

A Review on Plant Growth Analysis and Disease Detection

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Abstract:- This paper proposes a complete automatic plant light supplementary system that analyses the growth of indoor plants and detects and classifies plant diseases by using an image processing technique. Also suggesting basic treatment according to the diseases detected. Sunlight is the most necessary thing needed for indoor plants and if it is not available it will affect their growth. We introduce a solution for this problem by providing the necessary light for indoor plants using the smart bulb and also analysing the plant's growth. The system consists of different types of sensors to detect humidity, temperature, and soil moisture. Based on sensor outputs complete growth analysis of the plants is provided to a user through an application.

Keywords:- Indoor plants; Sensors; Plant Diseases; Image Processing, Android application.

I. INTRODUCTION

Sunlight is the most essential factor need for the growth of indoor plants. If it does not get enough sunlight, its growth will be affected. Solving this problem is an important. Visible light is a critical environmental component for plant photosynthesis. The visible light spectrum ranges from 360 to 860nm. The effective absorption band for plant photosynthesis is mostly red and blue light, and smart bulb is a new generation of light source. Artificial light filling is required to boost plant photosynthetic production and extend the photoperiod of plant illumination. We designed a plant light supplement system based on smart bulb light source and Wi-Fi module which is able to automatically supply differential light illumination according to the plant light requirement. It automatically analysis the complete growth of the plant and by using image processing technique detect the diseases of the plants and provide basic suggestions. By using different sensors, its analysis the temperature, humidity, soil moisture content and developing an android application that

is connected by WIFI module, user can access all the details of the plants and also known about the disease detected.

II. LITERATURE REVIEW

In [1] Methodological model of Lightning Energy Plant integrated with different energy extraction processes to harness Lightning Energy. Simulation model of lightning energy plant has been proposed in MATLAB/Simulink environment. The overall system of lightning energy plant is demonstrated to produce lightning in indoor. The efficiency and viability of the proposed scheme is yet to be discovered.

The paper [2] describes a Complex Network Approach for Plant Growth Analysis using Images. Theory of complex network on visible images from a plant phenotyping system technique is used. Plant growth status, plant to plant interactions, and correlation among the plants under the observing community. Setting the threshold for creating the network, and with fewer data points it is difficult to observe the detailed dynamics of the system through network.

In paper [3] introduces Plant Leaf Detection and Disease Recognition using Deep Learning. Deep Learning approach for detecting various diseases in several plant varieties. The plant leaf is infected with disease or not, identifies the plant disease and recognizes its variety. Only 32 different plant varieties and types of diseases is being included in dataset.

In paper [4] describes a framework for plant growth analysis and simulation using data analysis techniques. Monitors the plant growth and sends the data to a centralized database using regression, gradient descent, clustering. Help to predict the real-time conditions for best plant growth and also identifies problem and conditions of crop. The main drawback is lack of accuracy.

III. PROBLEM STATEMENT

This paper is introduced to solve the main issue on the complete guidance of indoor plants. People usually are busy with their daily schedules and rarely have their time to look after the indoor plants. When people have their plants on outdoors, they usually keep gardeners to look after them. If they grow plants as agriculture they look after them because of their occupation. But in case of indoor plants, people keep plants for decoration purposes, and also to grow healthy indoor vegetables. But these purposes do not matter to people because they do not affect their daily life. Plants used for decoration purposes will be kept they're for 2-3 months then when the plants are dead it will be thrown away and a new one will be brought up. Instead of letting it die we have introduced a complete guidance application to look after them.

IV. PROPOSED SYSTEM

Our app provides complete guidance over indoor plants. Our app provides features where smart bulb can be used to give light energy source to plants. Indoor plants usually will be kept in places where efficient light energy cannot be reached, so plants will have deficiency in light energy. So, our app controls the smart bulb to provide efficient light energy. Then our app provides another feature to detect diseases and provide suggestion for their treatment. With the help of image processing, we can capture the image of the plant and identify whether it is healthy or not. If it is not healthy, basic suggestions will be provided to improvise the plant to become healthy.

V. CONCLUSION

This paper mainly deals with the indoor plants that people grow for decoration purposes as well as to grow some fresh vegetables inside home. These indoor plants are being given complete guidance through our application by testing these plants through various sensors such as soil nutrition, soil moisture, humidity, temperature etc. These plants are also being tested with image processing to identify their diseases and suggest for their basic treatment.

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