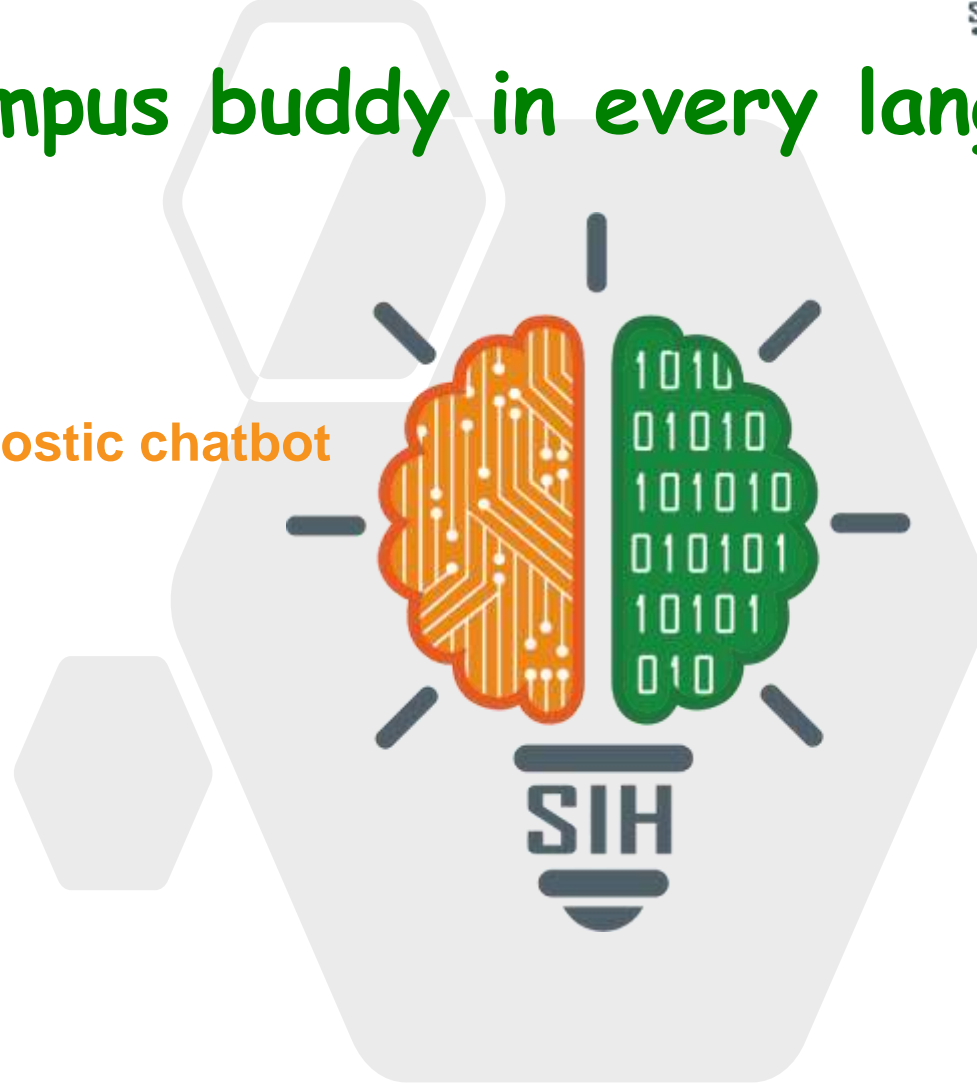


# SMART INDIA HACKATHON 2025



**CampusSathi:** " Your campus buddy in every language."

- Problem Statement ID – 25104
- Problem Statement Title- Language agnostic chatbot
- Theme- Smart Education
- PS Category- Software
- Team ID- 88302
- Team Name - Encodr



***A conversational AI assistant that ingests college circulars, FAQs, and PDFs, and responds to student queries in English, Hindi, and multiple regional languages. It can be accessed via the college website and popular messaging apps, supports multi-turn conversations, logs queries for improvement, and escalates to staff when needed.***

1

## Multilingual-First Design

Unlike most chatbots, it's built to handle English, Hindi, and multiple regional languages from the start, ensuring no student feels left out due to language barriers.

2

## Hybrid model

Uses AI for quick, automated answers to FAQs, but seamlessly escalates complex or unique cases to staff, ensuring both efficiency and human support.

3

## Cross-platform access

Students can reach the assistant not only on the college website but also via popular messaging apps (WhatsApp, Telegram, etc.), making it accessible anytime, anywhere.

4

## Continuous improvement

Every query is logged and analyzed; feedback helps the assistant learn and improve daily, ensuring responses remain accurate, consistent, and relevant.



## PROBLEM-SOLUTION



Queues & Repeated Questions



AI answers instantly, no need to visit offices.

Limited Access & Language Barriers

24 × 7 info in English, Hindi & regional languages.

Staff Overload

Routine queries automated, staff handle complex cases.

Inconsistent/ Outdated Info

Centralized, updated, and accurate responses.

Prototype



## Programming Languages:

- Python / Node.js → Backend development
- JavaScript → Frontend (React)

## Frameworks & Tools:

- Rasa / Dialogflow / LangChain → Chatbot logic & NLU
- FastAPI / Express.js → API development
- React: Web interface

## Databases:

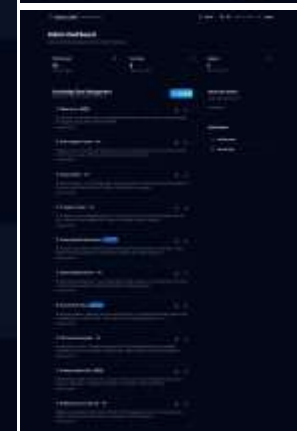
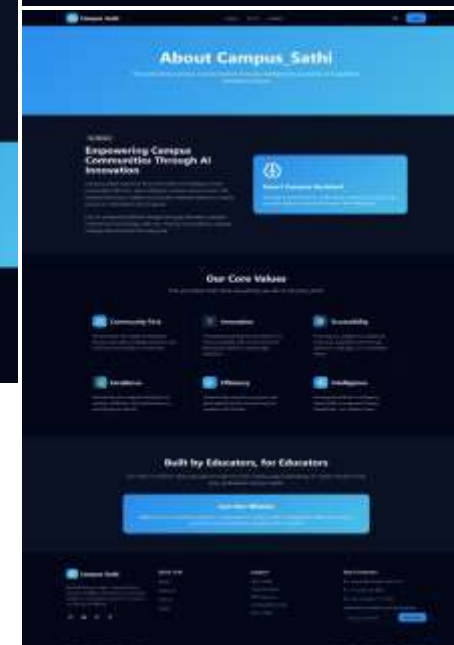
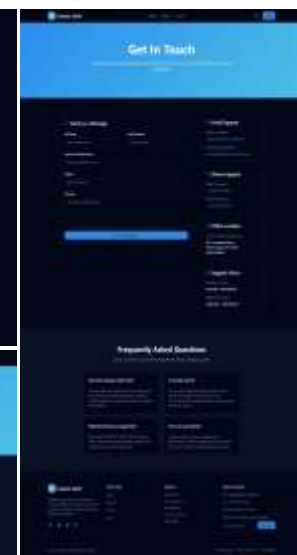
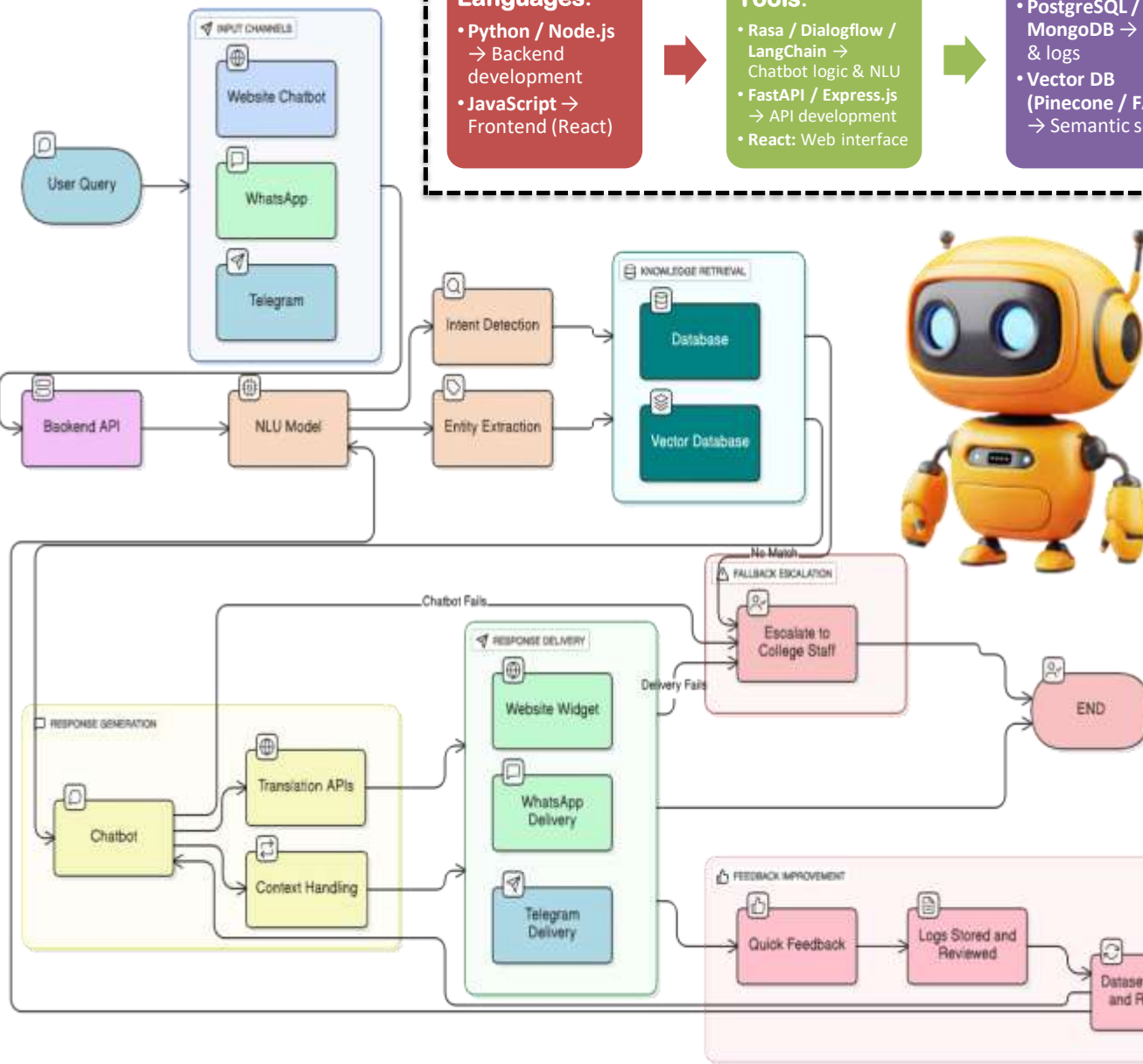
- PostgreSQL / MongoDB → FAQs & logs
- Vector DB (Pinecone / FAISS) → Semantic search

## AI/ML Services:

- Pre-trained multilingual NLP models (HuggingFace, Google Translation APIs)

## Hosting Options:

- Cloud (AWS / GCP / Azure)
- On-college server for cost optimization







## Feasibility

- **Existing Technology Availability** – NLP models (HuggingFace, Google Translate, Rasa) make multilingual chatbot development practical.
- **Low Cost of Infrastructure** – Chatbots will work well with any standard web hosting and messaging APIs; they won't require any special hardware.
- **Hackathon Ready** – Small knowledge base + MVP chatbot can be built in 2–3 days.
- **Cloud & Open-Source Support** – Free-tier cloud services and open-source libraries reduce expenses.
- **Integration Ease** – Embeddable on college website and connectable to WhatsApp/Telegram with minimal setup.



## Challenges & Risk

- **Language Accuracy** – Regional dialects and slang may reduce response accuracy.
- **Context Handling** – Multi-turn conversations may confuse the chatbot.
- **Data Privacy** – Query logs may capture personal/sensitive information.
- **User Trust & Adoption** – Students may not initially trust automated responses.
- **Maintenance Issues** – Volunteer turnover could disrupt content updates.



## Strategies

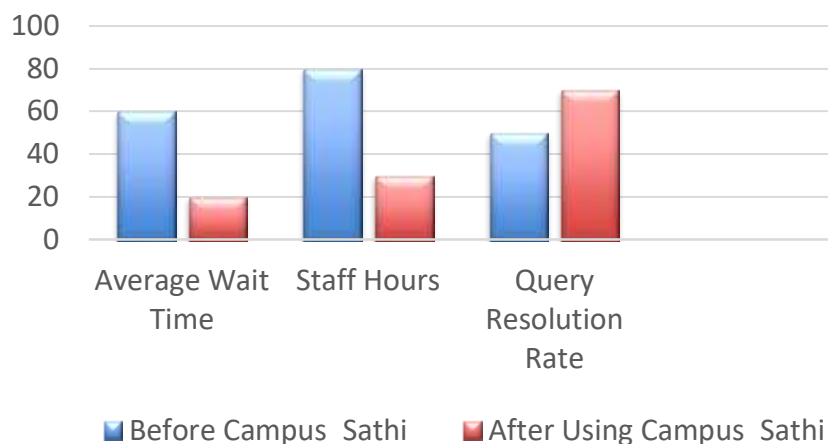
- **Multilingual NLP + QA** – Use pre-trained models with manual checks for accuracy.
- **Session Tracking** – Maintain context across multi-turn conversations.
- **Data Privacy** – Redact personal info and log only minimal details.
- **Human Fallback** – Route unclear queries to staff for reliability.
- **Volunteer Dashboard** – Simple tools and SOPs for easy FAQ updates.



## Viability

- **Scalability** – Can easily add new FAQs, languages, and services over time.
- **Cost-Effective Operations** – Saves staff hours, reduces paper use, and cuts administrative overhead.
- **Inclusive Access** – Reaches all students regardless of language or digital literacy level.
- **Adoption Potential** – Students are already comfortable with chat apps → faster acceptance.
- **Replicability** – Solution can be adapted to other colleges/universities with minimal changes.

## Impact of Campus\_Sathi on Campus Services



## Buisness Scope

- ❑ **Cost Efficiency:** Automates repetitive tasks, saving staff hours and reducing manpower needs.
- ❑ **High Adoption:** 80%+ students prefer local languages, ensuring quick engagement.
- ❑ **Scalability:** Easy to add FAQs, languages, and campuses; adaptable to other sectors.
- ❑ **Revenue Potential:** One-time investment for multi-campus use; scalable SaaS model.
- ❑ **Brand Trust:** Builds reputation through inclusive and timely information access.

## Potential Impact

### 24 × 7 Access

Students receive instant answers anytime, in their preferred language.

### Reduced Wait Times

Shorter queues at offices; staff can dedicate time to complex tasks.

### Inclusive Learning

Supports students more comfortable in Hindi or regional languages.

### Improved Awareness

Keeps students informed about deadlines, forms, timetables, and scholarships.

## Benefits

### Social

Ensures equitable access to information for all students.

### Economic

Saves administrative time → reduces operational overhead

### Environmental

Cuts down paper usage by minimizing physical circulars and forms.

### Educational

Encourages self-service, digital literacy, and greater autonomy among students.



[Github Repo Link](#)



[Prototype Link](#)

## ChatSense - A Multilingual Chatbot:

This study presents the implementation of ChatSense, a multilingual AI assistant leveraging pre-trained language models such as Gemini-2.0-flash and Google Translate APIs.

[ChatSense](#)



CALGARY  
PUBLIC  
LIBRARY



Dialogflow (Google Cloud)

Cloud-based NLU & intent recognition for text & voice bots, supports multi-language.



Verge AI

GECKO

1

• [Georgia State University – Pounce Chatbot](#)

2

• [University of Murcia – Lola Chatbot](#)

3

• [University of Wisconsin–Green Bay – Phlash Chatbot](#)

4

• [Deakin University – Genie Digital Assistant](#)

5

• [BERT Paper – Devlin et al., 2019.](#)



Feature	Others	CampusSathi
Domain-Specific Chatbot	✗	✓
AI-Driven Query Handling	✗	✓
Data Integration	✗	✓
Multilingual Support	✗	✓
Analytics & Insights	✗	✓
Ease of Use (Admin Panel)	✗	✓