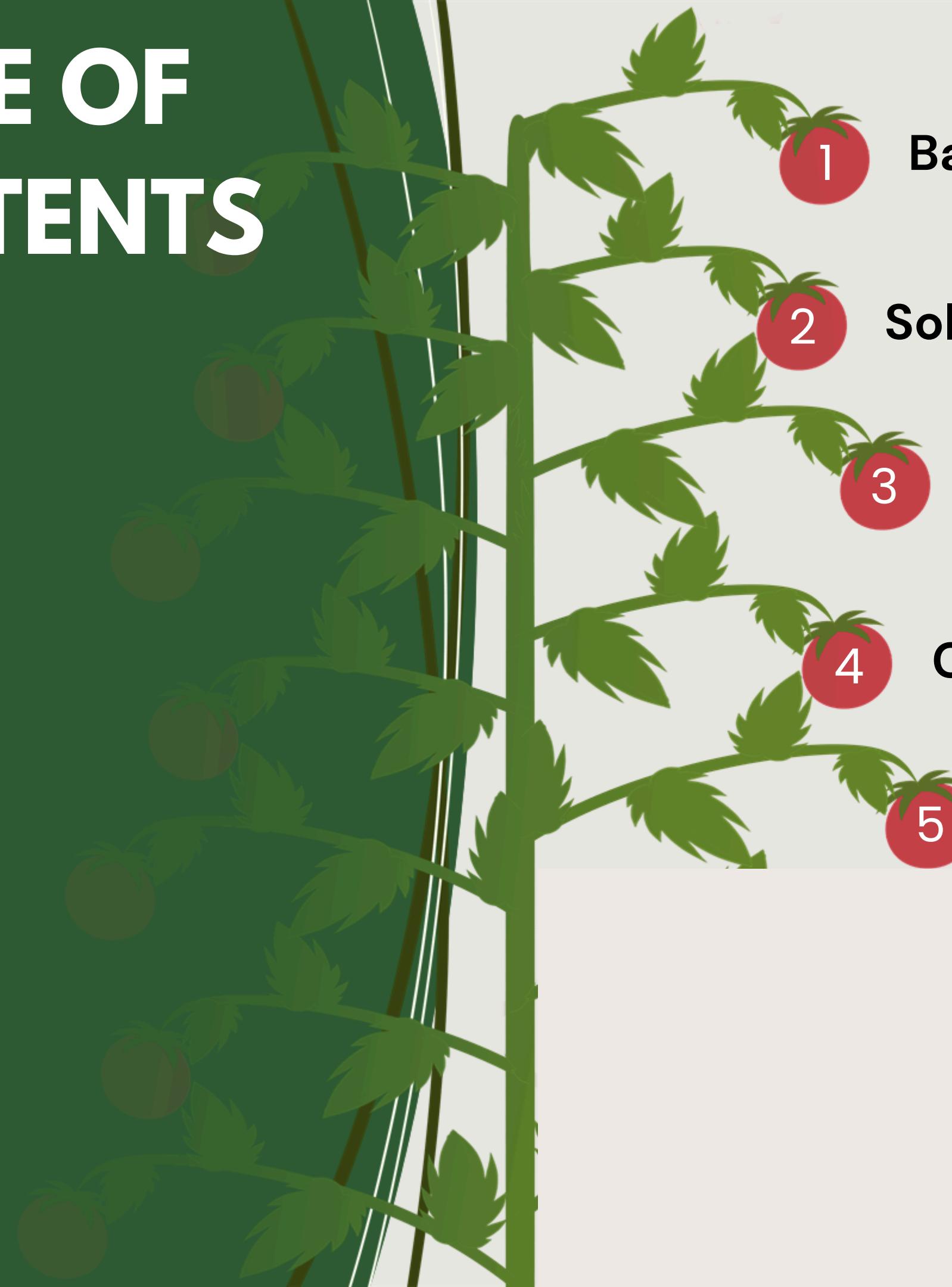


INTRODUCTION TO MICROCONTROLLER BOTANY BUGGY

Raphael Nazareth
Justin Kuo
Efran Leonard P.S.
Willsan A Jantho

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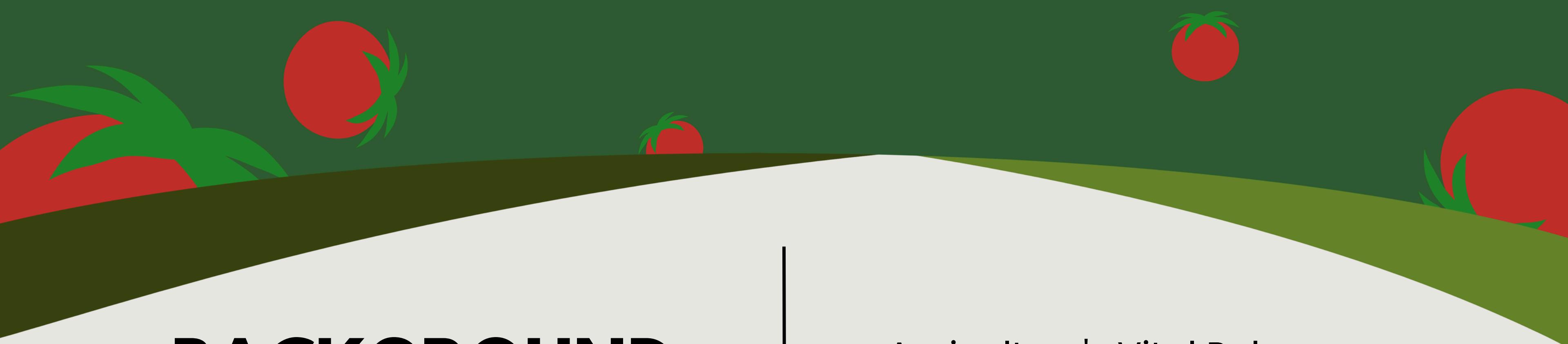
1 Background & Problem Identification

2 Solution to Problem

3 Components used

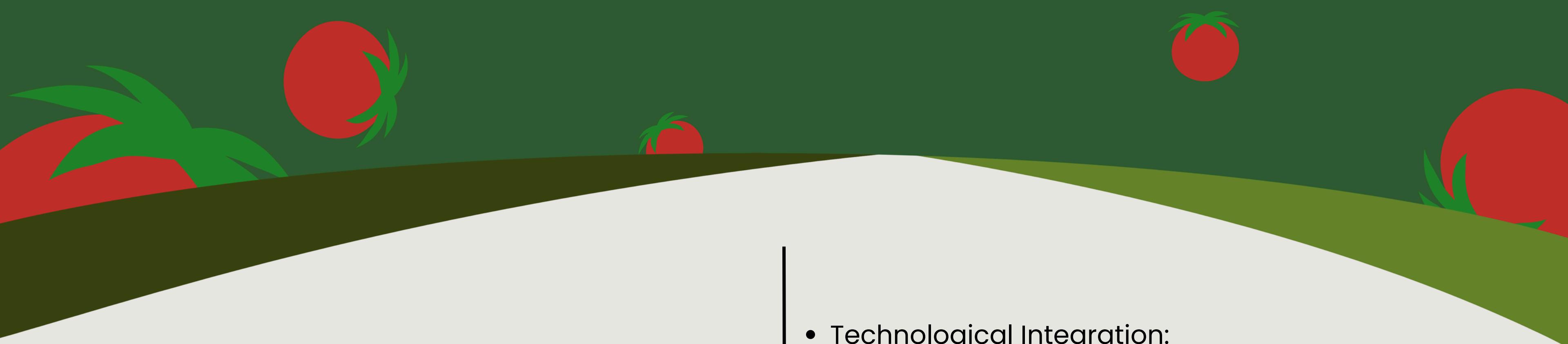
4 Concepts used

5 Result



BACKGROUND & PROBLEM IDENTIFICATION

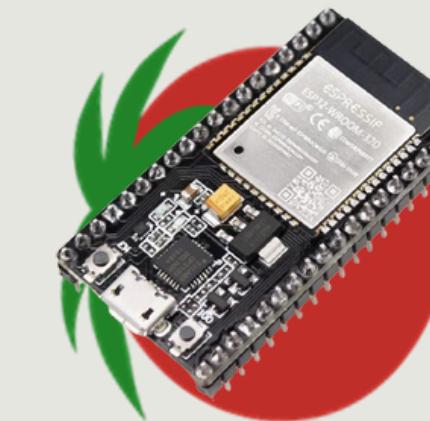
- Agriculture's Vital Role
- Challenges from Population Growth
- Declining Interest in Farming
- Technological Implementation



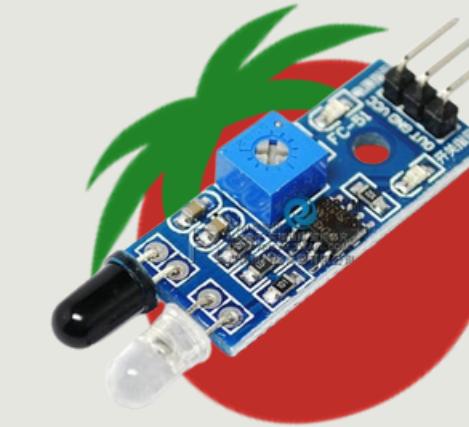
SOLUTION TO PROBLEM

- Technological Integration:
- Botany Buggy
 - Sensors: The Botany Buggy uses a variety of sensors to collect data.
 - Data Transmission: The collected data will be uploaded to Firebase
 - Function: Based on the sensors' input, Botany Buggy will react accordingly to facilitate the plant.
- Impact: This technology facilitates efficient and responsive plant care, addressing the demands of modern agriculture.

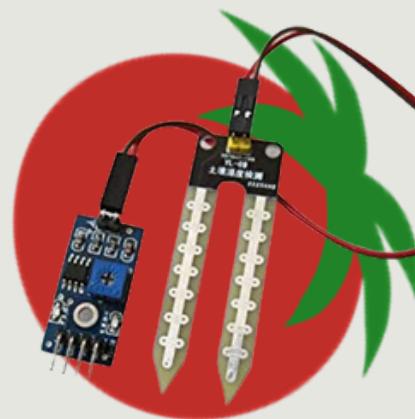
COMPONENTS USED



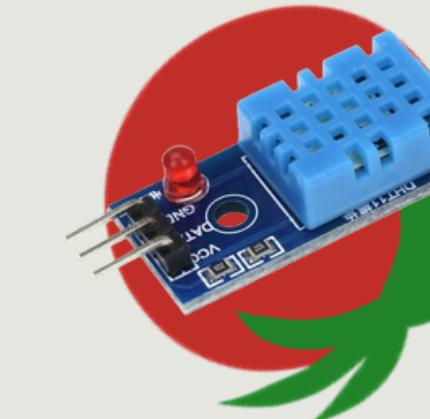
ESP32



IR sensor



Soil Moisture
Sensor



DHT11



Mist Actuator



Servo



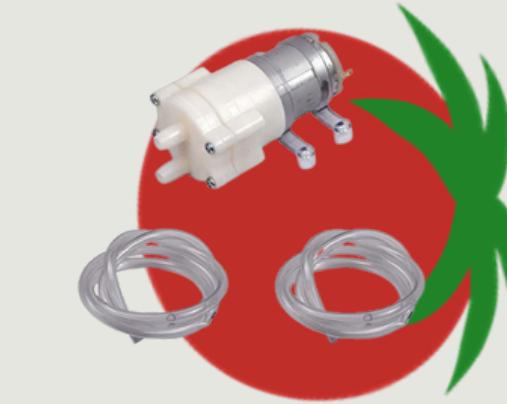
6V batteries



Relay

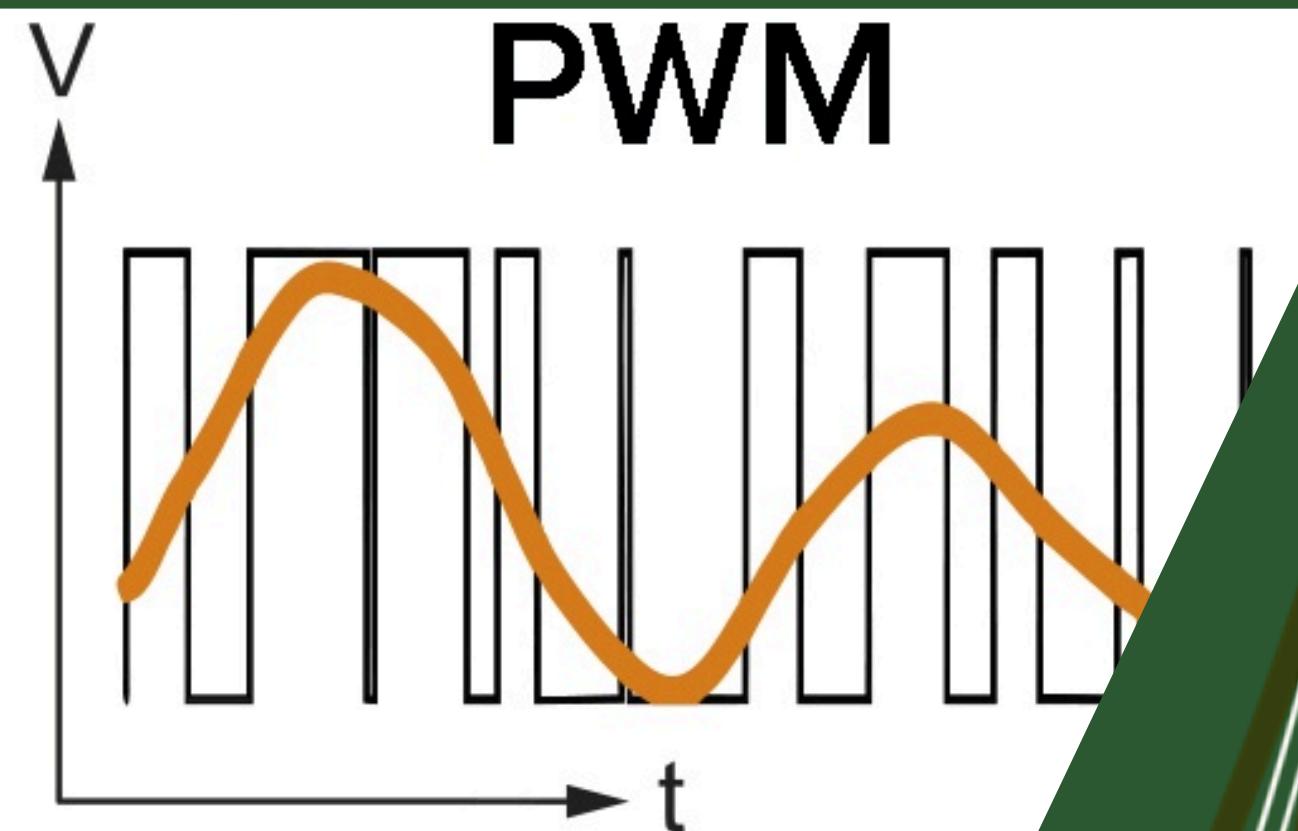


TCS 3200
color sensor



Water Pump

CONCEPTS USED ON PROJECT



Our project uses Pulse Width Modulation (PWM), to modulate the angle of rotation on the servo. The servos can be found in the Pipe (to aim), and one can be found on the mist actuator, (the module requires a button to push).

Result



Sensor	Parameter	requirement	Actuator	Performance
Soil Moisture & Color sensor	Soil Moisture & color	X1 > 4000 & color "Blue" // X2 > 4000 & color "Brown"// X3 > 4000, color "Green"	DC motor OFFServo Rotate 180°Pump ON 5 secondPump OFFServo Rotate 90°DC motor ON	✓
		X1 & X2 & X3 < 4000 & color "red"	DC motor off	✓
DHT11	Humidity	Hum < 90	Servo Hum rotate 90° (wait 10s)Servo rotate 90° twice	✓
		Hum > 90	Servo Rotate 0°	✓

Result

Plant Specs

- Water every 10 hours.
- Sunlight from 6-11 am & humidity at 60% - 85%.
- Pour 100 ml evenly.
- Optimal soil moisture: 2000.



Day 1



Day 4



Day 7



Day 10



Day 13



Day 16



Day 19



Day 22



Day 25

Result

[Link to Google Drive](#)



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Conclusion

- Agriculture plays a vital role in society, but faces challenges due to population growth, declining interest in farming, and the need for technological advancements.
- The Botany Buggy integrates various sensors and technological components to automate plant care. Sensors collect data on soil moisture, humidity, and color, which are then processed to control actuators for watering, misting, and other functions.
- The project employs components such as soil moisture sensors, DHT11, IR sensors, and ESP32, alongside concepts like Pulse Width Modulation (PWM) to control servo motors.
- The project demonstrated significant improvements in plant care efficiency. Specific parameters were monitored and managed, ensuring optimal conditions for plant growth.
- The Botany Buggy's technology facilitates efficient and responsive plant care, addressing the demands of modern agriculture, thus promoting sustainable farming practices.



THANK YOU!



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