Iot Driven Vertical Farming Using Deep Learning For Cultivation of Medicinal Plants

Github Link

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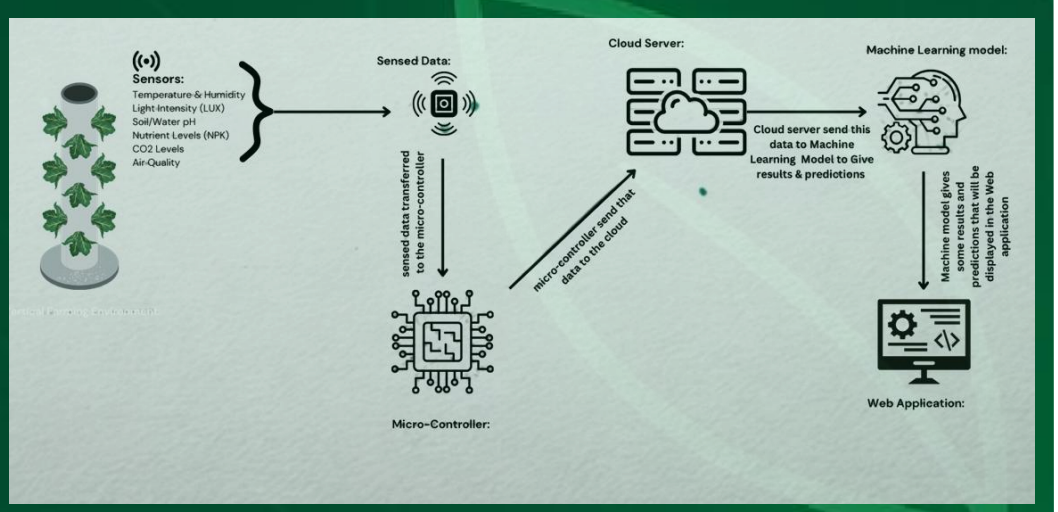
Introduction

This project presents a smart, IoT-enabled vertical farming system integrated with Deep Learning (DL) models for crop name and cultivation optimization. By leveraging environmental sensors and AI-driven analytics, the system provides real-time monitoring and prediction of crop health, enabling sustainable urban agriculture

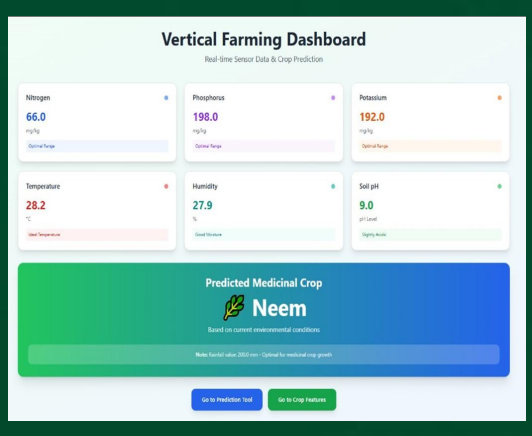
SYSTEM ARCHITECTURE

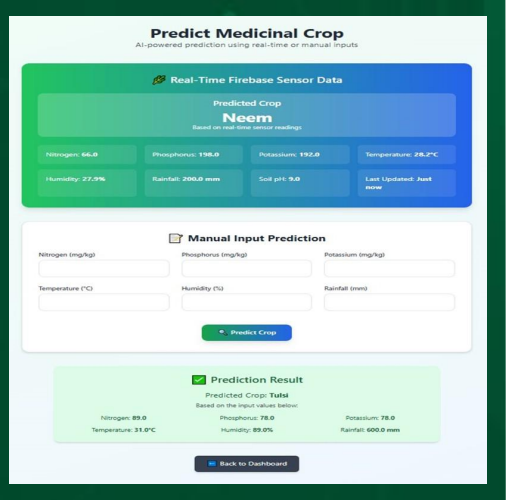


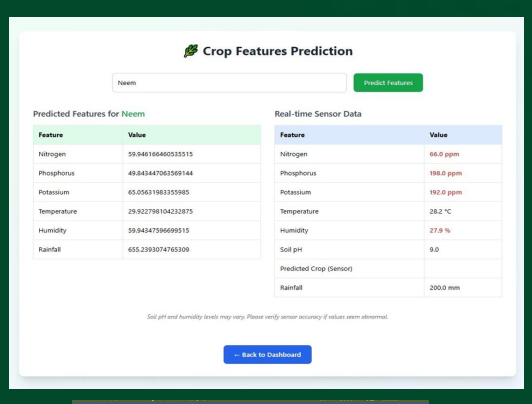
RESULTS / ACHIEVEMENTS

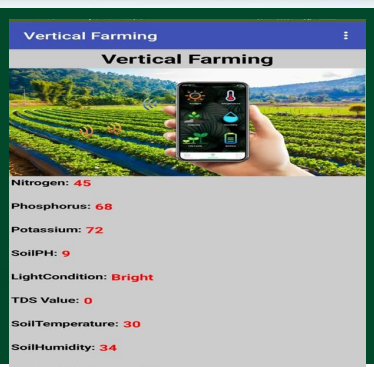
Achieved real-time crop monitoring with IoT.
ML/DL-based prediction accuracy > 85% for Medicinal Plant Cultivation.
Functional dashboard for farmers with live data.
Successfully integrated IoT + AI + Automation for sustainable farming.

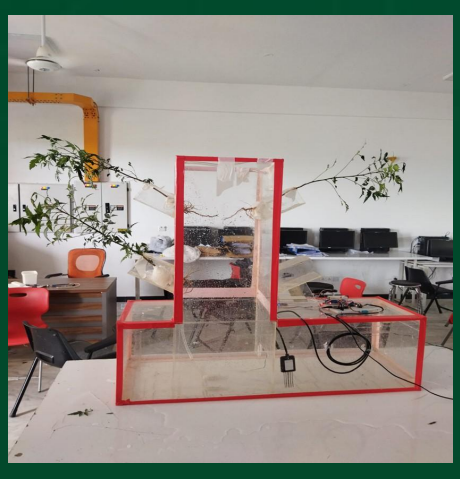
PROJECT IMAGES











KEY FEATURES

IoT Sensor Integration
Temperature & Humidity Sensors
Soil pH & Nutrient Sensors
Light Intensity (PAR)
CO_2 & Oxygen Sensors
Water EC Sensors
Airflow Sensors

AI / ML & DL Models

Random Forest, SVM, Decision Tree, kNN
Deep Learning Models (CNN, RNN, FCNN,FCDNN)

Growth monitoring & crop recommendation
Smart Farming Automation
Automated irrigation & lighting control
Nutrient distribution based on DL predictions
Real-time monitoring via web & mobile dashboard
Visualization & Control
Live sensor data dashboard
Prediction charts for crop

TECHNOLOGY USED

CONCLUSION

The system demonstrates how IoT-driven smart farming with ML/DL can revolutionize agriculture. By predicting crop name and automating resource distribution, it enhances crop yield, resource efficiency, and sustainability. This scalable prototype can be deployed in real-world urban vertical farming systems.