

Part 2: Task 2: AI-Driven IoT Concept

- **Scenario:** Design a smart agriculture system using AI and IoT.
- **Requirements:**
 1. List sensors needed (e.g., soil moisture, temperature).
 2. Propose an AI model to predict crop yields.
 3. Sketch a data flow diagram (AI processing sensor data).
- **Deliverable:** 1-page proposal + diagram.

AI-Driven IoT-Based Smart Agriculture System

Problem Statement:

Smallholder farmers often rely on intuition rather than data to make decisions about planting, irrigation, and fertilization. This leads to low productivity, poor soil health, and unpredictable crop yields.

Proposed Solution:

Design a smart agriculture system that integrates **IoT sensors** and **AI models** to monitor real-time farm conditions and predict crop yields. This system empowers farmers to make data-driven decisions that improve productivity, resource use, and sustainability.

Sensors Required:

Sensor Type	Data Collected
Soil Moisture Sensor	Water level in soil
Temperature Sensor	Ambient temperature
Humidity Sensor	Relative air humidity
Light Sensor (LDR)	Sunlight intensity

AI Model: Crop Yield Prediction

- **Model Type:** Regression Model (Random Forest Regressor or XGBoost)
- **Inputs:** Aggregated sensor readings
- **Output:** Predicted yield (kg/ha) for the given crop and plot

Why Random Forest?

- It handles non-linear relationships and sensor noise well.
- Performs feature importance ranking (e.g., rainfall vs soil pH impact).

No 3: Sketch Diagram

