e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:07/Issue:03/March-2025 Impact Factor- 8.187 www.irjmets.com

TREE PLANTING ROBOT IS DESIGNED TO HELP REFORESTATION REACH AN ENVIRONMENTALLY FRIENDLY PLANT PROCESS

Yogesh Gopale[*1], Shravani Kanawade[*2], Gauri Gaikwad[*3], S. V. Gaikwad[*4]

[*1,2,3]Third Year, Electronics and Telecommunication, Amrutvahini Polytechnic, Sangamner, India.

[*4]Dept. of Electronics and Telecommunication, Amrutvahini Polytechnic, Sangamner, India.

ABSTRACT

This paper introduce automatic tree planting robot should be suitable for all kinds of tree plantation work and it should also be reliable and efficient, which is the basic requirement for our project. The main motto of our project is to reduce the man power needed to plant trees. Nowadays humans are too busy with their work that they do not have time to plant trees, in such case we would see a lot of reduction in trees in the near future. So, we thought of implementing a tree planting robot which would reduce the reduction of trees to a great extent. From this we can plant different types of saplings. We have tried to make it cheap by using different process method so that it becomes affordable to one and all. We have made its control very easy so that it does not get difficult for the users.

I. INTRODUCTION

The growing global concern over deforestation and climate change necessitates efficient and sustainable solution for reforestation. Traditional planting methods involve manual labor, which can be time-consuming and inconsistent in terms of quality and efficiency. Additionally, some methods inadvertently harm local ecosystems. This paper propose a tree planting robot design to address these challenges by automating the process, ensuring precision and reducing the environmental impact.

II. METHODOLOGY

Conceptualization and System Design:

- Define the core functionality of the smart tree-planting robot.
- Focus on automating the planting process with minimal human intervention.

Development of Robotics and Control System:

- Use microcontrollers (PIC18F4520) for automation and control.
- Design a mechanism for efficient tree planting.

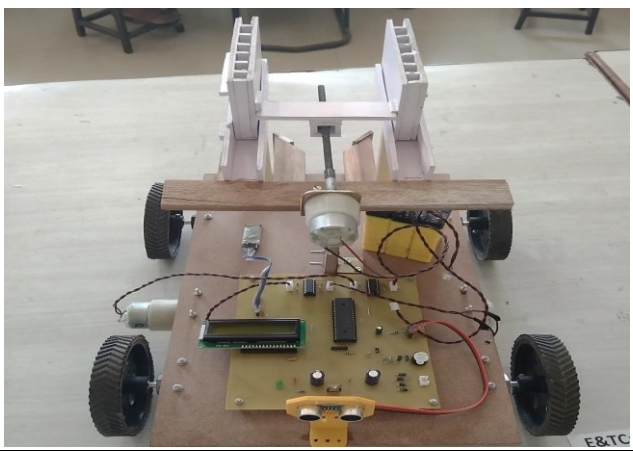
Navigation and Environment Interaction:

- Implement Bluetooth network for controlling the robot.
- Address range of Bluetooth network.

Prototyping and Testing:

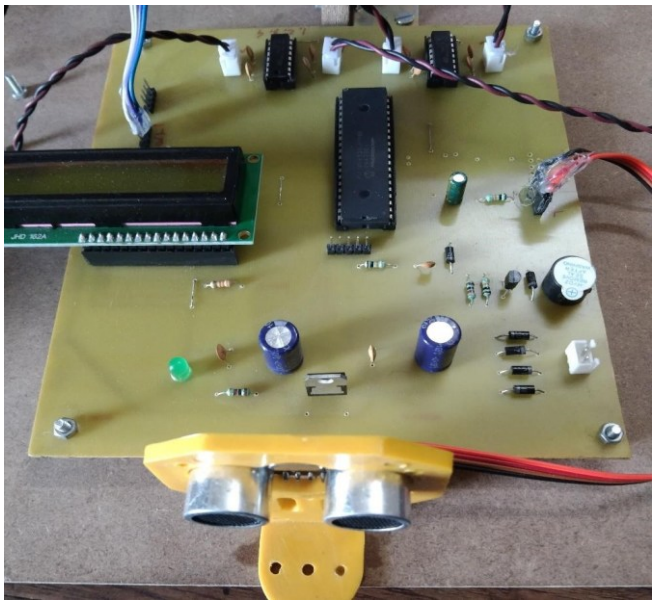
- Develop a prototype to test planting efficiency and accuracy.
- Conduct field trials to measure planting accuracy and system reliability.

III. MODELING AND ANALYSIS



e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:07/Issue:03/March-2025 Impact Factor- 8.187 www.irjmets.com

IV. RESULT AND DISCUSSION



V. ADVANTAGES

- It will reduce the manpower required to plant trees
- Only a single person can operate this
- Easy control (via smartphone)
- Time saving

VI. CONCLUSION

As mentioned in the paper this combination of tree planting is better than manually plating trees, it takes more time and labor cost. Here our project aims to plant more trees in less time and minimal labor cost and also this will help to overcome some problems in agriculture and forest department as this could be a very useful device to work easily, efficiently and effortlessly & it will also help in save the time. The operation of this robot is very simple & easy & it does not require any skilled person for its operation. As compared to manual operation it could result in less wastage. Also, energy required for this is less compared to manual operation. So, this device will be a better option for the people indulged in agricultural & forestry activities. It can also be manufactured by any local workshop. The main task now is to promote these kinds of technologies & making it available to the consumers easily and at an affordable cost. So, we think that this project is a boon to the modern world and it has something good to serve and it should be taken into consideration. We hope that this device will help in reducing the difficulties of reforestation & shortage of labor.

VII. REFERENCES

[1] Patrick Piper and Jacob Vogel published a paper on “Designing an Autonomous Soil Monitoring Ro-bot” (IEEE - 2015).

[2] V.M. Martin Vimal1, A. Madesh1, S. Karthick, A. Kannan, “Design and Fabrication of Multipurpose Sowing Machine”, International Journal of Scientific Engineering and Applied Science (IJSEAS), ISSN: 2395-3470, Volume-1, Issue-5, August 2015.

[3] Thorat Swapnil V, Madhu L. Kasturi, Patil Girish V, Patil Rajkumar N International Research Journal of Engineering and Technology (IRJET) Volume 04 Issue 09, 2017

[4] Abdulrahman, Mangesh Koli, Umesh Kori, Ahmadakbar at International Journal of Computer Science Trends and Technology (IJCST) – Volume 5 Issue 2, Mar – Apr 2017

[5] Istiven Appavoo, Anicet Marionneau, Michel Berducat, Benoit Merckx, Natacha Olivier, Loic Cotten at SATT Grand Centre Irstea (National Research Institute of Science and Technology for environment and Agriculture) 3 Alliance Forets Bois.