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AI for Bharat Hackathon

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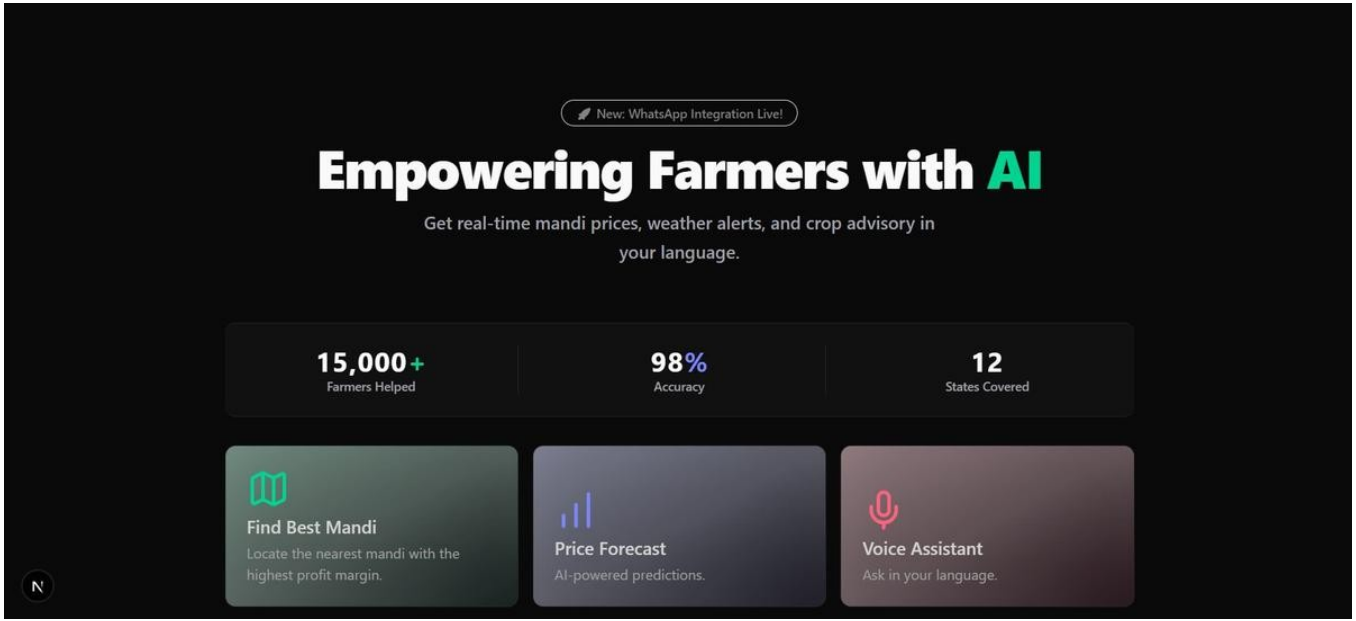
Team Name : Antigravity AI

Team Leader Name : KisaanAI Team Lead

Problem Statement : Information Asymmetry & Market Inefficiency in Indian Agriculture

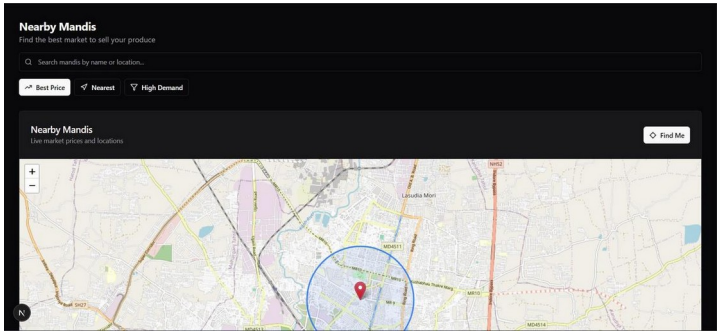
Brief about the Idea:

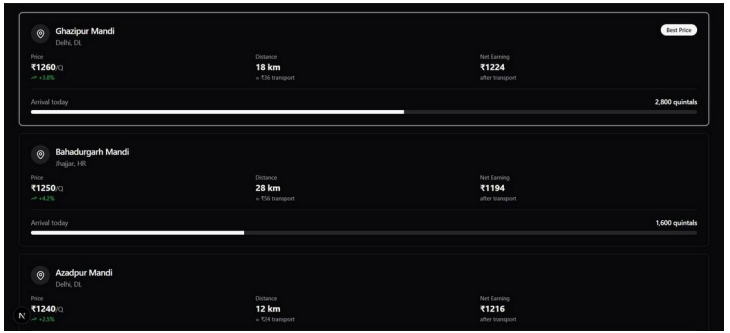
KisaanAI is a voice-first, AI-powered platform that empowers farmers with real-time mandi prices, weather forecasts, and crop advisory services in their local language. It bridges the information gap, enabling data-driven decisions for better profitability and reducing distress selling.



Proposed Solution & USP:

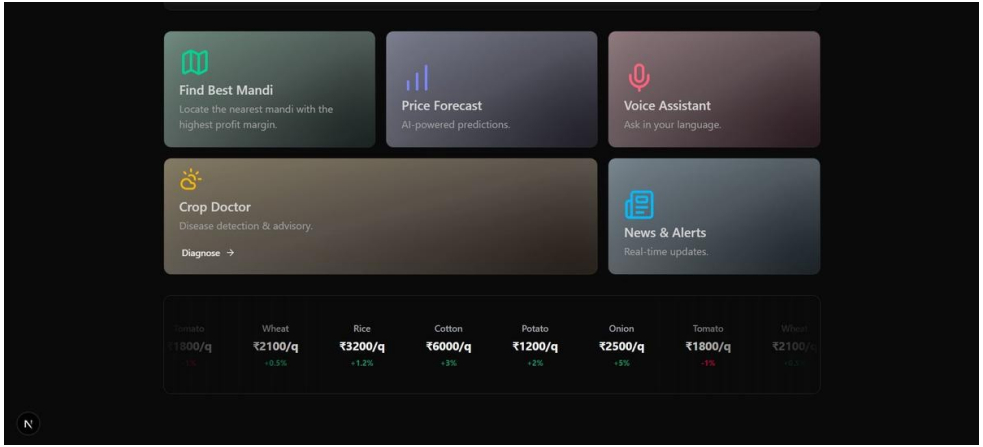
1. Voice-First Interface: Breaks literacy barriers using Bhashini AI, allowing farmers to interact naturally.
2. Predictive Intelligence: 7-day price forecasts using Temporal Fusion Transformers (TFT) for better market timing.
3. Smart Routing: Calculates Net Profit (Price - Transport Cost) to recommend the best mandi, not just the nearest one.
4. Explainable AI: Provides reasoning behind predictions to build trust.





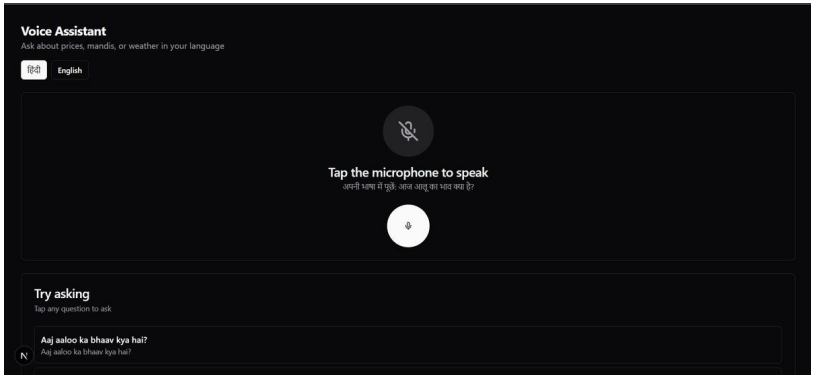
Key Features:

- KisaanCredit (New): AI-based credit scoring using yield forecasts for instant micro-loans.
- AI Price Forecasting: Accurate predictions for Potato, Onion, Tomato.
- Voice Assistant: 'Bolo aur Jaano' interface.
- Smart Routing: Real-time transport cost calculation.
- WhatsApp Bot: Low-bandwidth access.
- Crop Doctor: Image-based disease detection.



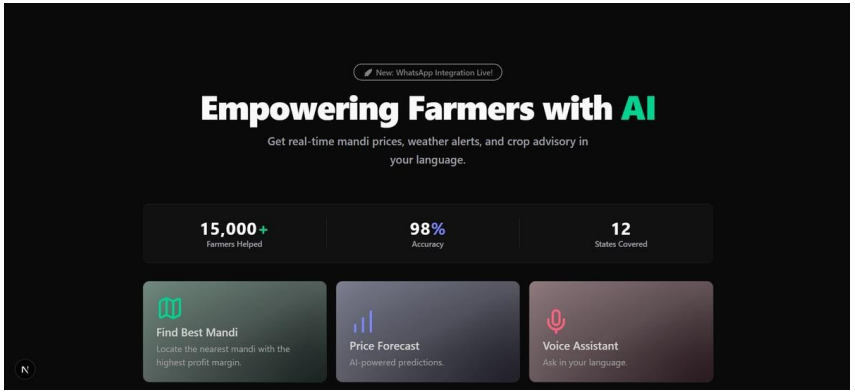
Process Flow:

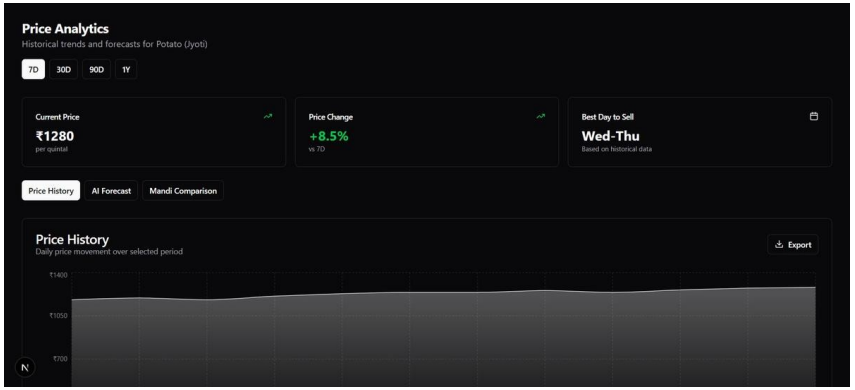
1. Farmer asks query via Voice/WhatsApp.
2. Bhashini translates speech to text.
3. NLP Engine identifies intent (Price/Weather/Disease).
4. Backend fetches data from AI Models or Databases.
5. AI generates personalized response.
6. Bhashini converts text to speech.
7. Farmer receives actionable advice.



User Interface Experience:

The KisaanAI Dashboard features a high-contrast, accessible design:
- MagicUI Animations: Engaging, smooth interactions.
- Bento Grid Layout: Clear, modular information display.
- Responsive Design: Optimized for low-end Android devices and desktops.
- Visual Cues: Icons and color-coding (Green/Red) for intuitive understanding of trends.





System Architecture:

[Frontend]: Next.js 16 (PWA) + Tailwind CSS + MagicUI
[Backend]: FastAPI + PostgreSQL (PostGIS) + Redis
[AI Layer]:
  - PyTorch (Price Forecasting)
  - YOLO (Disease Detection)
  - Bhashini (Voice/Vernacular)
[Data Pipeline]: Agmarknet (Prices) + Sentinel-2 (Satellite) + IMD (Weather)
[Infrastructure]: AWS EC2 + S3 + RDS

Technology Stack:

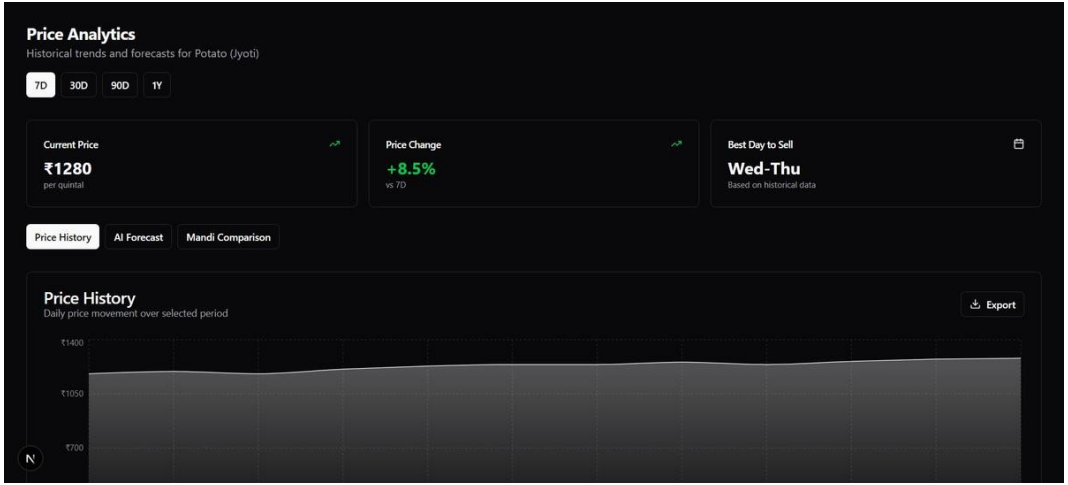
- Cloud: AWS (EC2, S3, RDS)
- AI/ML: PyTorch, XGBoost, Temporal Fusion Transformer (TFT)
- Voice/NLP: Bhashini API, Twilio (WhatsApp)
- Web: Next.js, Tailwind CSS, Leaflet Maps, MagicUI
- Backend: FastAPI, PostgreSQL, MinIO

Implementation Cost & Feasibility:

- Infrastructure: ~$50/month (Optimized with AWS Spot Instances).
- Data: Free (Open Government Data Integration).
- AI Costs: Managed via free tiers for research (Bhashini).
- Feasibility: MVP ready for deployment; Scalable to 50+ crops.

Business Impact & Future Scope:

- Impact: Projected 15-20% increase in farmer income via smart arbitrage.
- Scale: Designed for nationwide roll-out with local dialect support.
- Future: Integration with Farmer Producer Organizations (FPOs) for collective bargaining and direct-to-buyer sales.



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