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AUTONOMOUS AGRICULTURAL ROBOT BASED ON IOT

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Abstract:- Climate change, a lack of soil nutrients, a decrease in pollinators, plant diseases, and water waste from conventional irrigation techniques that cause water clogging on top soil are all contributing factors to our nation's food issue. The issues are resolved by the suggested model, which contributes to a rise in agricultural irrigation efficiency. Microcontroller VEGA AS1061 is used in this system. The purpose of the spack fun soil moisture sensor is to periodically measure the soil's moisture content and nutrients in order to develop a workable and reasonably priced model. DHT11 is used to measure temperature and humidity. And PH of soil is measured by PH sensor. With the help of sim 900 GSM module the status of soil moisture, PH level, soil nutrients and temperature is sent to the farmers' phone. Farmers are provided with information using machine learning object recognition and picture classification, which may identify pests, animals, and birds.

1. INTRODUCTION

1.1 GENERAL

Agriculture is the backbone of economic system of a specified country standard techniques of farming rely on Man power and old procedures such as the application of synthetic chemical fertilizers, pesticides, herbicides and genetically changed creatures. To carry out similar tasks with efficiency, we make use of agricultural robotics. Agribots can spot the existence of diseases, weeds, insect infestations and other stress circumstances. Agri robots are lightweight. Agricultural robot can be controlled by an android application which is helpful for the farmers livelihood. An android application is used to monitor Agribot. This indeed supports the farmer's livelihood. Nevertheless, current methodologies that permit highly mechanised group of primary phenotypic data for compact numbers of plants in the greenhouse fall far short of the requirement to look into and distinguish plenty of plants under real world circumstances. Building structures that can gather multi-modal, multicharacter data in real time in the field needs joining plant biology and crop science with robotic vision and computer engineering. These structures should be precise and dependable, and should supply exceptional facts than the present routine accessible for

automated greenhouse or physical field phenotyping. This will assist us to associate plant genotypes in additional to the molecular and ecophysiological responses with the interpretation of particular phenotypes in retaliation to the flourishing surroundings.

2. LITERATURE SURVEY

2.1 EXISTING SYSTEM

The existing agricultural systems predominantly rely on manual labor and traditional farming equipment for tasks such as planting, monitoring, and harvesting crops. These methods are labor-intensive, time-consuming, and often inefficient, with limited ability to collect and analyze real-time data for optimizing farming practices.

2.2 PROPOSED SYSTEM

The proposed system leverages IoT technology to develop an autonomous agricultural robot capable of performing various farming tasks. This robot is equipped with sensors and connected to an IoT network, enabling real-time data collection and analysis. The system allows for precise monitoring of soil conditions, crop health, and environmental factors, enabling automated and optimized decision-making for planting, irrigation, and harvesting, thereby increasing efficiency and productivity in agricultural operations

3. BLOCK DIAGRAM

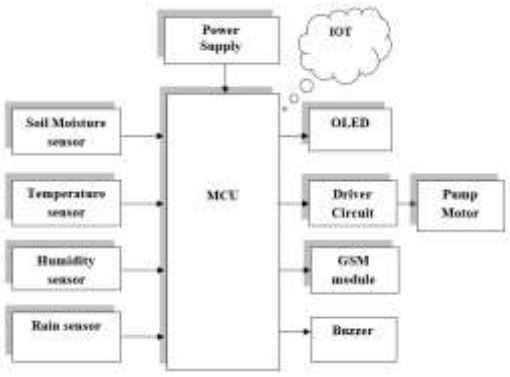

FIG: 1 Block diagram

3.1. HARDWARE COMPONENTS

- Regulated power supply.
- Micro controller.
- Soil moisture sensor
- Rain sensor
- Temperature sensor

3.2. SOFTWARE REQUIREMENTS:

- Embedded C

4. IMPLEMENTATION

Microcontroller VEGA AS1061 is used in this system. The purpose of the spack fun soil moisture sensor is to periodically measure the soil's moisture content and nutrients in order to develop a workable and reasonably priced model. DHT11 is used to measure temperature and humidity. And PH of soil is measured by PH sensor. With the help of sim 900 GSM module the status of soil moisture, PH level, soil nutrients and temperature is sent to the farmers' phone. Farmers are provided with information using machine learning object recognition and picture classification, which may identify pests, animals, and birds.

5. CIRCUIT DIAGRAM

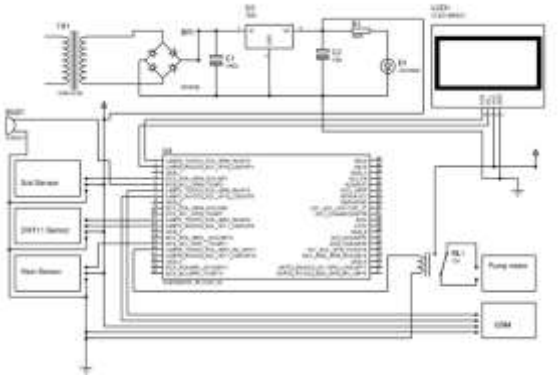

Fig circuit diagram

6. RESULT

This project is well prepared and acting accordingly as per the initia specifications and requirements of our project. Because of the creative nature and design the id of applying this project is very new, the opportunities for this project are immense. The practical representation of an experimental board is shown below:

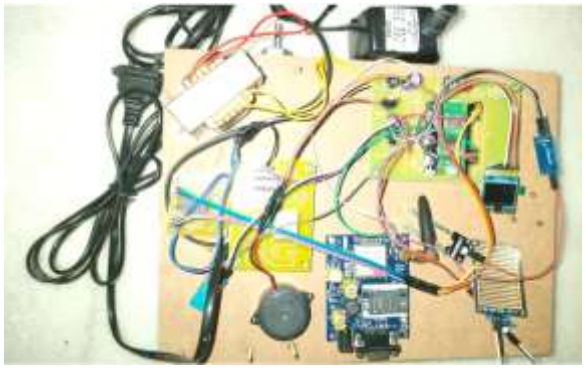

Fig:3. Project Model

6. CONCLUSION

This paper is primarily based on keeping down the labour force and price of machinery, that will be economical to the farmers. The current successful robots needs a skilled technician because these robots constitutes the use of powerful fuel based IC engines and hefty machinery, It also causes needless environmental pollution and it also causes cut down in fossil fuel. To overcome these issues, the usage of automation agrobot is applied by this project. This device cultivates the field on its own. This automated device called as “Agri-Bot” is distinctively built to ease the farmers so that the demand of food is accomplished conveniently. An agribot delivers enhanced result than hand-operated structure. It is an automated agribot, which is operated on the basis size of field, size of seed and in which mode it is functioned. This agribot should be handled by making use of an algorithm for the well-being of farmers and linked by making use of Arduino board. We foresee that this agri-bot will modify the method of farming in the approaching days. The application of robot significantly saves time, energy, labour, and also it is inexpensive. Thus, farming is made simple and efficient.

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