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Semi-Automatic Seed Sowing Robot

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Abstract: ***Agriculture is the backbone of Indian economy. A half of the total population of our country has chosen agriculture as their chief occupation. due to the impact of latest "innovation in Agro-technology" farmers came to know about the various techniques involved in farming and the advantages in it. Due to this Now a days Agro-technology is improve day by day.***

Hence in this work of project we decided to design a better Electro-mechanical system which is available to the farmers at a cheaper cost & easy to use. It will be improved the standard of living of farmers as well as it will be help to reduce labour cost & time.

Keywords : Freeduino, DC Gear Motor, L298N Motor Driver, Servo Motor, Bluetooth Module HC-05

I. INTRODUCTION

Sowing is the most important process in farming. It is a very tiring and time consuming process that requires a lot of human effort. Here we propose the design and fabrication of a semi-automatic seed sowing robot that automates this task. Our proposed robot uses four DC gear motors for running it in desired directions. The front part of the robot consists of a bent plate that drags on the soil to make a slot ahead of the machine before seeds are poured in it. In middle part We use a small bracket for pouring seeds. Our proposed robot consists of a funnel like arrangement in order to pour seeds into a container. There we use a shaft with like gear teeth to pick up limited quantity of seeds and pour them on the ground in a steady manner in proper quantity. The back part of the robot consists of a tail like bent shape rod that is again used to pour soil on seeds sowed thus covering them with soil. Thus the system completely automated the seed sowing process using a smartly designed Electro-mechanical robotic system.

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II. LITERATURE SURVEY

This research [1] highlights stated that the seed sowing robot is a key component of agriculture field. Very High precision pneumatic planters have been developing for many types of croping for a high range of seeds size, then the resulting to uniform seeds distributed along the travel path , in seed spacing in particular distance .

Author proposed [2] a system for agricultural researcher to determine the effects of different seeding technique and machines and also different rates of oil seed rape application on seeding emergence plant establishment and final grain yield.

Author proposed [3] that bullock drawn planters are becoming needs of skilled workers for sowing are almost diminishing. Maintaining particular distance between two plants and plant population are crucial factors in maximizing the yields of crops. Early planting was done by hand. The seeds would be thrown, or broadcast. This procedure made it more difficult to weed and harvest the crop. Later a dibber was used for some crops. A dibber was a board with holes evenly spread apart.

A stick would be pushed through the holes and then a seed would be placed in the hole made

by the stick. This was very effective but also very tedious and time consuming [4] Author proposed [5] the implement system would cut small channels into the soil and the seed would be dropped into the channel.

This research paper presents[6] design and development of manually operated seed planter machine. In this paper author proposed objective of seed planter machine design, factors affecting seed Emergence, some mechanisms.

This paper presents [7] mainly based on minimizing man power and cost of the equipment, which can be affordable to all farmers.

Author proposed [8] innovative seed sowing equipments we can save more time required for seeding process.

III. SYSTEM MODEL

Freeduino Module Compatible with Arduino Servo port-Added feature external DC power socket (7Vdc to 20 Vdc) or USB powered. On board IC 7805 regulator (5v) with heat sink area for efficient 1000mA output . Has built in ICSP port for on the fly programing (P1). Robotics ready (has 4 servo port P3 & P2)

Bluetooth Module HC-05 module is an easy to use Bluetooth Serial Port Protocol module, designed for wireless Data Transmission between small distance is consider as wireless personal area network technology.

it consist as the cheapest method for data transmission The HC-05 has to operating modes, one is the data mode in which it can send and Received data From other Bluetooth device and the other is the AT command mode where the default device setting can be change. The Bluetooth range from 2.042 GHZ to 2.4080 It has the footprint as small as 12.7mmx27mm. Hope it will simplify your overall design/development cycle.

IV. DESIGN

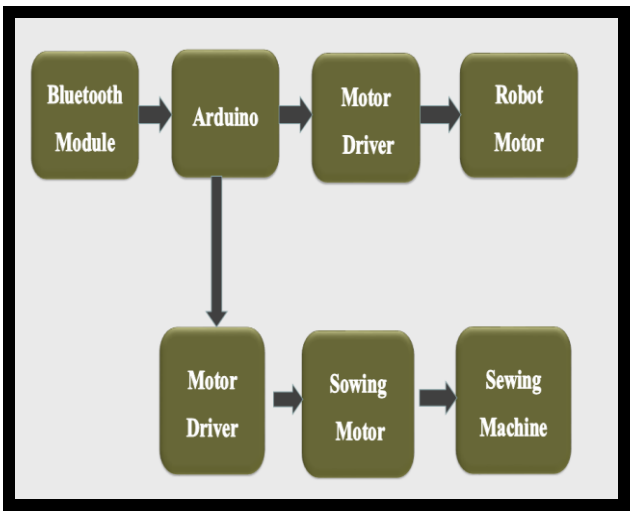

Fig: Block Diagram Of SSR

V. Methodology

In this project we used one robot for plantation of seed and for that we use a robot call seed sowing robot. For that Freeduino is used to control all the technical data handling means which customer how many food grains are provided. I that microcontroller all needed data is first entered into system and then system start working. System need commands which is received by Bluetooth module seed plantation. After that Freeduino gives command to motor driver IC L298N to drive motor for move the robot & perform seed sowing operation.

A. Flow Chart

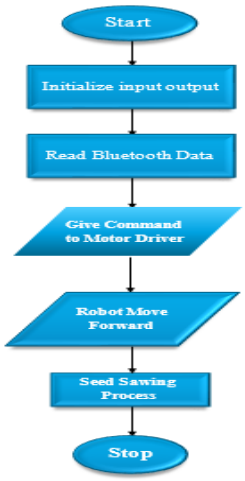

Fig: Flow Chart

VI. IMPLEMENTATION

A. Circuit Diagram

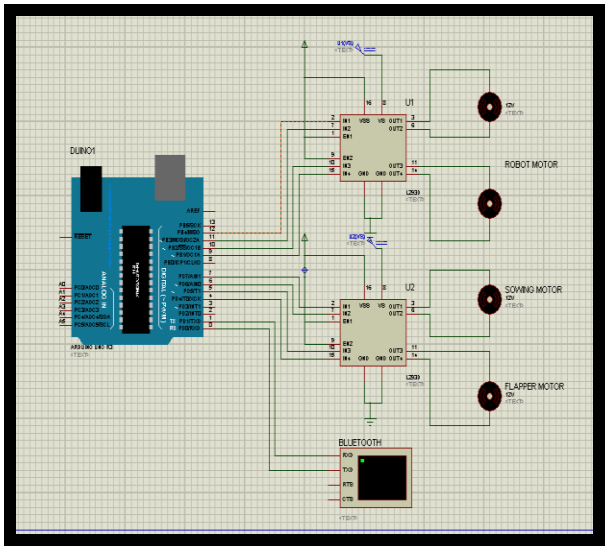

Fig: Circuit Diagram

B. Bluetooth Application

Fig: Bluetooth Application Of SSR

- Robot Control keys
  - Up arrow key is used for Robot move in Forword direction.
  - Down arrow key is used for Robot move in reverse direction.
  - Left arrow key is used for Robot move in Left direction.
  - Right arrow key is used for Robot move in Right direction.
  - Pause key is used for Stop operation for particular time.

- Plough control keys is used for UP & DOWN movement according to requirement.
- Start & Stop key is used for Turn On & Off Robot.

VI. RESULT ANALYSIS

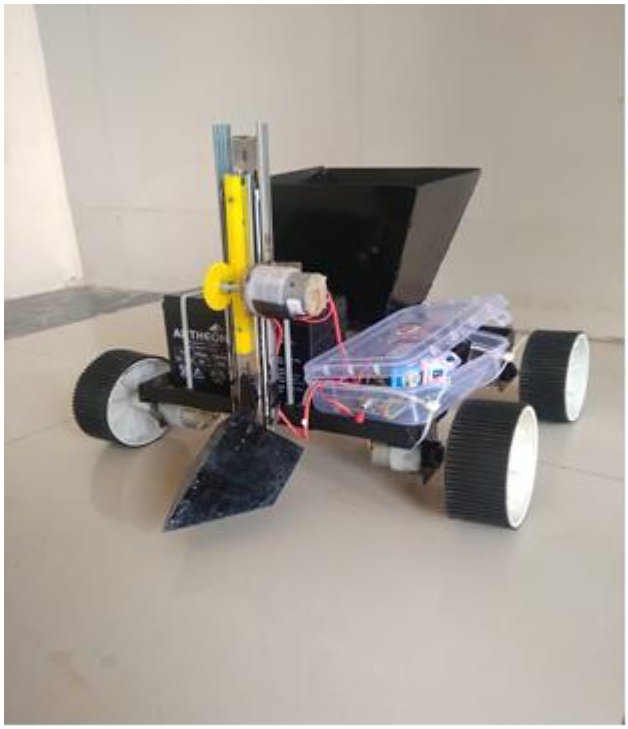

Fig : Actual picture of Seed Sowing Robot

ADVANTAGES

- Reduces Manual Work.
- More Work Done In Less Time
- Very Economical and Beneficial

Application

- Automatic Seed Plantation

Future Scope

- ZIGBEE / IR / IOT based
- SOLAR Based

VII. CONCLUSION

Our proposed seed plantation machine has great potential for increasing the productivity of the planting.

REFERENCE

1. Abdulrahman, Mangesh Koli, Umesh Kori, "Seed Sowing Robot" International Journal of Computer Science Trends and Technolog (IJCST) – Volume 5 Issue 2, Mar – Apr 2017
2. Prabhakar Khandait, Shubham Sariyam, Dumesh Agarkar"Seed Sowing Robot"International Journal of Engineering Science and Computing, March 2018Volume 8 Issue No.3
3. PIRAKALA ATHISH REDDY, G.E BABU "AGRIBOT -RF based farmer friendly Agricultural Robot with automatic seed dispensing system"International Journal of Research JULY/2018Volume 7, Issue VII
4. Kiran AS and Baban Parisa Dathwade"Design and Fabrication of Automatic Seed Sowing Machine with Variable PitchEuropean"Journal of Advances in Engineering and Technology, 2016, 3(9): 50-54ISSN: 2394 - 658X
5. Nikita Chame, Mamta Jadhav, Priyanka Tele "Design and Implementation of Automatic Seed Sowing Robot"International Journal of Research in Engineering, Science and Management Volume-1, Issue-5, May 2018
6. K.Saravanan,S.P.Sundar.SinghSivam,S.RajendraKumar,K. SathiyaMoorthy,"DESIGN AND FABRICATION OF AUTOMATIC SEED SOWING ROBOT FOR AGRICULTURAL FIELD"International Journal of Pure and Applied Mathematics Volume 120 No. 6 2018, 11749-11766 ISSN: 1314-3395
7. Dr. K .A SUNITHA, G S Suraj, G Atchyut Sriram, D Shreyas and T Srinivas "Agricultural robot designed for seeding mechanism"IOP Conf. Series: Materials Science and Engineering 197 (2017) 012043 doi:10.1088/1757-899X/197/1/012043
8. Aniket B. Kolekar Sandip Waghmare Dipak Gawari Ram Sanap Manoj Bhete "Design and Fabrication of Automatic Seed Sowing Machine"Research Review International Journal Of Multidisciplinary Vol-3 | Issue-12 | December 2018 | Published Online: 10 December 2018
9. Senthilnathan N, Shivangi Gupta, Keshav Pureha and Shreya Verma "MATION OF SEED SOWING MACHINE USING IOT"International Journal of Mechanical Engineering and Technology (IJMET) Volume 9, Issue 4, April 2018, pp. 903–912, Article ID: IJMET_09_04_103
10. Thorat Swapnil , Patil Girish , Madhu L. Kasturi ,Patil Rajkumar"Design and Fabrication of Seed Sowing Machine"International Research Journal of Engineering and Technology (IR Volume: 04 Issue: 09 | Sep -2017 JET) Ms. Trupti A.Shinde,Dr. Jayashree. S. Awati
11. "Design and Development of Automatic Seed Sowing Machine"SSRG International Journal of Electronics and Communication Engineering - (ICRTESTM) - Special Issue – April 2017,ISSN: 2348 – 8549
12. Vidya Yedave, Punam Bhosale, Jyoti Shinde, Prof. Jagdish Hallur"Automatic Seed Sowing Robot"International Research Journal of Engineering and Technology (IRJET)Volume: 06 Issue: 04 | Apr 2019 e-ISSN: 2395-0056 p-ISSN: 2395-0072
13. Mr. V. Nivash , Mr. N. Kavin, Mr. S. Manikandan, Mr. S. M. Meyvel, Mr. K. J. Nethaji."Automatic Seed Sowing Machine"International Journal for scientific research & DevelopmentPublished in: Volume : 6, Issue : 2 Publication Date: 01/05/2018

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