**GROUP 7 PROJECT DOCUMENTATION  
  
AGRICULTURE – SCOUT WORK FOR INDUSTRY**Prepared by: Group 7  
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Date: 10 November 2025

🌾 AGRICULTURE – SCOUT WORK FOR INDUSTRY  
  
1. ABSTRACT  
  
This project aims to design and develop a clean, responsive agricultural website that connects farmers, buyers, and agricultural industries. The platform provides information about available services, industrial collaborations, and AI-based data systems for agricultural improvement. It features farmer dashboards, AI-driven advisory systems, and an integrated marketplace to facilitate agricultural business and decision-making.

2. RESEARCH ON EXISTING AGRICULTURAL WEBSITES  
Examples: Analyze the following live Indian agritech websites:

- [https://agrevolution.in/] (DeHaat)

- [https://www.agrostar.in] (AgroStar)

- [https://www.cropin.com/] (crop In)

- [https://salamkisan.com] (Salam Kisan)

- [https://farmerfriend.in/] (Farmer Friend)

3. PROJECT OBJECTIVE  
To build a **responsive, AI-driven agricultural website** that enhances interaction between farmers and industries while offering personalized insights, marketplace integration, and a modern digital ecosystem for agricultural management.

4. WEBSITE INFRASTRUCTURE  
**Frontend:** HTML, CSS, JavaScript, React.js, Bootstrap,   
**Backend:** Python (Flask / Django)  
**Database:** SQLite   
**Version Control:** GitHub  
**APIs:** Google Maps, AI Model API

5. BLUEPRINT / SITE STRUCTURE  
 **Main Pages**

1. **Home**
2. **About Us**
3. **DS & AI (Model Hub)**
4. **Farmer Dashboard**
5. **Marketplace**
6. **Authentication (Sign Up / Sign In)**
7. **Contact Us**

6. FUNCTIONALITIES AND COMPONENTS

**High-level UX flow:**Visitor → Home → Learn/Explore → Sign up / Sign in → Farmer Dashboard (post-login) → Marketplace / Orders / Analytics → DS & AI (Model Explorer & Inference) → Contact us

A. Home (hero-first, mobile stack)

* Hero: tagline, short benefits, primary (Sign up / Get Advice), secondary Left: text, Right: animated hero (3D low-poly plant growth or Lottie).
* Quick Features (cards x4): AI Advisory, Marketplace, Field Analytics, Live Support (each card: icon + 1-line).
* How it works (3 steps): Onboard → Field Monitor → Sell/Buy
* Live metrics / trust logos (partners, farmers served)
* Testimonials & Stories (carousel)
* Footer: Language toggle, app download, quick links, contact.

B. About

* Mission & Vision
* Impact numbers (infographics)
* Team & Advisors (cards)
* Partners & Investors (logos)
* CTA — "Work with us" / "Partner"

C. DS & AI (Model Hub) — critical page (separate component)

D. Farmer Dashboard

* Top summary card: greeting (with small 3D farmer animation waving — short, skippable), farm health score, next advisory.
* Field cards: each plot with satellite thumbnail, last advised action, expected yield.
* Recent AI Alerts: pest/water/deficiency alerts (actionable CTA: "Order Input" or "Call Agronomist")
* Orders & Marketplace quick links
* Map quick view (mini-map with layers)
* Community snippets: latest forum posts from nearby users.

E. Marketplace

* Search & categories, filters (crop, brand), product cards, product detail modal, cart & checkout (integrate payments).
* Buyer/seller flows separated (B2B should be separate dashboard).

F. Sign-up / Sign-in

* Sign-up (mobile-first): First name, Last name, Mobile (required), Email (optional), Role selector (Farmer / Buyer / Agent), Password optional (OTP recommended), Accept T&Cs. OTP verification step after mobile capture. Google OAuth button.
* Sign-in: Mobile or Email + Password OR OTP -> One-tap for Google OAuth. “Remember me” checkbox.

G. Contact

* Top: CTA to request demo or call.
* Two-column : left: contact form (name, mobile, email, message, subject dropdown), right: contact card (address, phone), embedded Map (Mapbox/Google/Maplibre).
* Agent Locator: search by pin code to show nearest field agent / DeHaat center.

8. DATA SCIENCE

**1. CropGuardNet – AI-Based Plant Disease Detection and Advisory System**

**Problem Statement:**  
Plant diseases reduce yields drastically, and many farmers can’t identify them early.

**Solution:**  
CNN-based image classifier detects plant diseases from leaf images and provides recommendations for treatment.

**Users:** Farmers, Agri Extension Services, Crop Insurance Companies.

**Tools:** Python, TensorFlow, Keras, OpenCV, Flask.

**Future Scope:** Integration with drones, IoT sensors, and voice-based assistance.

**Income Source:** Freemium mobile app, partnerships with agrochemical companies.

**2.AgriBuy AI – Intelligent Marketplace for Farmers & Traders**

* **Problem Statement:**  
  Farmers often sell their produce to intermediaries at very low prices due to limited market access, lack of price awareness, and no direct online selling platform. Traditional platforms do not provide price forecasting or quality assurance, making trade inefficient and unfair.
* **Tools/Tech:**  
  CNN (for image quality grading), LSTM (for price prediction), TensorFlow, Django, React, Firebase.

**Future Scope:**  
🔹 Integrate digital payment and logistics for farm-to-retail transactions.  
🔹 Add multilingual voice-based chatbot for rural accessibility.  
🔹 Partner with FPOs (Farmer Producer Organizations) and B2B buyers.

**3.AgroShop Vision – AI-Driven Online Fertilizer & Seed Store**

* **Problem Statement:**  
  Farmers often purchase unsuitable fertilizers or seeds due to lack of technical knowledge about soil condition or crop needs. There is no personalized advisory mechanism in existing e-commerce agri stores.
* **Tools/Tech:**  
  Deep Learning Recommender (Neural CF), ViT (Vision Transformer) for soil classification, Django, TensorFlow.

**Future Scope:**  
🔹 Integrate soil image upload to automatically suggest products.  
🔹 Build regional e-commerce models customized by local crop types.  
🔹 Provide subscription-based “fertilizer advisory kits.”  
🔹 Could scale into a **smart agri input store** for both B2B and farmers

**4.FarmGuard 360 – Real-Time Farm Surveillance & Anomaly Detection**

**Problem Statement:**  
Large-scale farms face difficulty detecting pest attacks, irrigation leaks, or dry patches. Manual monitoring is impossible.

**Tools/Tech:**

* DL Models: Autoencoders / YOLOv8 for anomaly detection
* Frameworks: TensorFlow + OpenCV + CCTV/Drone input feed
* Deployment: Edge AI devices

**Future Product Vision:**  
👉 AI-based camera system for 24×7 monitoring. Alerts sent to farmer’s phone when issues are detected.  
**Business use:** Hardware + software subscription product for smart farms.  
**Revenue Model:** One-time hardware + monthly monitoring subscription.

**5.Project Title: AgriSmart Hub — AI-Driven Smart Agriculture Marketplace**

**🔍 1️⃣ Problem Statement**

Traditional agriculture marketplaces only list products (tractors, harvesters, seeds, fertilizers) without **AI-based personalization, prediction, or automation**.  
Farmers often:

* Buy unsuitable products for their soil or crop type,
* Have no guidance on the best harvesting tools for their specific land conditions,
* Waste money due to lack of predictive intelligence.

There is a need for a **smart agriculture e-commerce platform** that integrates **Deep Learning recommendations**, **crop-based product suggestions**, and **predictive analytics**.

**Proposed Deep Learning Solution**

Build a **web-based platform** that recommends and sells **advanced agricultural and harvesting products** using **Deep Learning models** for decision-making.

**✅ Key AI/DL Features:**

1. **Intelligent Product Recommendation (DL-based):**  
   A **Deep Neural Network (DNN)** model that recommends farm equipment (e.g., harvesters, irrigation tools, fertilizers) based on:
   * Crop type
   * Farm size
   * Soil type
   * Weather conditions
   * Budget range
2. **Image-Based Crop Recognition (CNN):**  
   Farmers upload a crop or field image → DL model identifies the crop and suggests suitable harvesting products.
3. **Predictive Harvesting Time Estimator (LSTM / Transformer):**  
   Predicts the **optimal harvesting time** using past yield data, weather patterns, and crop stage images.
4. **Yield & Equipment Optimization (Reinforcement Learning):**  
   Recommends the best **equipment usage schedule** for energy and fuel optimization.

**6.GreenChain AI — Sustainable Agriculture Supply Chain Platform**

**🧠 Focus:** Deep Learning + Marketplace + Logistics Optimization

**🪴 Problem:**  
After harvest, many farmers struggle with **unsold crops**, **logistics delays**, and **price fluctuations**.

**💡 DL Solution:**

* LSTM for **demand & price forecasting**.
* CNN for **crop quality grading** (image-based).
* DL-powered route optimization for logistics using **Graph Neural Networks (GNN)**.

**⚙️ Features:**

* Farmers list produce → DL model predicts optimal sell time.
* Buyers see quality-certified crops (via AI grading).
* Automated logistics & delivery suggestions.

**💼 Business Value:**  
Builds an **AI-driven B2B marketplace** linking farmers, wholesalers, and exporters efficiently.

**🌱 Future Scope:**

* Integration with blockchain for product traceability.
* Government and NGO tie-ups for supply chain transparency.

**7.SmartCropMart – AI Quality Grading & Online Auction System**

**Problem Statement:**  
Online agriculture markets lack quality validation. Buyers can’t trust product quality remotely.  
**Tools/Tech:**

* DL Models: Image classification (EfficientNet) for grading crops
* Tech Stack: Flask/React, OpenCV, TensorFlow, AWS Cloud  
  **Future Product Vision:**  
  👉 Platform where farmers upload crop images → DL model grades them → buyers bid based on verified grade.  
  **Business Use:** Creates transparency & fair pricing through AI-based online auctions.  
  **Revenue Model:** Transaction fee or commission per sale.

9. REFERENCES

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