

Name of project:

AI Driven Agribot

Basic Design:

It is the rice planter machine with quality checker of the planted seedling. It uses the robotic arm controlled by the servo motor which can plant the rice seedling. For the quality detection purpose, it uses the camera connected with the Raspberry Pi which is mounted on the rice planter. It has 4 12V geared DC motors connected to wheels which makes the rice planter move forward. The battery of 12V and 1.2mA is used for the overall operation of the AI Driven Agribot. The Arduino mini is used for the working of the rice planter and for the quality analysis the raspberry will be used. The seedlings will be planted on the specific distance which can be changed by rotating the pin of potentiometer connected on the planter. The ultrasonic sensor is mounted in front of the planter which avoids it from the objects. The loader is mounted on the backside of the planter.

Components:

- 1) Raspberry Pi 4 - Model B (4 GB ram)
- 2) Arduino mini
- 3) 12V geared DC motors
- 4) 7 cm diameter wheels
- 5) 1.2mA 12v Battery pack.
- 6) 12 Voltage regulator.
- 7) L293D motor Driver.
- 8) Ultrasonic Sensor.
- 9) IR colour sensor.
- 10) 8 MP camera
- 11) 5V Servo motor

Working:

There are two modes with which the plantation of the rice seedlings and other is quality check of the rice plants which are already planted is done. Through this whole process the name of the project will be displayed on the 16 x 2 led display.

In the first mode which is plantation mode of the AI driven Agribot the rover moves forward with the help of the two 12v DC geared motors connected to the wheels with 7 cm in diameter. These wheels are operated by the L293D motor driver which can control the speed of the motor. The plants are loaded at the backside of the planter where the loader is attached. While the rover is moving another 5v servo motor which is connected to the planter arm rotates the 180 degrees that takes the rice seedling from the loader and buries it into the soil, After the interval of time and after the specific distance covered by the planter. The ultrasonic sensor is attached to the planter in the front direction which detects the object in front of the planter and stops at where it was.

The second mode is quality check mode. In this mode as the rover moves forward the rice plants which were already planted are checked by the 8 MP camera which is connected to the raspberry pi 4. This camera is attached on the left side of the planter which can detect the health of the plants on the left side only. It uses the machine learning algorithm which uses the OpenCV library to make the decision that if the plant is healthy or not. It detects the spots on the leaves of the plant to make the decision. Which can be seen of the display or on the website called Firebase. For the working of this feature the connection of the internet to the Raspberry Pi is essential. The ultrasonic sensor is

attached to the planter in the front direction which detects the object in front of the planter and stops at where it was.