

TITLE PAGE

- Problem Statement ID – SIH25104
- Problem Statement Title- Language
Agnostic Chatbot
- Theme - Smart Education
- PS Category- Software
- Team ID -
- Team Name – Neuro Ninjas



Voice-First Multilingual Assistant for Students - BHASASETU



Proposed Solution

- A **speech-to-speech, multilingual chatbot** for colleges that deflects repetitive queries (fees, exams, scholarships, timetables) by providing **round-the-clock support** in regional languages.
- Ingests institutional FAQs, notices, and circulars
- Provides voice + text answers in at least 5 Indian languages
- Works on college website & popular messaging apps (Telegram / WhatsApp)

Innovation & Uniqueness

- Goes beyond text → natural speech-to-speech system (भाषा↔ भाषा).
- Inclusive: Helps students not comfortable with English/typing.
- Maintained by students (drag-and-drop content updates).

TECHNICAL APPROACH & WORKFLOW

Technologies:

Frontend : Next.js + Tailwind (chat widget, mic input)

Backend : FastAPI/Flask (AI pipeline APIs)

STT : Whisper / Vosk

NLU/Intent Recognition : Rasa NLU / Dialogflow

Translation / Indic NLP : HuggingFace IndicNLP /
Google Translate API

TTS : gTTS / Coqui TTS

Database : Firebase/MongoDB (logs + FAQs)

Methodology:

Query (voice/text) → Speech-to-Text.

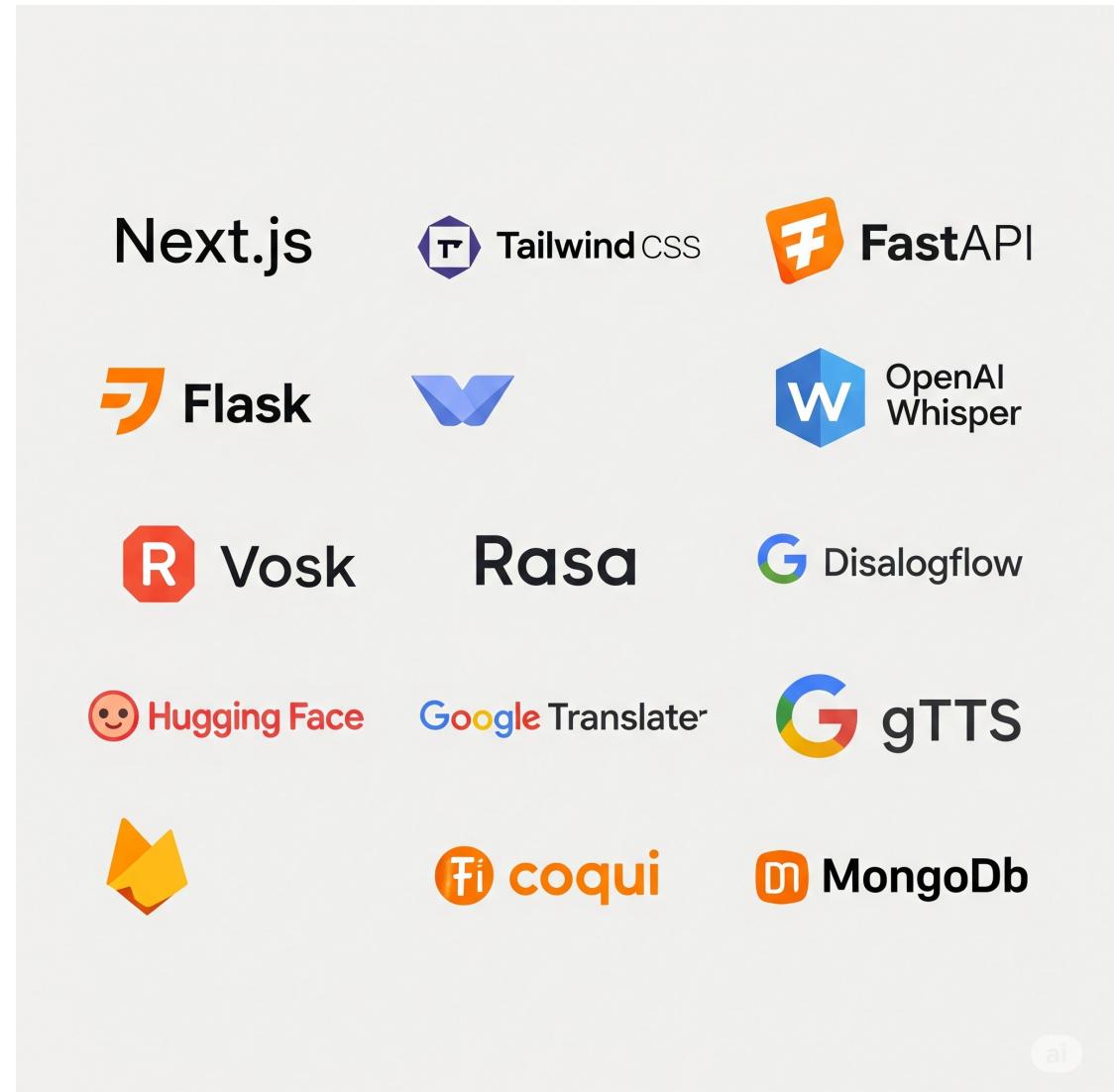
Detect language + intent.

Retrieve answer **from** FAQs/DB.

Generate response → Text + Speech.

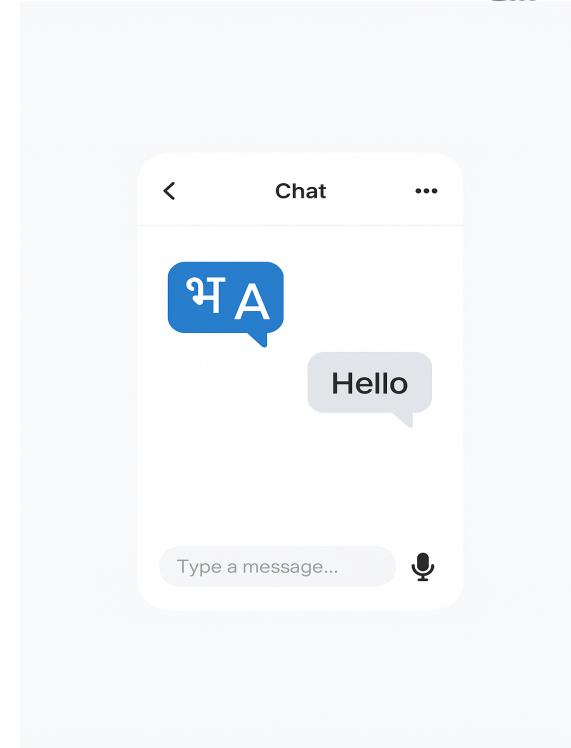
Deliver **via** Web/WhatsApp/Telegram.

Log interactions → Review & improve.



FEASIBILITY AND VIABILITY

- **Feasibility:**
- Lightweight AI models (Whisper, IndicNLP) already exist.
- Deployable on cloud or local servers.
- Integrates easily into college websites & apps.
- **Potential Challenges:**
- Regional dialect accuracy gaps.
- Keeping FAQ data updated.
- Latency in real-time voice translation.



- **Solutions:**
- Fallback → translate to major language if dialect not supported.
- Assign student volunteers/staff to update FAQs weekly.
- Use caching + optimized APIs for near real-time responses.

IMPACT AND BENEFITS



Impact on Audience:

Students: Get instant answers in their **mother tongue**.

Staff: Reduced burden of repetitive queries.

Colleges: Better communication & inclusivity.

Benefits:

Social: Removes language & literacy barriers.

Economic: Saves hours of staff time → efficiency.

Scalable: Deployable across all Indian colleges/universities.

Inclusive: Ensures rural/regional students aren't left behind.

Research & References

Bhashini (Govt. of India) – National AI framework for Indian languages.

bhashini.gov.in

OpenAI Whisper – State-of-the-art multilingual speech recognition model.

github.com/openai/whisper

Indic NLP Library – Crucial tools for processing Indian languages.

github.com/anoopkunchukuttan/indic_nlp_library

Rasa – Open-source framework for contextual AI assistants.

rasa.com

