**Smart Agriculture AI-IoT Proposal**

**Project Title: AgroSense – AI-Powered Smart Farming System**

**Objective:**

AgroSense is a smart agriculture system designed to optimize crop yield prediction and farm resource usage using real-time data collected via IoT sensors and analyzed with AI models. The system supports decision-making in irrigation, fertilization, and harvesting.

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**Required Sensors:**

| Sensor Type | Purpose |
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| Soil Moisture Sensor | Detects water levels in the soil for irrigation scheduling |
| Temperature Sensor | Monitors ambient temperature affecting crop growth |
| Humidity Sensor | Measures air moisture, useful for disease prevention |
| Light (LDR) Sensor | Tracks sunlight exposure for photosynthesis analysis |
| pH Sensor | Measures soil acidity for crop suitability |
| Rain Gauge | Records rainfall data to reduce over-irrigation |

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**AI Model Recommendation:**

- **Model Type**: **Time Series Forecasting Model (LSTM or Prophet)**
- **Purpose**: Predict future crop yield based on trends in environmental conditions, soil parameters, and historical yield data.
- **Input Features**:
    - Soil moisture (daily avg)
    - Temperature & humidity trends
    - pH and light levels
    - Rainfall patterns
    - Past yield data

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**Data Flow Diagram:**

[Sensor Layer]

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[IoT Devices (Edge Nodes)]

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[Data Aggregator / Gateway]

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[Cloud Database (IoT Platform e.g., AWS IoT or ThingsBoard)]

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[AI Engine (LSTM Time Series Model)]

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[Dashboard & Alerts]

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[Farmers / Decision Makers]

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**Key Features:**

- Real-time sensor readings via edge IoT devices
- Smart alerts for irrigation and fertilization
- AI-powered dashboard for yield prediction and trends
- Mobile and web access for farm monitoring