

Intro (0:00 - 0:30)

Hi, I'm Raul Akhuli, currently pursuing B.Tech in Computer Science Engineering with a specialization in AI and ML

Today, I'm presenting, a smart automated plant watering system. It's an IoT device that monitors soil moisture and automatically irrigates the plant. (display project model & github link)

I've integrated arduino, Raspberry pi and even a basic machine learning model using linear regression to predict future watering needs.

Objective & problem solved (0:30 - 1:30)

The idea came from a common issue - many people forget to water plants, or do it too often, leading to plant stress or root rot.

my solution was to

sensing real-time soil moisture

automatically plant the water when needed.

Logging data using Raspberry pi

and predicting the next watering time using a linear regression model trained on past data.

System components & working (1:30 - 3:30)

(2)

• Moisture Sensor + Arduino Uno

The sensor is placed near the plant's root level for accurate data. Arduino reads this data and if the moisture is below a threshold, it activates a water pump via a MOSFET.

(Arduino & pump wiring Setup).

• Pump & Reservoir

The pump is placed in a sealed reservoir in the back compartment. It irrigates the soil through a small plastic tube.

The system will be designed using a laser-cut MDF box with three sections:

- plant soil.
- Electronics (Arduino + Pi)
- water tank.

Raspberry Pi - Data logger & ML

The Raspberry Pi plays two key roles:

- First, it logs moisture and watering amount into a CSV file using Python.
- Second, it uses linear regression to analyze historical data.

CSV,
model.py,
graph output

The model predicts when the next watering might be needed based on moisture ~~data~~ patterns over time.
temperature
humidity

Linear regression integration (3:30 - 4:30)

(3)

I used the scikit-learn library to train a simple linear regression model.

it takes temp, humidity & soil moisture over time as input and predicts the time when soil will reach the dry threshold.

this helps us

- plan watering schedules.
- Avoid unnecessary watering
- make the system smarter over time

model

Learnings & Conclusion (4:30 - 5:00)

This is a simple yet powerful system for house plant care. I learned:

- Arduino sensor interfacing
- Raspberry pi data logging
- Implementing linear regression using python
- Applying real time in a small IoT setup.

Thank you for watching - I'd love to discuss further in the interview.