F.E.R.B – Voice Assistant

1) Aim

To provide easily accessible, first-line medical guidance to college students in Tamil Nadu—focused on resolving everyday health queries quickly through a voice-enabled, AI-powered assistant accessible even without personal computational resources.

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2) Problem & Target Audience

What is F.E.R.B?

F.E.R.B is a **LLM-based voice assistant** that:

- Runs using pretrained **LLaMA-2 medical model**
- Accepts **speech or text** input
- Provides responses as **text + speech**
- Translates outputs into **Tamil** for local accessibility
- Runs in **Google Colab**, allowing universal access without expensive hardware

Why was it created?

College students often struggle with:

- Lack of immediate medical advice
- Needing to physically visit the infirmary for **small issues**
- No digital, guided medical resource in college
- Limited local language health support

Who is it for?

- Students from **VIT Vellore / Tamil Nadu college campuses**
- General population in **Vellore region** with minor health concerns

Key Pain Points Identified

Pain Point	Impact
No quick medical guidance on campus	Students hesitate or delay getting help
Language barriers when accessing health info	Reduced understanding & misuse of medicines
Low access to powerful devices to run AI tools	Digital exclusion
Minor ailments still require physical consultation	Overburdened medical staff

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How F.E.R.B solves these issues

Feature	Pain Point Solved
Instant medical query responses	Removes dependency on physical infirmary
Voice-based interaction	Supports accessibility + ease of use
Tamil translation of output	Solves language comprehension gap
Cloud execution via Colab	Eliminates hardware cost barrier
Medical dataset-trained LLM	Ensures reliable, domain-aligned guidance

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Priority Pain Point

Delayed access to medical advice for minor health concerns among students

This is the most significant and widespread issue — affecting student wellbeing, productivity, and campus healthcare load.

Feature List (Backed by Code Implementation)

Category	Feature	Description

Smart Medical Q&A	LLaMA-2 Medical Model	Responds with reliable health information
Input Channels	Speech-to-Text (Whisper / Recognizer)	Student can speak queries for convenience
	CLI Text Input	Fast fallback if voice unavailable
Output Channels	Text-to-Speech (gTTS / pyttsx3)	Responses spoken aloud for accessibility
	Display English Text	For precise information recall
Localization	Tamil Text Translation (Google Translate API)	Improves comprehension for regional users
Deployment	Cloud-based Execution (Google Colab + T4 GPU)	No personal hardware required
Accessibility	Shared notebook environment	Any student can launch and use it instantly

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3) Results

From the prototype testing environment:

- Successfully processed multiple common medical queries (e.g., cold, headache, diet questions)
- Inputs via **English speech** converted accurately into commands
- Responses generated with consistent medical context alignment
- Tamil translation enabled better understanding for non-English speakers
- Model latency remained within acceptable conversational boundaries due to GPU acceleration

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4) Future Scope

To expand reliability, inclusivity, and official adoption:

Roadmap Item	Outcome
Tamil speech input support	Fully localized voice assistant
Mobile/Web UI beyond CLI	Wider accessibility on phones
Emergency escalation features	Immediate alerts for severe symptoms
Offline capability for low-connectivity areas	Support in rural and remote regions
Medical validation with college doctors	Safety & credibility compliance
Symptom-tracking and reminders	Preventative care for students
Medical record anonymized analytics	Helps improve campus health policies

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F.E.R.B democratizes first-line medical assistance — giving users fast, reliable, voice-based healthcare guidance anytime, anywhere.