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We're designing a smart agriculture system that combines **Artificial Intelligence (AI)** and **Internet of Things (IoT)** to monitor farm conditions and predict **crop yields**, helping farmers make better decisions in real-time.

Sensors Needed :

To monitor the environment and crop health, we'd use the following IoT sensors:

- **Soil Moisture Sensor** – checks water levels in the soil

- **Temperature Sensor** – monitors the ambient temperature

- **Humidity Sensor** – measures air moisture (important for disease control)

- **Light Sensor** – tracks sunlight exposure

- **pH Sensor** – detects soil acidity or alkalinity

- **Rain Sensor** – detects rainfall presence

- *(Optional)* **CO_2 Sensor** – useful for greenhouse monitoring

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◆ AI Model

The AI model will be a **regression model** that predicts **crop yield** based on sensor data trends.

Input features:

- Soil moisture

- Temperature

- Humidity

- Light intensity

- pH level

- Rain presence

Output:

- Estimated crop yield (e.g., in kg/hectare)

AI Model Type:

- A simple **Linear Regression** or **Neural Network Regressor** using TensorFlow or Scikit-learn.

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◆ **Data Flow Diagram**

Here's a basic structure of how data flows in the system:

[IoT Sensors]

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[Microcontroller (e.g., Arduino or ESP32)]

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[Data sent to Cloud or Edge Device]

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[AI Model processes real-time data]

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[Dashboard for Farmer / Yield Prediction Output]