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SmartCare- Plants care assistant system Using fertilizers

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Abstract:" SmartCare" is an innovative plant care assistant System that enrages advanced technology to ensure optimal plasthe- alth. The system utilizes three distinct Fertilizers and precise water The care and nurturing of plants have long been a cherished practice For many, offering not only natural beauty but also a sense of well-Being and tranquillity. However, as urbanization and busy lifestyles Become the norm, the demands of plant care can present challenges. The horticultural industry, encompassing gardening and landscaping, Has seen steady growth. Yet, there is a growing need for innovative Solutions to simplify plant care and make it more efficient. Ring Techni- ques to support and replicate the photosynthesis process, providing plants with ideal conditions for growth and vitality.

I. INTRODUCTION

The care and nurturing of plants have long been a cherished practice for many, offering not only natural beauty but also a sense of well-being and tranquility. However, as urbanization and busy lifestyles become the norm, the demands of plant care can present challenges. The horticultural industry, encompassing gardening and landscaping, has seen steady growth. Yet, there is a growing need for innovative solutions to simplify plant care and make it more efficient.

Plant enthusiasts face a range of challenges. With varying knowledge levels and limited time, maintaining the correct watering, nutrition, and ideal growing conditions can be complex. Issues like overwatering, underwatering, and nutrient imbalances can impact plant health.

II. EXISTING SYSTEM AND ITS LIMITATIONS

- The existing methods of plant care predominantly rely on traditional manual approaches, which require individuals to personally oversee and manage the needs of their plants. This conventional method involves routine tasks such as watering and fertilizing based on personal knowledge and a predetermined schedule. However, it presents several limitations, particularly the potential for human error, leading to overwatering or underwatering, especially when users have busy daily routines. Moreover, this method often lacks adaptability to the unique requirements of different plant species, resulting in suboptimal care.

- Another existing approach is the use of timer-based systems that automate watering at fixed intervals. While these systems reduce the need for manual intervention, they are rigid and do not account for changing environmental conditions or the specific needs of different plants. Sensor-based systems represent a more advanced approach, where soil moisture sensors trigger watering when the soil is too dry. Nevertheless, they may lack real-time monitoring and the ability to offer precise care recommendations beyond basic moisture levels.

- In recent years, traditional Internet of Things (IoT) solutions have been introduced for plant care. These solutions typically combine sensor technology with mobile apps for remote control. However, they often fall short in providing comprehensive, data-driven recommendations and the capacity to adapt effectively to users' preferences and the diverse care requirements of different plant species.

- The "Smart Care" project seeks to overcome these limitations by introducing an innovative approach that provides real-time monitoring, automated care, and intelligent recommendations. By doing so, it aims to make plant care more accessible, efficient, and effective for a wide range of users, addressing the shortcomings of existing methods.

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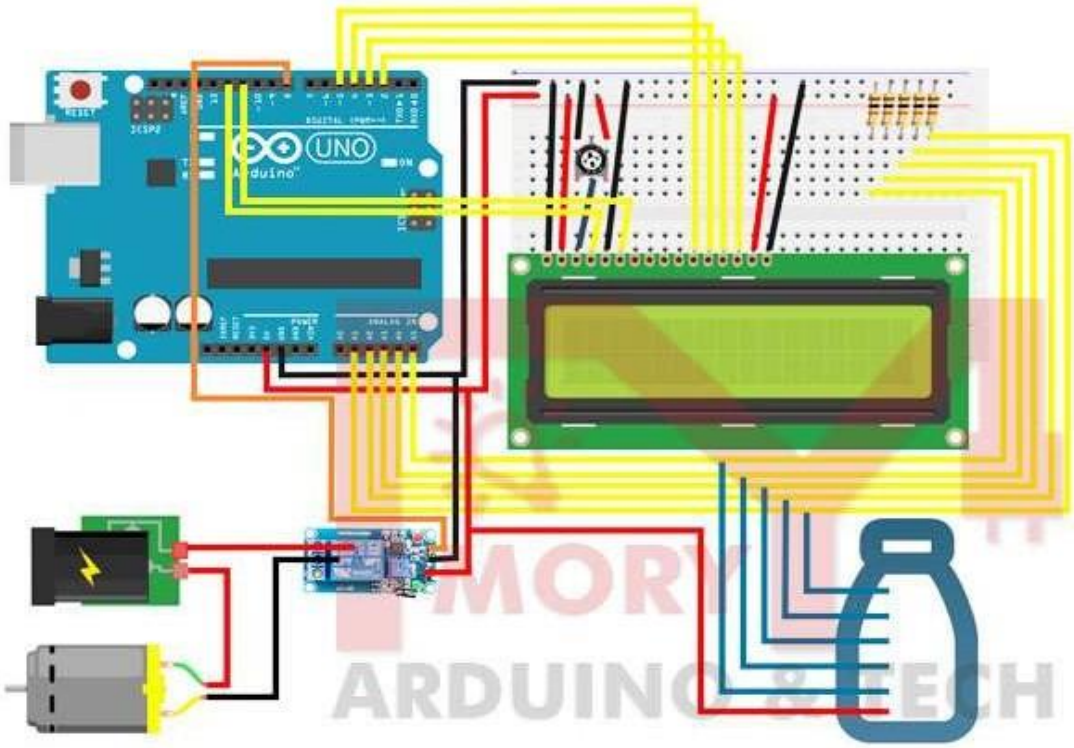
III. PROBLEM STATEMENT

During the unprecedented challenges posed by the **COVID-19** pandemic, the "**Smart Care**" project emerged as a response to the urgent need for innovative solutions in plant care. The pandemic drastically altered daily routines and emphasized the significance of remote and automated systems. With individuals spending more time at home, the demand for efficient and user-friendly plant care solutions increased significantly. This period highlighted the vulnerabilities of traditional manual care methods, which often required frequent in-person attention to plants. The "**Smart Care**" system's automated features, real-time monitoring, and remote control options became particularly relevant during the **COVID-19** crisis, allowing plant enthusiasts to maintain their green spaces while adhering to social distancing guidelines. The project addressed the challenges of plant care in a world grappling with the impacts of **COVID-19**, offering a technologically advanced and convenient solution to ensure that plant health and well-being remained a source of comfort and positivity during these challenging times.

IV. SCOPE OF PROJECT

The "Smart Care" project boasts an extensive scope that encompasses various facets of plant care, with its core objectives centered around automation, real-time monitoring, user customization, environmental sustainability, and remote accessibility. The system aims to automate critical plant care tasks, such as watering and fertilization, reducing the manual effort required by users and guaranteeing precise and consistent care. By providing real-time plant health data through an intuitive mobile app, the project ensures that users have immediate insights into their plant's well-being. Furthermore, users will have the flexibility to customize care schedules and preferences based on the unique needs of their plants. Environmental sustainability is a focal point, with the project striving to minimize resource wastage and promote eco-friendliness in plant care, aligning with government schemes emphasizing environmental protection and conservation. Moreover, the system allows remote monitoring and control, which was particularly distancing guidelines. In alignment with government initiatives, the "Smart Care" project complements urban greening programs, water conservation initiatives, and smart city objectives, contributing to the broader goals of environmental protection and sustainable urban development. This scope positions the project as a holistic and forward- thinking solution in the realm of plant care.

SCHEMATIC DIAGRAM



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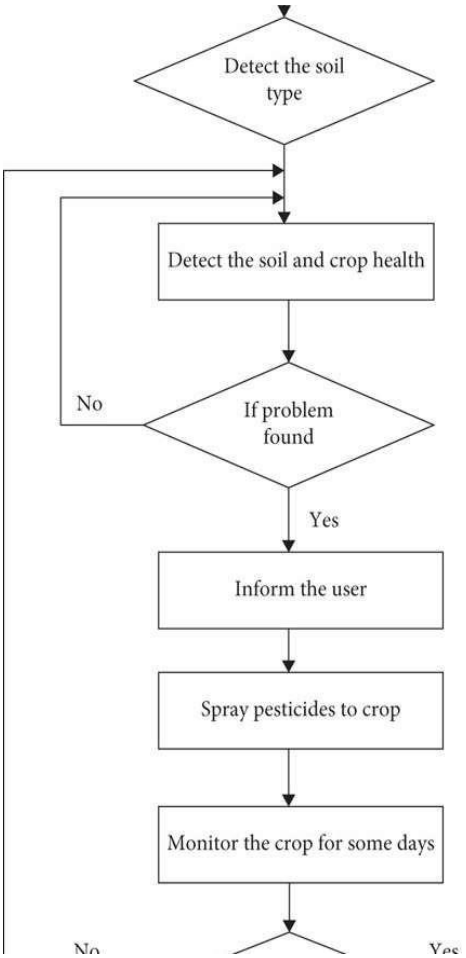
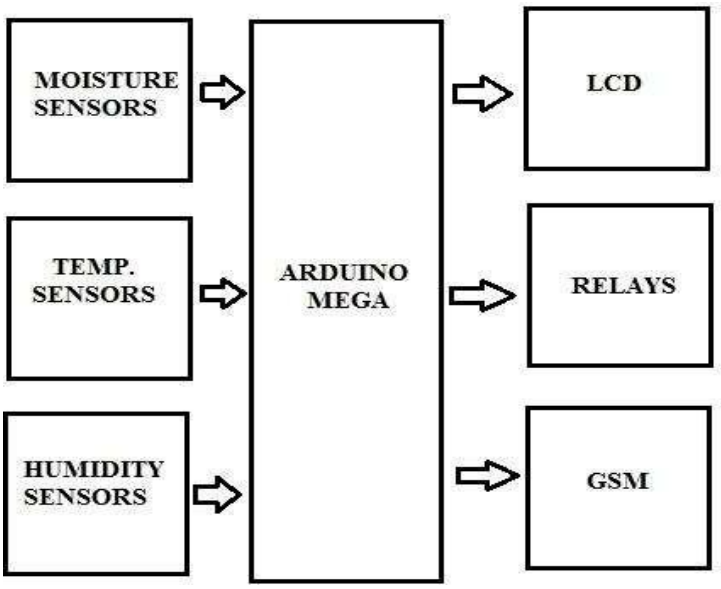
FLOW CHART



BLOCK DIAGRAM OF



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V. WORKING

After setting up the Smart Dustbin and making all the necessary connections, upload the code to Node MCU and provide 5V power supply to the circuit. Once the system is powered ON, Node MCU keeps monitoring for any object near the Ultrasonic Sensor.

If the Ultrasonic Sensor detects any object like a hand for example, Node MCU calculates its distance and if it less than a certain predefined value, Node MCU will activate the Servo Motor and with the support of the extended arm, it will list the lid open. After certain time, the lid is automatically closed.

Setup is given below

- **Specifications of Male to Female Connecting Wires**

- 1 x 20cm male to female breadboard connecting wires
- Easy to plug in
- Durable, Flexible
- Multiple Colours
- Jumper wire size : 26 AWG
- Current Rating : up to 1 A
- Insulation Type: PVC

VI. CONCLUSION

In conclusion, Smart Care Plant Systems offer a comprehensive and innovative solution for plant care. These systems provide automated, efficient, and secure monitoring and care for plants, promoting their health, water conservation, and convenience for users. Additionally, they serve as valuable educational tools for technology enthusiasts. In summary, Smart Care Plant Systems represent a significant advancement in the realm of plant care and environmental management. By combining automation, remote monitoring, and robust security features, these systems address the challenges of efficient watering, plant health, and user convenience. They also contribute to water conservation efforts, which is increasingly important in our environmentally conscious world. Furthermore, these systems offer a user-friendly interface that simplifies plant care management, making it accessible to a wide range of users. Beyond their practical advantages, Smart Care Plant Systems serve as engaging educational platforms for those interested in exploring electronics, IoT technologies, and automation, fostering creativity and learning in the process

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