K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Project Report: Harvest Intel – Smart Agriculture Platform

Project Title

Harvest Intel – Bridging Traditional Farming with Modern Agricultural Insights

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Group Members and Roles

- **AANEYA SHOKEEN** – *Team Leader & Frontend Expert*
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1. Introduction

The global agricultural landscape is undergoing a digital transformation as technology integrates with traditional practices. Farmers are now presented with the opportunity to leverage real-time data, artificial intelligence, and predictive analytics to boost crop productivity, manage resources efficiently, and adapt to changing climatic conditions.

Harvest Intel is an advanced agri-tech platform that provides farmers and agricultural stakeholders with critical insights into crops, soil conditions, weather patterns, yield predictions, and market trends. It supports data-backed decision-making to drive smart, sustainable, and profitable agriculture.

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2. Website Overview & Key Features

A. Total Crop Analysis

A comprehensive overview of all major and minor crops, including health metrics, seasonal trends, disease detection, and performance forecasting. The ML-powered system uses historical data and real-time inputs to provide smart recommendations.

B. Average Soil Moisture

Real-time tracking and visualization of soil moisture levels across various regions and crops. This data is essential for irrigation planning and water resource management.

C. Weather Trend

Weather APIs are integrated to display short-term and long-term climate patterns, including temperature, humidity, rainfall forecasts, and drought alerts.

D. Predicted Yield

Machine learning models are used to estimate crop yields based on variables like soil data, rainfall, crop variety, and fertilizer use, helping farmers plan harvests and sales.

E. ML Feature for Crop Analysis

Artificial intelligence assists in detecting crop diseases, identifying deficiencies, and recommending corrective actions. Image-based ML models help farmers analyze crop health through simple uploads.

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3. Reports & Analytics

The Reports & Analytics section offers advanced visualization and filtering tools to monitor farm performance over time.

Key Filters:

- **Time Period**: Daily, weekly, monthly, and seasonal reports
- **Crop Type**:
    - All Crops
    - Wheat
    - Rice
    - Cotton

Data Visualization Includes:

- Crop health trend charts
- Moisture vs. yield graphs
- Weather impact timelines
- Profitability insights based on season and crop type

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4. Service Modules

1. **Crop Analysis** – Crop health monitoring and disease detection
2. **Soil Analysis** – Nutrient analysis, pH, and moisture tracking
3. **Weather Forecasting** – Real-time weather and climate predictions
4. **Irrigation Management** – Smart water scheduling and conservation suggestions
5. **Pest Control** – Identification and control methods via AI diagnosis
6. **Market Analysis** – Real-time mandi price updates and demand trends

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5. Subscription Plans

Plan	Features	Price
Basic	Access to crop/weather analysis, limited reports	₹100/month
Professional	Full access to all services, ML features, personalized insights, and analytics	₹300/month

Each plan includes multi-language support, offline capabilities, and mobile compatibility.

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6. Help Centre

To ensure accessibility and ease of use, the **Harvest Intel Help Centre** provides the following support features:

1. **Knowledge Base** – Detailed articles on government schemes, subsidies, and agricultural policies
2. **Video Tutorials** – Instructional videos on how to use each feature, available in regional languages
3. **Live Support Calling Feature** – Direct helpline for technical or agricultural assistance

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7. Technical Stack and Architecture

- **Frontend**: React.js
- **Backend**: Django (Python)
- **Database**: PostgreSQL
- **APIs Integrated**:
    - Indian Meteorological Department (IMD) for weather
    - Agmarknet for market prices
    - Custom ML models for image recognition and yield prediction
- **Deployment Platforms**: Heroku or PythonAnywhere
- **Security**: User data is encrypted, and secure authentication protocols are in place.

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8. Benefits to Farmers

- Real-time and science-backed agricultural insights
- Enhanced crop yield forecasting
- Improved soil and water management
- Access to market prices and government schemes
- Multilingual support for better accessibility
- Smart AI tools for pest and disease detection
- Affordable plans with offline capabilities

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9. Conclusion

Harvest Intel is a next-generation agricultural intelligence platform built to empower farmers with accurate, real-time insights. By integrating traditional farming knowledge with modern technologies like machine learning, weather forecasting, and market analysis, it offers a sustainable and profitable future for the farming community. With affordable pricing, farmer-centric support, and robust technical architecture, **Harvest Intel** is set to transform the way agriculture is managed and understood.