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TECHNOLOGY-IoT Based Soil Nutrients Monitering and Management

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Phase -5 Soil Nutrients Monitoring and Management

Abstract :

This project leverages IoT technology for real-time soil analysis to support agricultural decision-making. Sensors gather data on moisture, pH, temperature, and nutrients. This data is processed and visualized on a dashboard, helping farmers optimize irrigation and fertilization. The system aims to increase crop yields and reduce resource wastage.

1. Project Demonstration - System Walkthrough: From data collection to nutrient recommendations. - Sensor Data Accuracy: Live readings for moisture, pH, and NPK levels. - IoT Integration: Sensors connected via microcontrollers to a cloud server. - Dashboard Demo: Visuals and alerts via a live interface. - Performance Metrics: Transmission latency and sensor precision. - Security: Basic encryption and secure cloud access.

2. Project Documentation - System Architecture: Diagram of sensors, microcontroller, cloud, dashboard. - Code Snippets: For sensor interfacing, data transmission, and cloud sync. - User Guide: Sensor installation and dashboard usage. - Admin Guide: Hardware maintenance and backend management. - Testing Reports: Logs from different soil types and calibration efforts.

3. Feedback & Final Adjustments

- Collected feedback from faculty and testers.

- Improved sensor calibration and dashboard responsiveness.

- Validated in field trials for usability and accuracy.

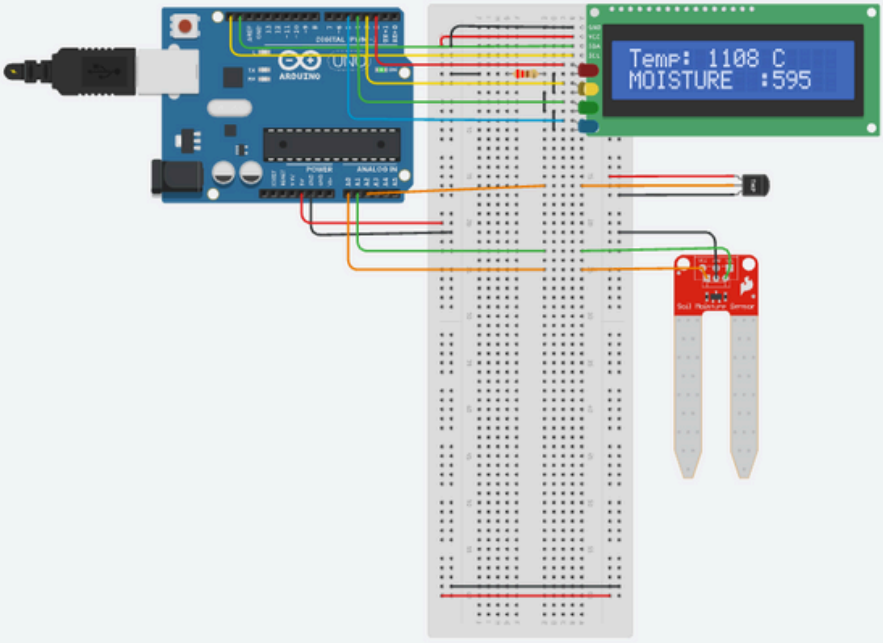
4. Final Report Overview - Project summary and development phases. - Challenges addressed: noise reduction, rural connectivity. - Results: Proven performance in real-world farming conditions.

5. Handover & Future Work - Delivered full codebase and documentation. - Suggested enhancements: AI nutrient prediction, mobile app, SMS alerts.

6. Screenshots (Include visuals of sensor readings, dashboard UI, and test results.)

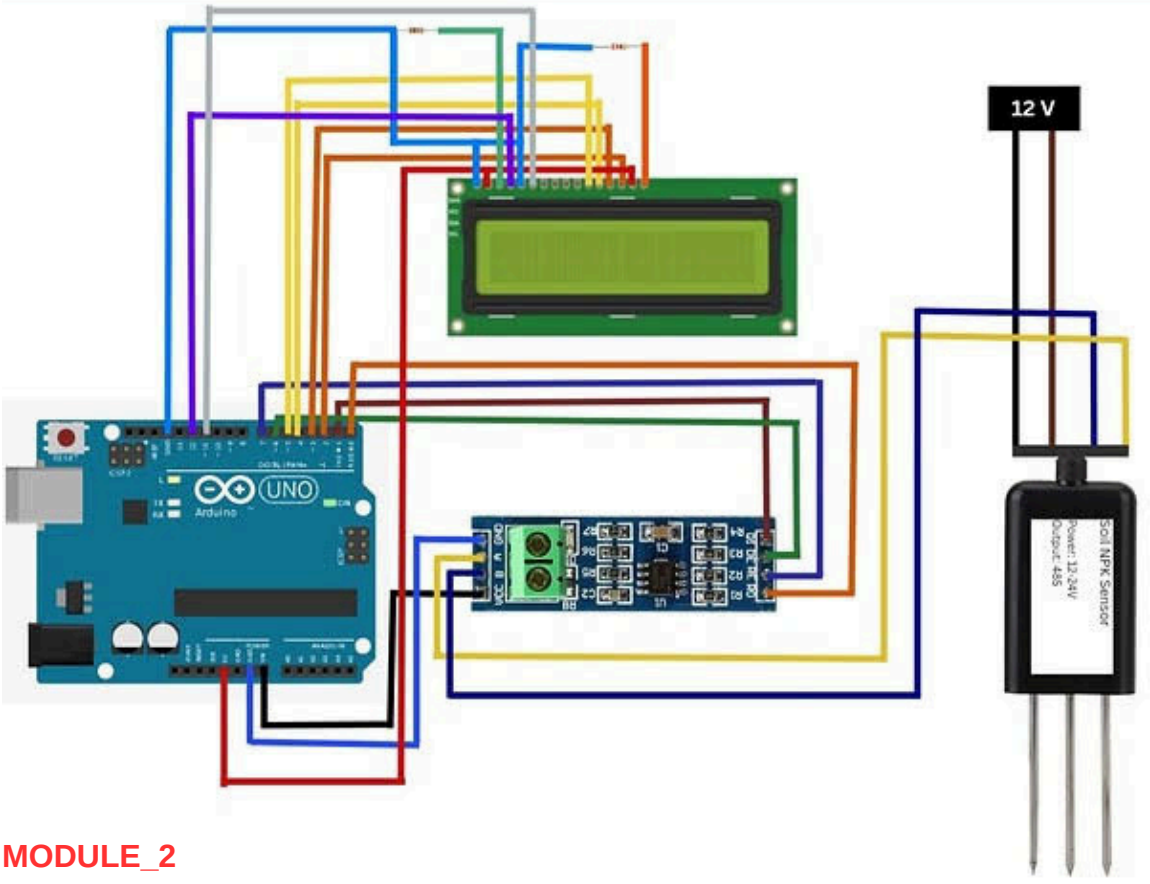
NPK SENSOR

1. Temperature and Moisture module



MODULE_1

2. N.P.K SENSOR WITH LCD DISPLAY



MODULE_2