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Modelling of AGRO–BOT

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Abstract:- The main intention behind the development of thisidea and solution is to support the backbone of our country, which weighs 58.7 percent of the workforce in India, was employed in agriculture and around 30 percent of the workforce in the world. Automation will improve the lives of people working on the land and help them make better decisions. This document provides detailed information about the work and activities carried out by AGRO-BOT along with effective use of time to ensure increased productivity of the respective crops.

I. INTRODUCTION

Three of the most requested functions in agriculture arefarming, seed distribution and agricultural harvesting. agronomic management and crop protection could be improved by certain activities. The project's goal is to use the most modern technologies in the field of mobile robots and image processing to reduce monitoring time and costs. By performing all these actions with the help of a self- supporting robot, the individual health quality indicator will definitely increase compared to conventional methods. Humans are often assisted by robots in a variety of fields. The needs of people and industry have led to the improvement of the science of robotics. Mobile robots are one of the main areas of science. Mobile robots are able to communicate with each other. Mobile robots can be classified as autonomous mobile robots (AMRs) and self- guided motorized vehicles (AGVs). There is a difference between the two machines. The AGV is based on body guidance and moves in a pre-defined environment along a pre-defined path. AGV has been used in industry several times, but has recently given up its role in the industry. AGVs can be used for repetitive tasks and are usually designed and manufactured for specific tasks. The work to be done by AGVs should be carefully planned and all details should be explained by the organizer in AGVs because they can make decisions and have no decision- making process based on caution[6][7]. It can be difficult to transition quickly because AGVs operate according to established systems. project is to implement state-of-the-arttechnology in the field of mobile robots and image processing to reduce time and cost monitoring. By doing all these events with a self-supporting robot, the individual health quality indicator will definitely grow compared to conventional methods.

II. NEED FOR AGROBOT

- The profit/cost ratio of other important agricultural activities should be improved to improve the economic indicators of agricultural enterprises
- Crop protection products, fertilizer, and water are used in land management practices to reduce adverse impacts on the environment
- The best yield can be achieved in each crop area

III. PURPOSE OF AGRICULTURAL ROBOT'S

- The planting of a nursery
- Crop seeding is being done
- Monitoring and analysis of crops
- Irrigation and fertilization
- Weeding and spraying can be done on a crop
- Autonomous tractor
- Thinning and trimming are done
- Picking and harvesting can be done

IV. METHODOLOGY

➢ *The Design Phase was Affected by Some Major Constraints. These Factors are Outlined below:*

- Modularity
- Low-cost production
- Environmental Suitability
- Background

The robot field needs to be modular to add units. These units can be robotic arms, sprays, cutting tools, and other tools used in the agricultural field. Mobile robots are often valuable and therefore increasing the cost of research and development. There is also a distinct feature that increases the cost of production with a ready-made robot when it comes to producing large volumes. The robot needs to be off the road and able to pass small obstacles to be suitable for the agricultural sector. The robot has electrical appliances. The robot must be innovative and unique to contribute to scientific research. The above criteria apply to the design of computer software and robotic software. Each of the components was made and assembled based on the communication factor, which is what the model below was created with. External computer hardware is imported and integrated into a model assembly.

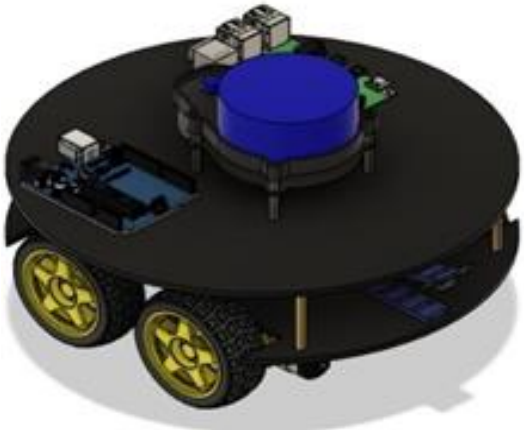

Fig 1 ISO View

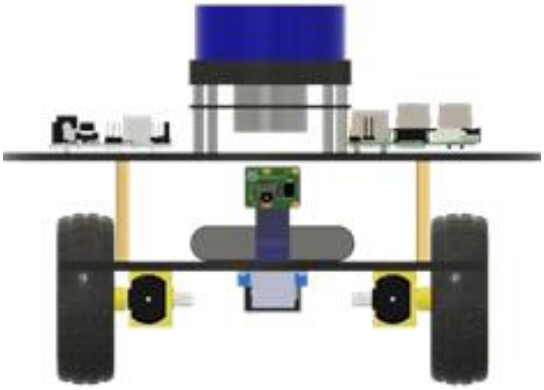

Fig 2 Front View

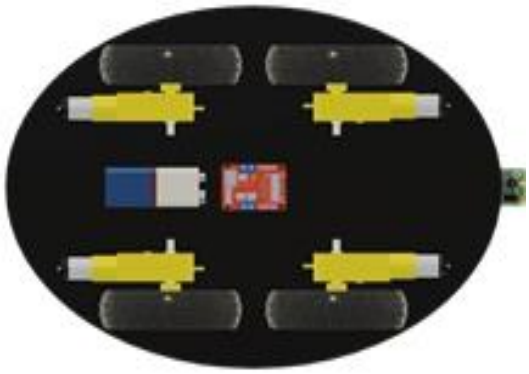

Fig 3 Bottom View

V. HARDWARE REQUIREMENTS

A. Arduino Uno

Arduino Uno is an open source microcontroller board based on the microchip ATmega328P microcontroller and developed by Arduino.cc. The board can be used to connect to other boards. The board has 14 digital I / O pixels (six PWM output), 6 PIN analog I / O pixels, and formatted with Arduino IDE (Integrated Development Area), with USB type B cable. power is a USB cable or 9-volt external battery, although it accepts volumes between 7 and 20 volts.

Fig 4 Arduino Uno

B. Raspberry Pi

The power of computer programming and visualization is what the Raspberry Pi Foundation works closely with. It does this by introducing low-performance, mid-range computers that people use to view, fix problems, and show humor. Provides access and training to help adults become computer-savvy and material-enhancing non-compliant materials to help people look at computers and do things with laptop systems and in addition trains teachers who can guide special people to watch.

Fig 5 Raspberry Pi 4 B+

C. L298N Motor Driver Module

This module is used for high power DC and Stepper Motor. The motor driver IC and controller are contained in this module. The L298N Module can control up to 4 DC motors, or 2 DC motors with steering and speed.

Fig 6 L298N Motor Driver Module

D. Wheel

The wheel of the BOT is intended to move the bear. The wheel is one of the most important parts of the whirl. The combination of the wheels and the axles allows the heavy objects to be moved more easily and to be easily transported while supporting a load or working on machinery.

E. Battery

An electric battery is a source of electricity that can be used to power electrical objects. When a battery is powered it has a positive and a negative terminal. The negative terminal is where the electrons will flow from the external electrical circuit to the positive circuit. The free energy difference is introduced into the external circuit when a battery is connected to an electrical load. The term "battery" refers to a device composed of many cells, but usage has advanced to include devices that are composed of single cells.

VI. CONCLUSION AND FUTURE CONSIDERATIONS

In conclusion, the Agro-bot seen in Fig. 2 is designed and constructed in accordance with the simulation design process. In the future the software structure will be completed. The robot will be integrated with additional features and attachments, which will be replicated and verified in ROS.

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