flows for scenarios such as job search, healthcare assistance, and government queries.
- To develop a multilingual AI chatbot that supports real-time voice and text-based conversations across major Indian regional languages.

Our Proposed Approach

1.User Interface Development

2.Speech-to-Text Conversion

3.Multilingual Translation

4.Generative AI for Response Generation

5.Text-to-Speech (TTS) Output

6.Backend Integration

7.Domain-Specific Optimization

8.Scalability and Accessibility Focus

Hardware/Software Requirements

Hardware Requirements

Component	Minimum Specification
Client Device	Smartphone / Laptop / Tablet
Processor	Dual-Core or higher
Microphone & Speaker	Required for voice input/output
Internet Connectivity	Minimum 3G / 4G (Stable connection recommended)

Software Requirements

Category	Technology / Tool
Frontend	React.js, HTML5, CSS3, JavaScript, Tailwind CSS / Bootstrap
Backend	Node.js with Express or Python Flask
Database	Firebase Firestore or MongoDB Atlas
Speech-to-Text	OpenAI Whisper API or Google Speech-to-Text API
Text-to-Speech	Google TTS API or ResponsiveVoice API
Translation	Google Translate API or HuggingFace mBART

References

[1] Sankari Subbiah; Vasudev.M. M; Lakshmikanth S; Raghuraman R,"Real Time Speech Translation between Indian Languages",(https://ieeexplore.ieee.org/document/11019046)

[2] S. Khanuja, D. Bansal, S. Mehtani, et al., "MuRIL: Multilingual Representations for Indian Languages," *arXiv preprint* arXiv:2103.10730, 2021.

THANK YOU!