Sayash Raaj

IIT Madras

Demo video:
https://youtube.com/shorts/DH7Ye1_OrZ8

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Why should a farmer's success depend on guesswork?

Every day, millions of Indian farmers face critical questions alone.

- 🗣️ **Language Barriers:** Advice is rarely in their native tongue.
- 📱 **Digital Hurdles:** Complex apps don't work for everyone.
- 🌐 **Poor Connectivity:** Slow internet makes most tools useless.

The result is uncertainty, risk, and lost income.

Demo images on the right

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Introducing Agri-Mitra.

We are solving the critical **information gap** in Indian agriculture. Millions of farmers lack access totimely, localized, and understandable advice, forcing them to make high-stakes decisions based on guesswork.

Why it matters: Empowering farmers with reliable, data-driven guidance directly improves crop yields, increases income, and strengthens food security for the entire nation. We are turning complex data into simple, actionable advice.

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Agri-Mitra is a conversational web application that acts as a personal farming advisor.

1. **User Interaction:** The farmer asks a question in their native language (English, Hindi, Marathi, Tamil, or Telugu) using text or voice.
2. **Contextualization Engine:** The app automatically captures the user's **geolocation** and the **current date/time**.
3. **Query Matching:** Instead of a live LLM, our system matches the user's query to a **curated, expert-verified Q&A knowledge base**.
4. **Localized Response:** The system delivers a precise, pre-translated, and context-aware answer that is relevant to the user's specific agro-climatic zone and time of year.

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Data Sources: Curated Expert Knowledge

Our core strength is our data- a high-quality, curated knowledge base, not a massive, generic dataset.

- **Primary Sources:** We finetuned on representative Q&A pairs from advisories published by State Agricultural Universities, ICAR (Indian Council of Agricultural Research), and government policy documents.
- **Data Preprocessing:**
  - **Content Curation:** We focused on the most frequent and critical farmer queries: irrigation, seed selection, pest control, and government schemes.
  - **Translation:** All Q&A pairs were professionally translated and culturally adapted for our five target languages to ensure clarity and trust.
- **Challenges:** The main challenge was not a lack of data, but filtering out noise and conflicting information to create a single, reliable source of truth for the farmer.

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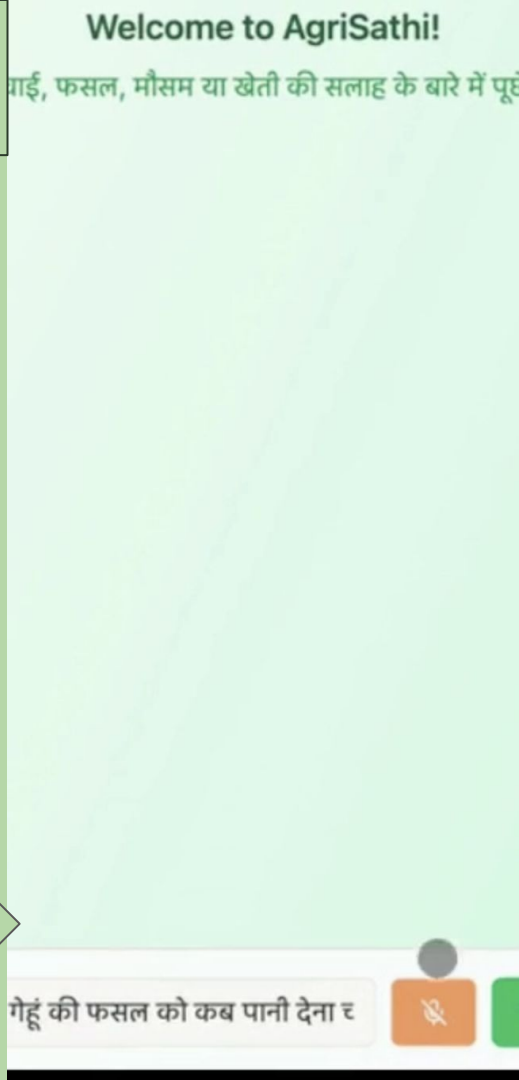

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Technology & Architecture: Simplicity and Speed

Our design philosophy was "maximum impact, minimum overhead." We chose a tech stack optimized for accessibility and rapid deployment.

- **Architecture:** This zero-dependency model ensures the app is extremely lightweight, fast, and works reliably in low-connectivity environments.
- **Tech Stack:**
  - **Frontend:** HTML, CSS, JavaScript (No complex frameworks).
  - **Backend**: Node.js
  - **Geolocation:** Browser Geolocation API for hyper-local context.
  - **Voice Input:** Web Speech API for natural language interaction.
- **AI Model:** We use multilingual Sarvam-1 developed in India

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Our journey is just beginning.

- **More Languages:** Expanding our reach across India.
- **Live Data:** Integrating real-time market prices and weather alerts.
- **Community Platform:** Connecting farmers to share knowledge and success.

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