AGRICULTURAL ROBOT:A SURVEY

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ABSTRACT

Mounting in the field of science and technology directed to the use of modern techniques in agriculture. In this paper many robot organized for agricultural purposes. Respectively robot supervision diverse the processor system and approaches in agriculture. Transitory sketch about all of the robot processor in consort with comparison are obtainable. We also provide an overview of some of the agricultural inventions presented in the recent literature and provide a summary of related research work. Moreover, we explore the relation between the IoT and other emerging technologies including big data analytics and cloud .We also present the need for better horizontal integration among IoT services. Finally, we present detailed service use-cases to illustrate how the different protocols presented in the paper fit together to deliver desired IoT services.

Keywords: Robot, Processor

I. INTRODUCTION

Agriculture is the backbone of India. Primarily the farmers want to improve the agriculture field intended for next generation. Require the agriculture field via robotic automation this technology is very new designed for agricultural purpose. The agricultural industry offers the higher quality of fresh production produce and they can automate the manual tasks where the use of tractors and the other manned vehicles is too dangerous for the operators.

II. AUTOMATIC ROBOT PROCESSOR

Robots is a mechanical, artificial agent and is usually an electromechanical system it just machine part of an overall push towards precision agriculture. In recent years great investments were made to develop intelligent robots that require little human input during operation. The robot performs the agricultural operation autonomously for instance the plough, seed sowing, digging, irrigation, and harvesting. The Robot needs to autonomously navigate their environment and perform actions at set locations. The multitude of sensors integrated into the machine, a GPS system for positioning and a powerful computer to process information and run the robot. Furthermore robot software is the set of coded commands or instruction that tell a mechanical device and electronic system know together as a robot, what tasks to perform. Robot software is mainly used to perform autonomous tasks.

2.1 Technology in Robot

GPS/GNSS is the multitude of sensors integrated into the machine, a GPS system for positioning and a powerful computer to process information and run the robot. Global Navigation Satellite System covers all countries satellite. Internet of Things is connecting any device with an ON/OFF switch to the internet. It communicate between farmer owner and robot.

III. SEVERAL PROCESS OF AGRI ROBOT

A. Design and Prototyping of a Robotic Vehicle with Seed Selector

Mason Ul Hassan, Mukhtar Ullah, Jamshed Iqbal [1] The main processing unit is Arduino Mega 2560. It pick a single seed from the bulk of seeds and lead to vacuum pump and linear actuator in order to suck a seed and move up and down inside the funnel. Curved nozzle which will continually move into the soil making a narrow line and from the pipe next to the nozzle, the seed will dropped and the soil will automatically covers the seed. Through ultrasonic sensor it detect the obstacels. All the device, GSM and Bluetooth module are directly communicate with Arduino using I/O ports. Farmer are getting trouble to charge the robot might be using solar panel.

Fig.1. single seed selector

B. Multi purpose agricultural robot

Nithin P V, Shivaprakash S [2] The robotic vehicle which can be controlled wirelessly through RF communication. This machine used a solar panel to operated digging machine driven by dc motor. The robot applications are crop establishment, plant care and selective harvesting. The four wheels connected and driven the rear wheel is dc motor. Funnel is made by the sheet metal, to store the seeds and the seeds flow through the funnel through the drilled hole on the shaft to the digged soil. IR transmitter and IR receiver is used to control the operation of the vehicle. The whole robot requires the 12v battery to operate the system. The sliding mechanism is used for leveler up & down movement. The Leveler is powered by a DC motor which is regulated by Relay switch and controlled by a remote controller.As the levelling plate moves downward to the ground level, the mud is closed in the sowed soil. Machines accurately sense the higher quality products.

Fig.2. Multi agricultural robot

C. Automated Seed Sowing Agribot using Arduino

Saurabh Umarkar, Anil Karwankar [3] Arduino Nano is the heart of system which is connected with all the sensors and other hardware device. The adafruit server interface Wi-Fi to operate the Android Application to manoeuvre robot in the field[8]. It monitoring all the actions related with the movement of agribot like obstacle detection over ultrasonic sensor. Seed sowing are using servomotor then the shaft of servomotor can be turned by the required degree which is attached with the hopper containing seeds then fall in the soil. It control by the solar panel.

Fig.3. seed sowing robot

D. Agricultural Automation System with Field Assisting Robot Edwina G Rodriguez, Kannan S A, Renjith G, Karishma.Raju , Anju Parvathy N , Soumya Sunny , Amrutha .I. Nair [4]. The robotic system can perform multiple operations like ploughing, seed dispensing and fruit picking. The controlling technology of the entire system with Raspberry Pi and a GSM module. It provided for the manual controlling of the system. And they using ultrasonic sensor send signal continuously and detect obstacles in front of the robot and that further decide the robot to stop or else keep moving. Then horizontal bar with a number of jagged teeth's fixed on it to aerate or loosen the soil bed and Ploughing the soil. Servo mechanism is used for seed dispensing .The process of fruit picking use image processing along with robotic arm. Here a camera which is fixed to the arm of robot is used for capturing images and we use a fruit gripper which is an arm tool to pick fruit with intense care. It reduces the labour work. It reduce cost of equipment and large farmer workers.
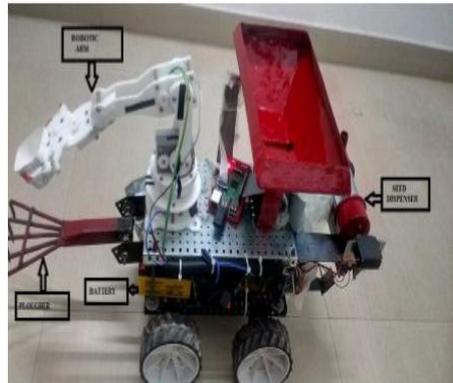
Fig.4. Agri automation robot

E. Multifunctional Robotic Vehicle for Agriculture Application

Mahendheran, Arunprasanna, Manickavasagam, Lawrence Justin and Parthasarathi [5] Agriculture robot are control by dint of mobile application through Bluetooth. The robot will be operated by a battery which is connected with a solar panel for recharging. The motor operates cutter by mobile application switch which controls to turn ON for moving forward for the cutting the various crops with very perfect manner. Then plough tool towards up and down direction for the deep tilling purpose by which we can gain more out tone. Spray nozzle is connected with motor which is used for scattering Pesticide over plants. Mobile robot has wireless video camera through which we can view and monitor the process. It has recharge battery to run the motor and play the robotics vehicles.

Fig.5. Multifunctional Robotic

3.6 Smart irrigation system using raspberry pi

Bhagyashree K.Chate , Prof.J.G.Rana [6] This process is fully controlled by raspberry pi. It's charity is to detect the moisture level of the soil expending the soil moisture sensor. This sensor is connect with the comparator circuit and signal conditioning circuit to provide the potentiometer to analysis the moisture level comparator high. This signal are accomplish by analog signal, It converts the analog signal to digital signal. The moisture level is high it represented into value 0 them it OFF the motor by relay otherwise it represented into 1 value and automatically ON the motor. Farmer exhausting phone to observe the condition and controlling in night time through LED. Web camera are show the live stream of the plant via wi-fi module in mobile. It shrinks the water wastage.

Fig.6. Smart irrigation robot

3.7 IoT based smart agriculture

Nikesh Gondchawar, Prof. Dr. R. S. Kawitkar[7] The robot control remotely through GPS based mobile function. Motion detector will detect the motion in the room when security mode will be ON and on detection of motion, formerly send the alert signal to user via Raspberry pi. Temperature sensor and Humidity sensor senses the temperature and humidity gamble crosses the threshold then room heater or cooling fan will be switched ON/OFF automatically. Control of water pump based on real time field data automatically turning on/off the pump after attaining the required soil moisture level in auto mode. It vintage more crops and all production.

Fig.7. IoT smart robot

IV. COMPARSION OF PROCESSOR

MODEL	PROCESSOR	FUNCTION
3.1	Arduino Mega 2560	Seed sowing
3.2	PIC	Digging, Seed sowing
3.3	Arduino Nano	Obstacle detection, Seed sowing
3.4	Raspberry pi	Plough, Seed sowing and Harvesting.
3.5	Micro controller	Harvesting, plough, and spray Pesticide
3.6	Raspberry pi	Irrigation
3.7	Raspberry pi	Motion detector, Irrigation

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