



# SOLAR POWER BASED MULTI PURPOSE AGRICULTURE ROBOT USING ANDROID APPLICATIONS

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**Abstract**— More than 40 percent of the population in the world chooses agriculture as the primary occupation. The main objective of the project is to design a multitasking vehicle for agriculture which could run automatically. It is designed to minimize the labour of farmers in addition to increase the speed and accuracy of the work. With innovation in every field of our lives, agricultural field also gets impacted by technological innovations on a huge scale. agriculture is backbone of India. In order to support this, a multi-functioning robot is required. Smart agriculture is implemented to save the manpower and time of work with help of multitasking. The main aim of the project is to provide the smart farming at low cost without compromising on the efficiency of the processes involved. The multitasking robot perform the ploughing, seed dispensing and water pumping to the fields using the Arduino UNO and Bluetooth terminal HC-05 module. This ensures the using eco-friendly energy source and prevents frequent charging of the vehicle.

**Keywords:** Agriculture robot, Ploughing, Seed despancer, Water sprinkling

## I.INTRODUCTION

An Embedded System is a combination of computer hardware and software, and perhaps additional mechanical or other parts, designed to

perform a specific function. A good example is the microwave oven. Almost every household has one, and tens of millions of them are used everyday, but very few people realize that a processor and software are involved in the preparation of their lunch or dinner.

This is in direct contrast to the personal computer in the family room. It too is comprised of computer hardware and software and mechanical components (disk drives, for example). However, a personal computer is not designed to perform a specific function rather; it is able to do many different things. Many people use the term general-purpose computer to make this distinction clear. As shipped, a general-purpose computer is a blank slate; the manufacturer does not know what the customer will do wish it. One customer may use it for a network file server another may use it exclusively for playing games, and a third may use it to write the next great American novel.

Frequently, an embedded system is a component within some larger system. For example, modern cars and trucks contain many embedded systems. One embedded system controls the anti-lock brakes, other monitors and controls the vehicle's emissions, and a third displays information on the dashboard. In some cases, these embedded systems are connected by some sort of a communication network, but that is certainly not a requirement.

## II.EXSTING SYSTEM :

In present days, farmers are using various machines for various purposes like seed dispensing, ploughing and water sprinkling

We conducted a survey on the where the farmers are facing many problems regarding to the ploughing and seed dispensing in the manual process. As there are no well organized equipment's to support the farmers. Modern techniques are need to be implements.



Fig : water pumping machine



Fig: ploughing machine



Fig: seed dispenser

## III.PROPOSED SYSTEM

This is the advanced booming technology in the agriculture sector. However, certain considerations and approaches should be taken when designing these types of robots, taking into account the agricultural setting in which they will be used. The main aim of this project is to provide smart farming at low cost without compromising on the efficiency of the processes involved. This paper discusses the design

procedure and development of multitasking robot that could be applied for agricultural purpose like soil digging, sowing seeds as well as water pumping to the field. This robot works on solar energy and will also help in conserving non-renewable energy resources on a large scale thereby contributing towards the sustainability of our planet.

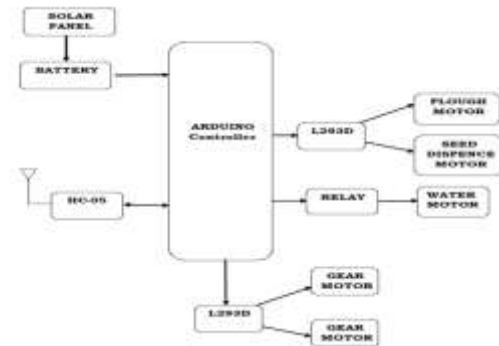


Figure: Block diagram proposed system

In this proposed system we have developed a robot for doing the purposes of seed dispensing, ploughing and water sprinkling. That can be operated with the HC-05 Bluetooth serial communication and ARDUINO used as main board.

The solar powered multipurpose agriculture robot using android application the gives the more efficiency in the agriculture fields.

## ADVANTAGES

- Low cost
- Easy construction
- Easy to operate
- Solar energy is a renewable energy and the battery is charged continuously
- Highly reliable
- No need of skilled operators to operate this system

## IV.RESULTS AND DISCUSSIONS

The solar power multi purpose agriculture robot using android application is a game changer in the agriculture fields. The outcomes of the project are saving of water seeds and reduction in the man power for the agriculture purpose.

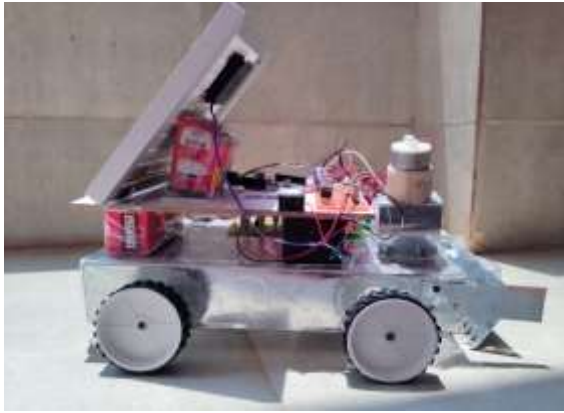


Figure: Multipurpose Agriculture Robot



Figure: Agriculture Robot Moving

## V. CONCLUSION AND FUTURESCOPE

Intended objectives were successfully achieved in the prototype model developed. The developed product is easy to use, economical and does not require any special training.

Hence, we have developed an solar power based multipurpose agriculture robot which is used for overall functioning of the farm with least use of manpower. Nowadays, the people involved in agricultural sector are decreased because of the influence of the modernisation and intervention of IT sector. The designed system can do the operations such as ploughing, seed dispensing and water sprinkling with manual involvement of manpower. This project can be used to manage the farm in a modern way. Also, this is more eco-friendly tool as it is run by solar power.

### FUTURE SCOPE

A solar-based multipurpose agriculture robot offers numerous possibilities for enhancing efficiency, productivity, and sustainability in farming practices. In future, by adding few sensors like soil moisture & ultrasonic sensors for extreme minimizing the human supervision. By using soil moisture sensor we can

detect the soil type. By Using the ultrasonic sensor we can implement the change the direction of the robot when the obstacle ahead

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