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Wireless Agribot for Plough Seed and Sprinkler

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Abstract— Agriculture is an essential thing for survival of the humans and the farmers who do agriculture spend so much of time in ploughing the field and irrigating the field etc. The proposed system is a boon to farmers which combines the robotics with agriculture and capable of moving around the field like a farmer and plough the field and sow the seed in the pre determined row and irrigate the field along the rows autonomously. In addition to this, obstacle detection and clearance are also done. All these operations are controlled via Bluetooth module.

Keywords— Watermark, Discrete wavelet Transformation (DWT), Singular Value Decomposition(SVD),2D Barcode,Steganography

I. INTRODUCTION

Agriculture is considered to be the basis of life for the human species as it is the main source of food grains and other raw materials. It plays a vital role in the growth of country's economy. It also provides large ample employment opportunities to the people. Growth in agricultural sector is necessary for the development of economic condition of the country. Unfortunately, the traditional methods of farming are still used by many farmers which results in low yielding of crops and fruits. But wherever automation had been implemented and human beings had been replaced by automatic machineries, the yield has been improved. Hence there is need to implement modern science and technology in the agriculture sector for increasing the yield. This paper therefore proposes a system which is useful in monitoring the field data as well as controlling the field operations which provides the flexibility. The proposed system concentrates on performing functions like ploughing, sowing seeds, irrigation, detection of obstacles. Engineering research in field of agriculture holds a key for sustainable future of Mankind. Technological advancements in farming, referred to as Agtech as grabbed a massive attention among researchers, investors and end users. It focuses on every aspect of farming, starting from Crop selection, Land Preparation, Seed Selection and sowing till the crop is harvested. In past half decade the trends in Agtech have been promising with countries like USA, Canada, Australia, India and Brazil. Agtech is automation of conventional farming techniques using modern day robots and drones. Initially, the main use of Agricultural robots had been in harvesting of crops. However, the Drones revolutionized the orthodox laborious techniques to easy, quick and more precise methods which help in maintaining the nutritional values of soil and improving crop quality thereby, increasing the overall yield.

II. SIGNIFICANCE OF WORK

In modern agriculture, maximizing and sustaining crop yields are the main objectives. One of the major problems constraining the development of an economically successful agriculture is nutrient deficiency for crop production. The existing agricultural robot performs basic elementary functions like harvesting, planting and spreading the pesticides. The Proposed system aims at designing multipurpose autonomous agricultural robotic vehicle which can be controlled through Bluetooth for ploughing, seeding and irrigation systems. The main motive for developing Agricultural Automation Technology is decreasing labor force, a phenomenon common in the developed world. The reasons are the need for improved food quality. Robotics offer solutions in precision agriculture to processes related to seeding, ploughing, sprinkling, etc. to improve productivity and efficiency.

III. METHODOLOGY

The agriculture has always been the backbone of India's sustained growth. As the population of India continues to grow, the demand for production will also grows. Hence, there is a great need for multiple cropping in the farms and this in turn requires efficient and time saving machines. The paper discusses the modern way agriculture which will

be helpful for the agriculture industry to move towards mechanization. The methodological procedure, circuit diagram and the block diagram are included in this section. The development of the agricultural robot consists of the integration of hardware techniques and software tools. Arduino Uno microcontroller is the master controller of the developed robot. All theoperations of the robot are controlled through Bluetooth connectivity. The robot for agricultural purpose is an autonomous robot which is controlled remotely through a wireless Bluetooth connectivity between the Smartphone and the robot. The Bluetooth electronics app is used to control each and every operation of the robot. The Bluetooth HC-05 module is fixed on to the robot which receives signals from the Bluetooth electronics app and sends these signals to the microcontroller for processing of operations.

IV. LITERATURESURVEY

A technological revolution is taking place in the area of machine tools, inspection devices and handling equipment. This new revolution has been triggered off by electronics and sustained by ever- increasing capabilities of computers. This has led to emergence of a new technology called mechatronics symbolizing the synthesis of mechanical as Computer controlled robots are used in industry for welding, assembling and machining, and to handle various materials. Over the past few years, there has been significant interest in designing smart agricultural systems. The use of smart farming techniques can enhance the crop yield, while simultaneously generating more output from the same amount of input. But still, most of the farmers are unaware of the latest technologies and practices. Due to this the yield of crops are becoming low. Also, there are a number of factors that contribute to the low yield of crops such as proper soil preparation, seed rate, seed cultivar, different sowing time, lack of moisture in the fields, water logging and salinity, lack of application of fertilizers, plant protection, adoption of modern technologies, proper marketing and lack of investment. Farmers suffer large financial losses because of usage of incorrect irrigation mechanisms, insect pests and attack of plant diseases, usage of uncalculated number of pesticides and insecticides, and wrong prediction of weather. For getting higher yield on Crops, monitoring is the vital task for the farmers. Due to the various constraints involved in agriculture, there is an urgent need to develop enhanced and economically realistic strategies in growing of crops. The farm irrigation systems in the previous years used simple timers and switches to control the irrigation mechanism for a predetermined time period irrespective of the weather conditions or moisture content present in the soil. By incorporating various advanced sensing and controlling techniques, the crop yield has increased to some extent while simultaneously the labour costs have decreased. Thus, there is a need for wireless technologies and automation in agriculture farming.

V. SOFTWARE AND ITS IMPLEMENTATION

Step one:

Install the Arduino Software that is appropriate for your specific desktop operating system.

Step Two:

Fig:1 Install the Arduino Software

After you have downloaded and installed the Arduino software, connect your Arduino/OSEPP UNO board with the mini-USB port to your computer. You will see the green power LED on once connected.

Fig 2: USB port

Mac Users:

Launch the Arduino software. You will need to first select the Arduino Uno board from the menu options. This is under Tools -> Boards -> Arduino/Genduino Uno:

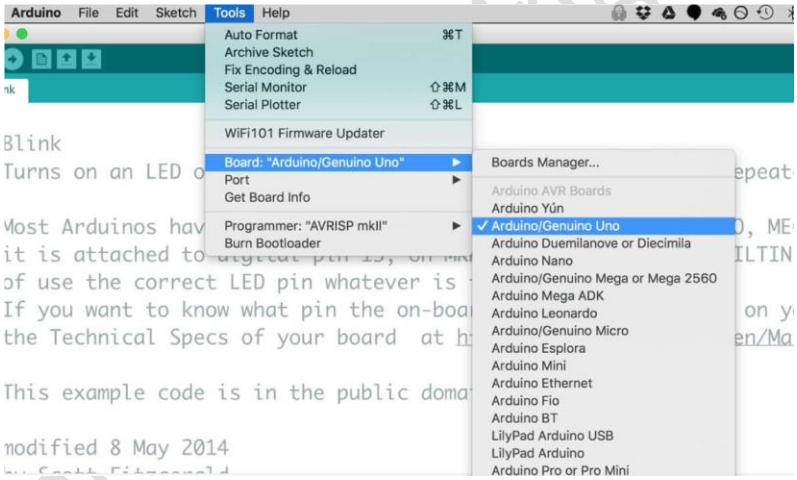

Fig 3: Launch the Arduino software

After, you will need to select the serial port. Thus, will show up as a USBdevice:

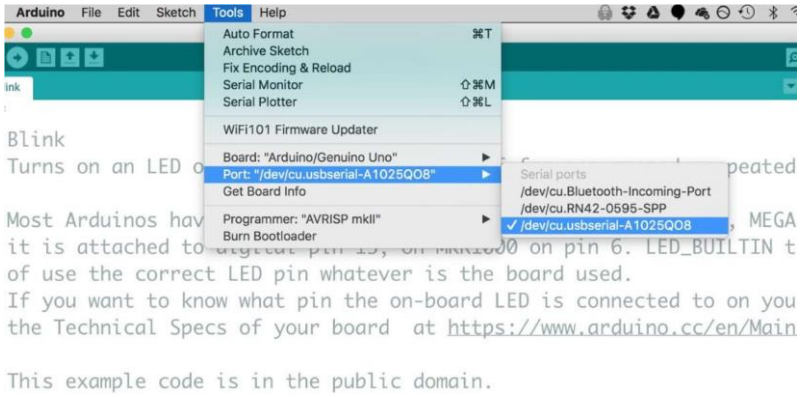

Fig 4: select the serial port

Windows Users:

After you have installed the Arduino software, the Arduino serial port drivers are not setup by default. You will need to manually install the drivers.Open the Device Manager.Scroll down to "other devices" and you should see FT232R USB UART device connected if you have connected your Arduino to your computer. Right click and install the drivers. Windows will prompt you the drivers have been successfully installed.

After properly installed, you will see a device named "USB Serial Port COM…"Navigate back to arduino. Select the Arduino UNO and the COM.. from the port menu:

Step Three:

After you have selected the Arduino UNO board and serial port, navigate to the "blink" example built into the

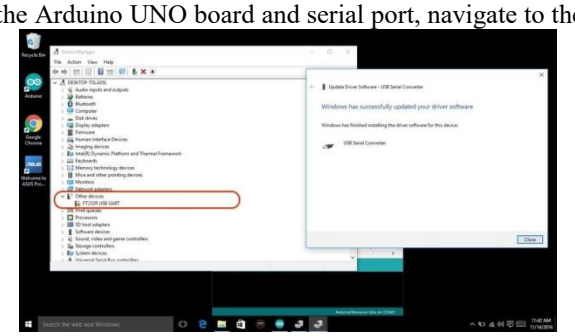

Fig 5: Arduino UNO board and serial port

Arduino software: Press the upload button while the Arduino board is connected to load the blink example in the Arduinos internal memory:

Fig 6:Uploading

Once you have uploaded the code, you will see the TX/RX led flash and then the onboard LED connected to pin 13 will blink. This blink test verifies that you have connected the UNO to your computer successfully.

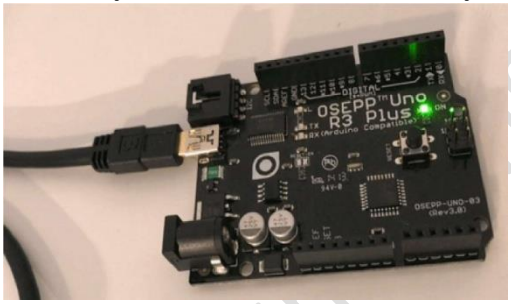

Fig 7: connected the UNO

VI .FUTURE SCOPE

This type of robots has very high future scope because it is very useful for agriculture by reducing the workload.It reduces the time-consuming process of spraying pesticides and water, and can work very effectively It can work in any weather condition by reducing workload and can work in any season by configuring through mobile It helps in reducing health conditions of farmers which generally happen due to inhalation of chemicals from pesticides and other animals too.

VII. CONCLUSION

This system may improve the way of agriculture is done by the farmer to save money, time and energy. This system may monitor and report real time situation of the robot in an accurate manner to the farmer's mobile, thus helping the farmer to be aware of the tasks performed. By implementing this project in the field of agriculture we can help the farmers in the various stage of agriculture i.e., during the Seeding and fertilizing. This project is very useful for the farmers who are intended to do agriculture activity but facing the labor problem.

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