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Author Guidelines for the Preparation of Contributions to Springer Computer Science Proceedings

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Abstract: *In this era, we can see farmers are not so well educated and not tend to have knowledge about farming. So looking all over the problems and drawbacks we have designed this model. This model works on solar as solar is unlimited resources were there is 0 cost of charging the robot. We have overcome with a drawback of battery which will last for long period of time, which means farmers can all day long. As we have surveyed nearby farm from them, we have gathered some information stating that few days there is electricity available. Which another drawback for the farmer while farming. To overcome this issue we have designed the battery for the robot. This Robot reduces 99% of work of a farmer which is he can get education from that robot as well as tips from it so that he can get a good profit out of the output.*

Keywords: Soil Analysis, Precision Agriculture, Automation, Field Mapping.

I. INTRODUCTION

In this era, we can see farmers are not so well educated and not tend to have knowledge about farming. So looking all over the problems and drawbacks we have designed this model. This model works on solar as solar is unlimited resources were there is 0 cost of charging the robot. We have overcome with a drawback of battery which will last for long period of time, which means farmers can all way long. As we have surveyed nearby farm from them, we have gathered some information stating that few days there is electricity available. Which another drawback for the farmer while farming.

To overcome this issue, we have designed the battery for the robot. This Robot reduces 99% of work of a farmer which is he can get education from that robot as well as tips from it so that he can get a good profit out of the output.Due to which the farmers could not understand properly about the crops and also the major cause for growing the crops any time in the year.

The crops lead to the failure due to which they went into a great loss. Also, they cannot afford to go to the educational hub to get the knowledge about the cultivation. So, for overcoming this issue we are designing “Agri-bot”. A specialist robot which helps every need of a farmer.

In Existing system, there are many robots in the agriculture sector, but they just do the needful things for the crops.

They are operated only for cultivating the land and planting seed in the land.

Hence those robots were not able to share any information about the crops and time for which crops should be planted.

As we have seen in earlier times the robots were not so responsive to the system, and would create a bug while operating in the field.

In our system we have added few new technologies that would help farmer to grow healthy crops and can get education from the robot.

We have added all information about the farming in our system, so that farmer can access that information easily anytime anywhere.

The robot works on battery which can power the robot all round for 30 hours in single charge.

And Thanks to our Sensors which help the farmer to get information when to spray fertilisers and pesticides on the crops, and also get the information about the minerals present in the soil.

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II. LITERATURE SURVEY

In literature survey we came to know that in pervious existing service there was no such technology for this agricultural sector.

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Also, by surveying with farmers, we asked few questions regarding the problems, the main problem is was of buying the expensive equipment's for farming.Hence by buying the farmer led to debt and from that it was not possible to remove the debt.

A literature survey of robots in agriculture provides a comprehensive overview of the current state of research and development in the field. The use of robots in agriculture has been a growing trend in recent years, as farmers look for ways to increase efficiency, reduce labor costs, and improve crop yields.

One of the main areas of research in this field has been the development of autonomous robots for various tasks in agriculture, such as planting, cultivating, harvesting, and monitoring crops. Autonomous robots can perform these tasks more efficiently and accurately than humans, reducing the need for manual labor and increasing the overall productivity of the farm.

The use of robots in precision agriculture has also been widely studied. Precision agriculture involves using technology and data to optimize crop production and minimize waste. Robots can be used to precisely measure and control inputs such as fertilizers and water, as well as to monitor crop growth and health in real-time.

In addition, there has been a growing interest in the use of robots for post-harvest processing and handling, such as sorting and grading, packaging and palletizing, and transportation. These robots can help reduce waste and increase the efficiency of the post-harvest process, leading to increased profitability for farmers.

Overall, the literature survey of robots in agriculture highlights the potential benefits of these technologies for increasing efficiency, reducing costs, and improving crop yields. However, it also highlights the need for continued research and development in this field, as well as the need for the adoption of these technologies by farmers in order to realize their full potential.

In paper [1], Ashish Lalwani, MrunmaiBhide and S. K. Shah, "A Review: Autonomous AgribotFor Smart Farming", 46thIRF International Conference, 2015.

Increasing population requires the food production to be increased which requires bettercultivation in the form of proper utilization of seeds and fertilizers with minimum labor work.The main objective of autonomous Agribot is efficient utilization of resources and to reducelabor work. It can perform various tasks like soil testing, sowing of seeds, spraying offertilizers and harvesting of fruits.

In paper[2],AkhilaGollakota and M.B. Srinivas, "Agribot-A multipurpose agricultural robot", India Conference (INDICON, 2011.

Agribot is a robot designed for agricultural purposes. It is designed to minimize the labor of farmers in addition to increasing the speed and accuracy of the work. It performs the elementary functions involved in farming i.e., ploughing the field, sowing of seeds and covering the seeds with soil. The robot is autonomous and provides the facility for

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optional switching of the ploughing system when required. PSoC (Programmable System on Chip) controller from Cypress Semiconductor, USA is used to control the robot.

In paper[3], M. Priyadarshini and Mrs. L. Sheela, "Command based self-guided digging and seed sowing rover", International Conference on Engineering Trends and Science & Humanities, ISBN 2348-8379.

It gives acknowledgement massage of seed tank empty or full to the farmer [5].

In paper[4], Amer S.M.M. Gulam and M.A. Malik Mudassir, "Design and operation of Wi-Fi Agribot Integrated system", International Conference on Industrial Instrumentation and control (ICIC), 2015.

Robotics in agriculture is not a new concept; in controlled environments (green-houses), ithas a history of over 20 years. Research has been performed to develop harvesters forcherry tomatoes, cucumbers, mushrooms, and other fruits. In horticulture, robots have beenintroduced to harvest citrus and apples. In this paper autonomous robot for agriculture (Agribot) is a prototype and implemented for performing various agricultural activities likeseeding, weeding, spraying of fertilizers, insecticides.

III. PROPOSED METHODOLGY

Structuring Your Paper

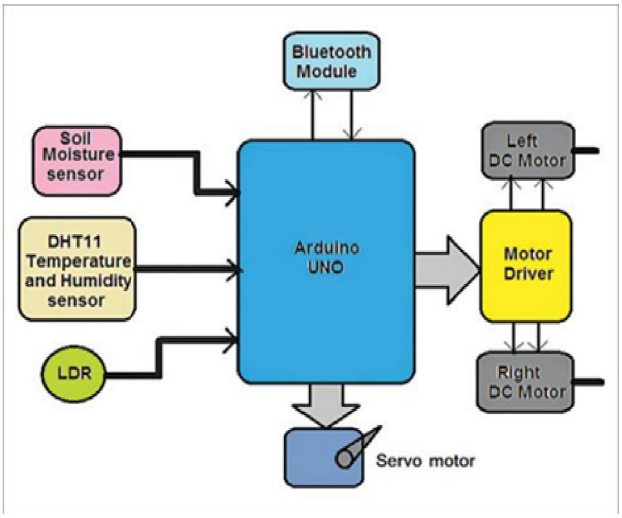

Fig 1.1

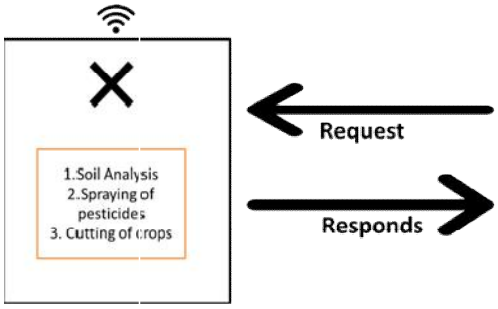

Fig: 1.2

A proposed methodology for developing and implementing Agribots in the agriculture industry could include the following steps:

1. Identify areas for improvement: Conduct a thorough analysis of current agriculture practices to identify areas where Agribots can be used to improve efficiency, reduce costs, and increase crop yields.

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2. Define requirements: Based on the results of the analysis, define the requirements for the Agribot system, including functionality, sensors, cameras, and other equipment.
3. Design and development: Develop a detailed design for the Agribot system, taking into account factors such as cost, reliability, and ease of use. This could involve a combination of hardware and software development, as well as testing and refinement.
4. Field testing: Once the Agribot system has been developed, conduct field tests to validate its performance and make any necessary adjustments. This could involve testing the Agribot in a variety of different crop environments and monitoring its performance over time.
5. Implementation: Roll out the Agribot system to selected farms and monitor its performance, collecting feedback from farmers and making any necessary improvements. Gradually scale up the implementation of the Agribot system to more farms as needed.
6. Evaluation and continuous improvement: Regularly evaluate the performance of the Agribot system and make any necessary improvements to enhance its functionality and efficiency. This could involve incorporating new technologies, modifying existing systems, or adjusting the design and deployment strategy.
7. The key to a successful Agribot implementation is to approach it in a systematic and step-by-step manner, taking into account the unique requirements and conditions of the agriculture industry.

IV. WORKING OF THE MODEL

In the above diagram (fig1.1) we can see that the working of the robot and the internal components of it. We will be using Arduino Uno or Node MCU anyone can be applicable for the working of the robot. As the robot will be running on the low power and giving the maximum ben-fits to the farmer.

Moving onto the working structure of the robot. It is de-sign to work on the wireless connectivityi.e.,Bluetooth (fig1.2).The program will operate the main board(Arduino or Node MCU) to other electrical devices such as Motors sensors etc. So, the Bluetooth will receive the command and this command will be sent to the main board and from the command will be checked and the task will be assigned to the particular component.

The electrical component will be doing the assigned task and till the time when the user terminates the assigned task. The limited amount of power will be transferred to the component or required amount of power; this is because the robot will be lasting for longer period of time.

Hence, there will be no issues with the battery life with the robot. If the user does not assign the task for limited time period, then the robot will automatically go on sleep mode.

Agribots, or agricultural robots, are autonomous or semi-autonomous machines designed to perform tasks related to agriculture such as planting, harvesting, soil cultivation, and monitoring of crops and livestock. The working of an Agribot typically involves the following steps:

1. Task execution: Based on the data collected, Agribots can perform tasks such as planting, harvesting, and soil cultivation, reducing the need for manual labor and increasing efficiency.
2. Resource management: Agribots can help optimize the use of resources such as water, fertilizer, and pesticides, reducing waste and increasing sustainability.
3. Data analysis and decision making: The data collected by Agribots is analyzed and used to make informed decisions on crop management, such as when to water, fertilize, or apply pesticides.
4. The working of Agribots is driven by advanced algorithms and artificial intelligence, which allow them to make intelligent decisions based on the data collected and perform tasks with a high degree of accuracy and efficiency. The development of Agribots is ongoing, and as technology continues to improve, it's likely that they will become even more capable and versatile in the future.

V. ADVANTAGES

1. The work of farmers can be done in very less period of time with Agribot.
2. Applying pesticides, time to time cutting vegetables, fruits, etc this main work the Agribot handle with ease.
3. The consumption of water can also be reduced.

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4. Farmers will feel self-employed as their dependency awork decrease.

VI. DISADVANTAGES

1. Implementation of Agribot in agriculture is costly.
2. Maintenance is more of agtibot.
3. Those farmers who will operate Agribot should be skilled in technology.

VII. FUTURE SCOPE

A huge contribution to the agricultural sector.The Bot will be the helping hand for the farmers.The flow of the Agriculture will be ina better way.Agriculture will be on the next level,cause it not only help the farmers but will be the greatest growth in the agriculture sector.

We focus on the Urban areas and less on the rural areas,so as a new future in agricultural sector we have contributed our ideas so that farmers can also get an experience in technology and can just drift away the issues faced by a farmer. Hence for this the robot has been designed and as partner to the farmer. Nowadays farmers need to invest a lot of money in equipment's whereas this robot will do the things which all the expensive equipment's were performing.

Agribot, or agricultural robots, have the potential to revolutionize the agriculture industry by improving efficiency, reducing costs, and increasing crop yields. Here are some of the key areas where Agribots are expected to have a significant impact in the future:

Precision Agriculture: Agribots equipped with sensors, cameras, and GPS systems can collect real-time data on soil moisture levels, crop health, and pest infestations, which can then be used to make data-driven decisions on crop management.

Automated Farming Operations: Agribots can perform various tasks such as planting, harvesting, and soil cultivation, reducing the need for manual labor and increasing efficiency.

Climate-controlled Greenhouses: Agribots can be used to monitor and control the environment in greenhouses, allowing for year-round crop production, regardless of weather conditions.

Livestock Monitoring: Agribots can be used to monitor livestock health and well-being, as well as track their movements and behavior.

Resource Management: Agribots can help optimize the use of resources such as water, fertilizer, and pesticides, reducing waste and increasing sustainability.

Overall, the future of Agribots is very promising, and their use is expected to become more widespread as technology continues to improve and costs come down.

VIII. CONCLUSION

In this project, we are developing the robot that is a helping hand to the farmer and also an investment to the rural area. This system is more flexible than traditional system.

This system helps to reduce human efforts.Thus, it has made possible to automate the most significant working routines.Also, this system helps to drift away all the problems that are faced by the farmers nowadays. We have added all information about the farming in our system, so that farmer can access that information easily anytime anywhere.

In conclusion, Agribots have the potential to greatly impact the agriculture industry by improving efficiency, reducing costs, and increasing crop yields. With their ability to perform tasks such as planting, harvesting, and soil cultivation, Agribots can reduce the need for manual labor, freeing up time and resources for other tasks. Additionally, their ability to collect real-time data on crop health and soil moisture levels, as well as control the environment in greenhouses, can lead to more data-driven decision making and increased sustainability.

However, it's important to note that the widespread adoption of Agribots may also have negative consequences, such as job loss for human workers and a potential for increased income inequality in rural areas. Therefore, it will be important for policymakers and industry leaders to carefully consider the potential benefits and drawbacks of Agribot technology and ensure that its development and implementation is carried out in a responsible and ethical manner.

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