

# ET208: Mini Project 1: S.E. Sem: IV Vineyard Monitoring System

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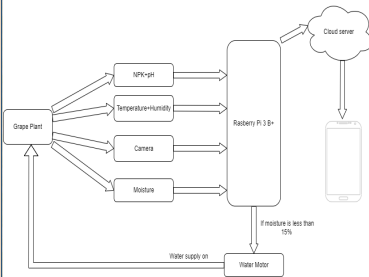


## Introduction

1. The project will provide accurate and real-time data on **soil moisture, nutrients, pH, temperature, and humidity**, and automate the watering process based on this data.
2. The App will provide users with easy access to the data and the ability to **control the system remotely**.
3. The system will avoid plant damage from excess water, chemical fertilizers and harmful pesticides and suggest remedies to users through App.
4. The system will help to **manage all required parameters for grapes to grow and maximize the yield**.

## Project Goals

1. The main Aim of our project is to design a bot that will monitor the grape field remotely with the help of IOT enabled Raspberry Pi.
2. Getting readings from sensors to get real-time data from farm field.
3. We will be using Moisture, Temperature & Humidity sensors and NPK+pH sensor to get data on the surroundings and the soil.
4. Design of bot and mechanical components to go through the farmland.
5. Camera is used so that by using image processing bot can follow a straight path.(future scope)
6. Application of image processing for automation of a bot and monitoring grapefruit with a camera.
7. Design of App and UI using the cloud and add suggestions for users, Also adding automation in irrigation.



## Project Description

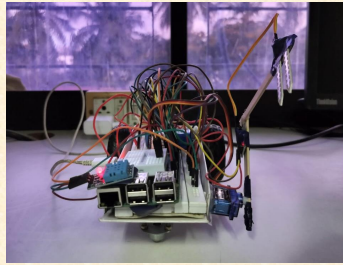


Figure 1. BOT Prototype

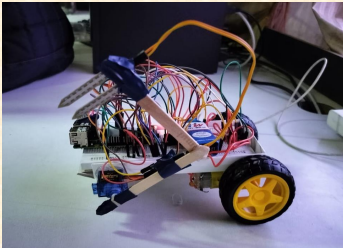


Figure 2 Raspberry Pi 3 B

## Findings

- 1.Data Acquisition and Processing: The bot monitoring system continuously collected data from the sensors at predefined intervals. The Raspberry Pi 3B's GPIO pins facilitated the communication and data acquisition process. The collected data was processed and stored locally on the Raspberry Pi, providing real-time monitoring capabilities.
- 2.Data Analysis and Visualization: To extract meaningful insights, the collected data was analyzed and visualized. Statistical methods and algorithms were employed to identify patterns, trends, and correlations within the dataset. Various visualization techniques, such as graphs and charts, were used to present the analyzed data in a clear and understandable manner.

## Charts & Graphs

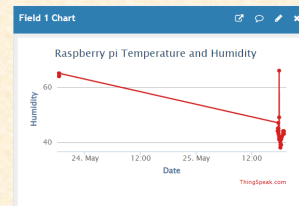


Figure 3 Humidity Graph on Cloud platform

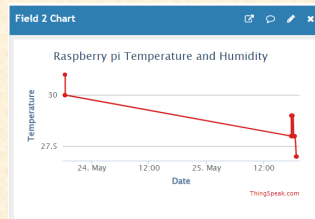


Figure 4 Temperature Graph on Cloud platform

## Conclusion

- 1.The developed Vineyard monitoring system successfully captured and monitored soil moisture, temperature, and humidity levels in real time. The collected data allowed for comprehensive analysis, enabling users to make informed decisions regarding irrigation schedules, crop health, and overall environmental conditions. The system demonstrated reliable and accurate measurements, facilitating efficient agricultural management.
- 2.The Vineyard monitoring system using Raspberry Pi 3B proved to be an effective and affordable solution for monitoring soil moisture, temperature, and humidity. By combining sensor integration, data acquisition, and analysis, the system provided real-time insights that can optimize agricultural practices. Future work may involve expanding the system's capabilities, incorporating additional sensors, and integrating wireless communication for remote monitoring and control.

## Acknowledgements if any

We would like to express our sincere gratitude to our project mentor, Dr Amol Deshpande, for their invaluable guidance and support throughout the development of this vineyard monitoring system using Raspberry Pi 3B.

We would also like to extend our appreciation to Sardar Patel Institute of Technology for providing us with the opportunity to work under the guidance of Dr Amol Deshpande. The resources and facilities made available to us by S.P.I.T. greatly contributed to the smooth execution of our project.

## References

1. Raspberry Pi Manual/datasheet
2. <https://tutorials-raspberrypi.com/measuring-soil-moisture-with-raspberry-pi/>
3. <https://youtu.be/DPvxsHoD7kc>
4. <https://youtu.be/uDkZcemldpo>
5. <https://chat.openai.com/>
6. <https://thingspeak.com/channels/2106512/private-show>