AGRI-BOT

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Motivation/ Introduction

Agri-bot is an automated machine that completes every possible manual work into automation. This project mainly focuses on decreasing farmers efforts in works like plowing, watering to crops, etc.

This prototype consists of two wheels(di-wheel) and an actuator to expand in case of a large ploughing pitch. The Radiofrequency controller operates it via Arduino UNO.

SCOPE of the Project

- The demand for these types of models in market is much high, automatically increasing the scope. It can be evolved by adding the plant seeding and watering system on top by adjusting the di-wheel's balance.
- As our project is based on a di-wheel plot, we can make a 360-degree rotatable di-wheel just like a vehicle.
- This prototype is the tip of the iceberg, which can be explored variedly, making clean farming possible.
- The model is energy efficient and can be supplied with attachable for a variety of work.

Methodology

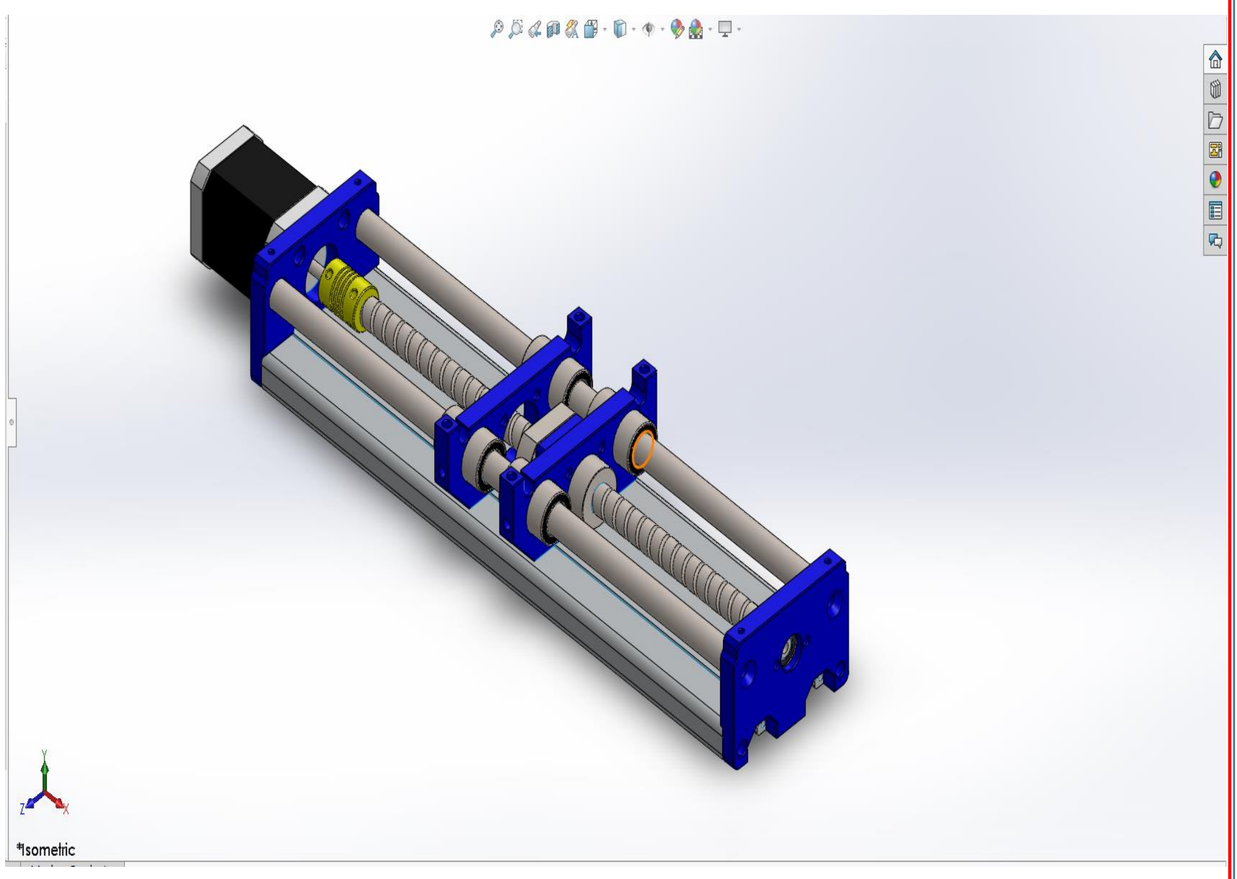
- Firstly, we made the body of the model by bending and drilling the aluminium sheets.
- Two drills were made at two sides where the wheels need to be placed(using DC motors).
- For the actuator, we used the keyboard desk channels(sliding mechanism with a ball bearing or nylon rollers), which helps to slide to and fro.
- Furthermore, we attached this channel to the stepper motor's threading spindle and controlled it through Arduino.
- For the body's stability, we have placed four rollers also, which can also be substituted by a plougher.
- A 15V battery runs this setup, and the RF controller gets its power through any small power source like a power bank.

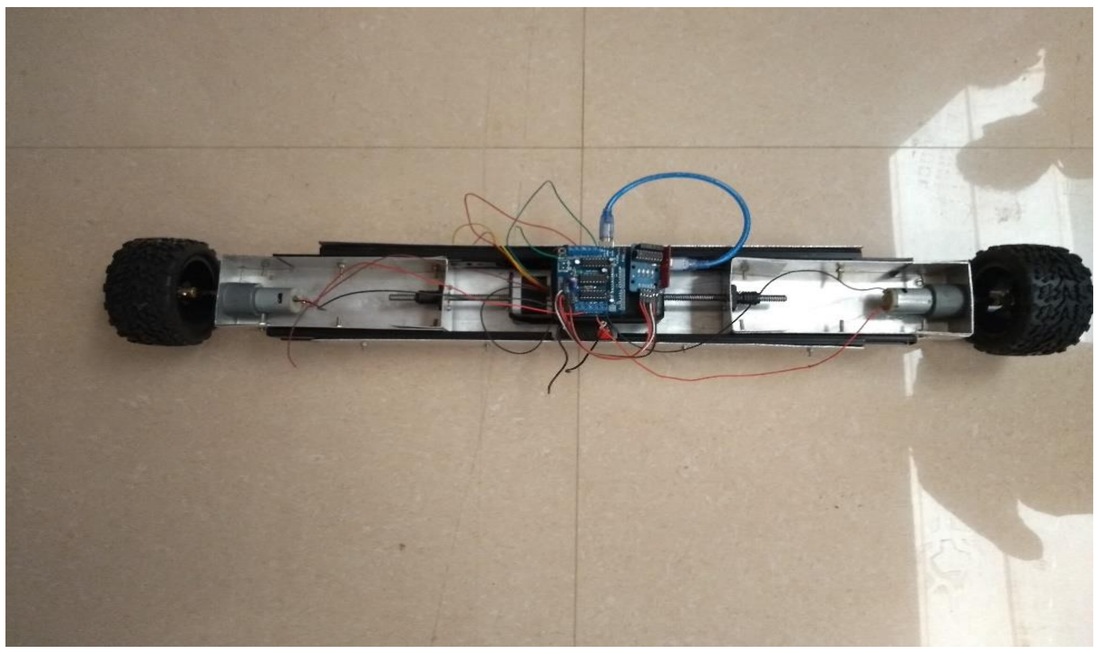
Working of an Actuator:

- An actuator is a part of machine which enables the motion between two mechanisms or two pairs in a machine.
- It has two channels on both sides, which enables it to create motion between two sections.
- This is done in steps i.e., stepper motor, with its rotor axis threaded with the requirement.

Results

- The expected result was to achieve a fully functional model that moves following our needs.
- The procured result is that the motors are moving when suspended in air. Moreover, the actuators move as desired and extend the arms to change the body's length.
- But the lack of power is the main challenge which can be easily overcome by attaching a power amplifier to the motors.
- The designed model of linear actuator is shown below.





Conclusion/ Summary

- As an overall conclusion, the desired di-wheel for ploughing, watering activities has ben built.
- Designing an actuator was one of the first times. It was a whole new experience that enriched out flare of mechanical knowledge.

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Acknowledgments/ References

https://www.youtube.com/watch?v=ytaJuQt6d-E