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AGRIBOT-A MULTIPURPOSE AGRICULTURAL ROBOT

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Abstract: In times, Automation mechanism is employed in several of the fields like defence, police work, medical field, industries, agricultural so on. During this project, the mechanism system is employed to develop the agricultural processes while not the employment of force. It provides manual management and keeps a track on the humidness with the assistance of humidness sensors. The most element of our projected system is that the Advanced Virtual computer architecture (AVR) at mega small controller that supervises the whole method. For manual management the mechanism uses the wi-fi affiliation application as management device and helps within the navigation of the mechanism within the sector. Solar array is employed for power offer to the mechanism. This is often particularly necessary for the security and health of the employees. Automation is that the ideal answer to beat all the shortcomings by making machines that perform all operations and automating it to extend yield on an outsized scale.

Keywords: Ploughing, Bluetooth, Water system, Soil sensors, ph sensors.

Introduction: Recently computing and robotics technologies have seen major improvements in technologies commonly employed in agricultural robotics: perception, manipulation, and autonomous vehicles. Perception is achieved through a variety of sensors and that can be applied to a small focused workspace or to the monitoring of vast agriculctural field through sensors that are distributed. Main motive of Automation Technology is to reducing the effort of labour, a phenomenon common in the developed world. The reasons are the need for improved the process of farmer working. Robotics and artificial intelligence offers in agriculture field to processes related to seeding, harvesting, to improve productivity and efficiency. The uses of robotics are spreading every day to accomplished further various agricultural fields, as the opportunity of replacing human operators provides effective solutions with return on investment. agricultural robots have been developed and implemented a number of agricultural products in many countries. This Agricultural robot can performs basic functions like harvesting, planting and spray the pesticides. The applications of agricultural robot widely used in the investment and research . autonomous farming is the operation, guidance, and control of autonomous machines to fullfill the agricultural tasks. It motivates agricultural robotics. The main goal of agricultural robotics is more than just the application of robotics technologies to agriculture. The multipurpose agricultural robots are designed to perform the basic functions of agricultural field. by using this robot agricultural operations perform autonomously such as ploughing, seed sowing, mud closing and water spraying. The main aim of the proposed system are to check the soil depending on moisture level in the soil, to ploughing the seeds with teeth's like structure at the end to turn the top layer of soil down, to close the seeds and level the ground automatically and to provide irrigation system by spraying water with a pump in the field.

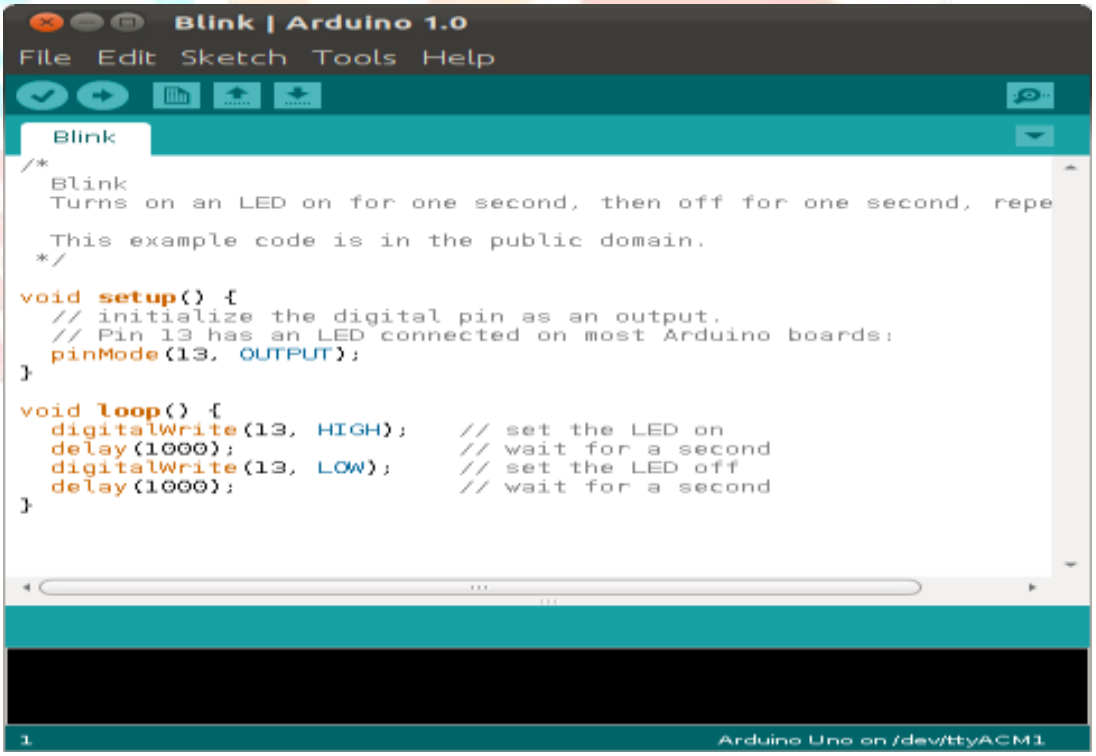
Problem statement: To develop a system which is capable of performing following actions:1. Automatic/Manual ploughing.2. Automatic/Manual sowing.3. Automatic/Manual watering.4.

Automatic/Manual soil levelling.5. Reducing work of farmers & increasing yield by proper maintenance using sensors such as soil moisture, temperature, humidity, water.

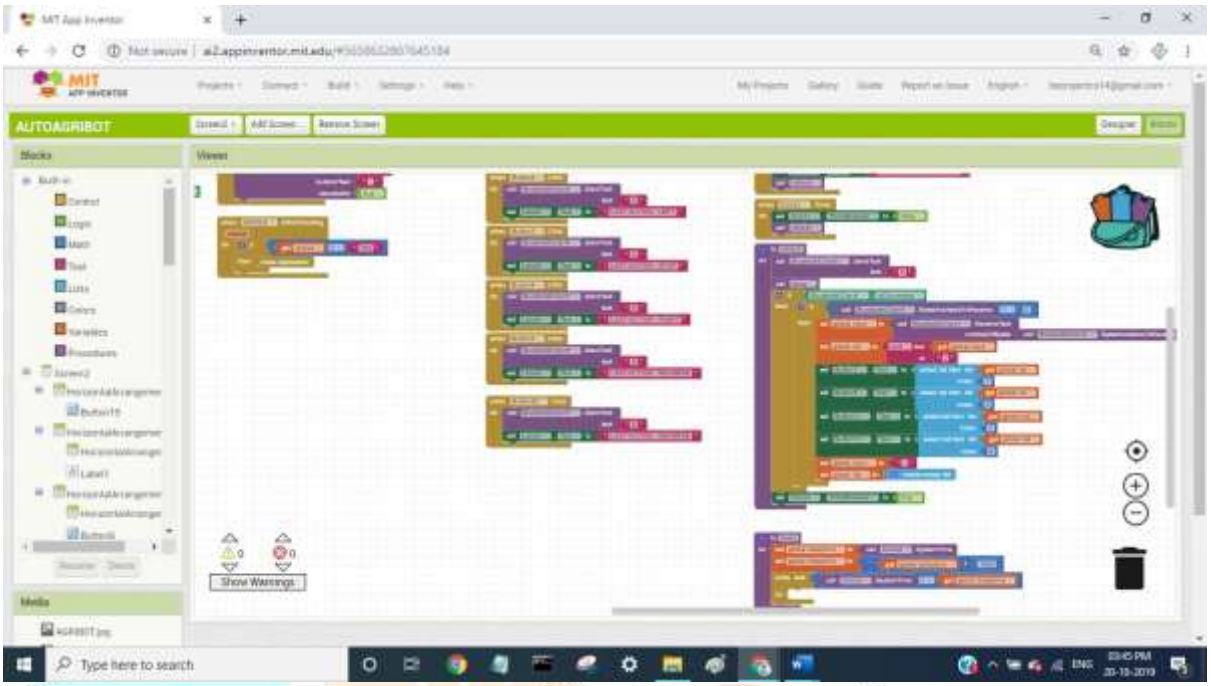
Proposed Methodology: This project is an Autonomous Agriculture Robot which is controlled over Bluetooth protocol using an Android App. The Android App consists of five buttons for movement of robot. The actions that would be performed by the robot are Forward, Backward, Right, Left and Stop. It also consists of list picker for selecting Bluetooth device connected to the robot. Once the Android application establishes a secure connection with the robot then the app is ready for controlling the actions of robot. The robot is capable of Digging, Sowing, Watering and Soil Levelling. Digging is done using Motor Drill. Sowing action will be performed using Servo Motor for lock mechanism. Watering will be done by Pump Motor. Levelling is done using Flat leveller. The Android App has a button for Starting all these processes. The robot has sensors like soil sensor, water level sensor . The sensor values are automatically senses and shows on the App. The temperature and humidity sensor are used for measuring the temperature and humidity in the surrounding of the robot. The water sensor is used for detecting the water level.The soil moisture sensor is used to sense the moisture content of the soil. The robot works in two modes. In the first mode the robot performs actions such as ploughing, sowing, watering and soil levelling along with movement of robot. In the second mode the robot performs only watering action by sensing the soil moisture content. First mode of operation is used in the initial stages while the second mode of operation is used after the initial stage when the robot only needs to water the field. The sensor data can also be manually updated by the in-app Refresh button.

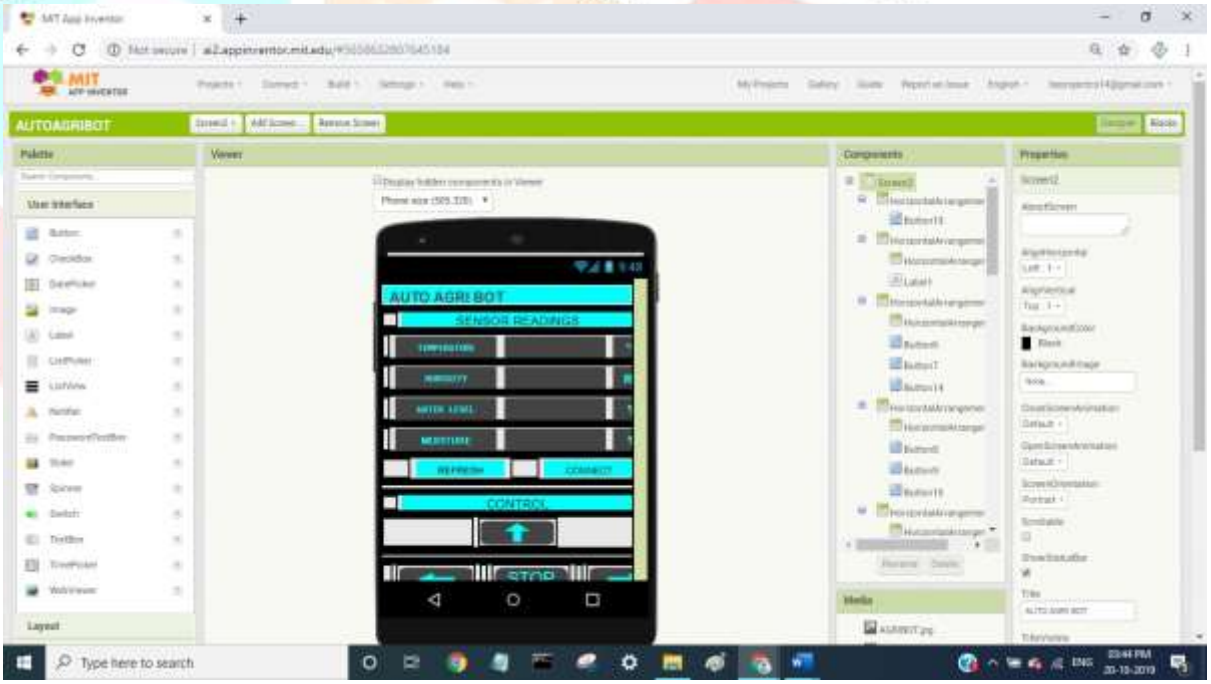
Software used:

1] ARDUINO IDE



2] MIT APP INVENTOR 2





Advantage:

1. Easy to use.
2. Reduces human efforts.

3. Performs all primary functions in agriculture.

4. Cost efficient.

5. Increase yield of crops**. Disadvantage:**

1. At present robot is not designed for harvesting and weed control features.

2. Seed container and water container needs to be refilled frequently.

Applications:

1. Ploughing.

2. Sowing seeds.

3. Watering.

4. Soil levelling.

5. Soil Moisture Analysis.

6. Field Analysis.

Conclusion: This systems are more flexible than traditional systems.This systems helps to reduce human efforts. Thus, it has made possible to automate the most significant working routines. Multipurpose autonomous agricultural robot has successfully implemented and tested for various functions like ploughing, seeding, levelling and water spraying. It was developed by integrating agricultural robot with C programming for aurduino and uses block coding for MIT app inventor.

Future scope:

1. A camera can be added for image processing feature.

2. Image processing will help in added functionalities like harvesting, weed control, disease identification etc.

3. The robot can be also modified in order to spray pesticides.