

# RoboSeed

TEAM: 94

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## ELEVATOR PITCH

Large agricultural companies, government agencies, and farmers struggle with inefficient seeding and high labor costs. RoboSeed is a robotic system that automates seeding, reducing labor and increasing efficiency. Unlike traditional methods, RoboSeed offers advanced sensors for optimal control, making seeding faster and more cost-effective.

## BACKGROUND

RoboSeed is a robotic system designed to automate seeding tasks like digging, planting, watering, and covering. It integrates multiple engineering disciplines to enhance efficiency, reduce costs, and promote sustainable agriculture.

## Target specifications



Seeding 208/h (seeds per hour)

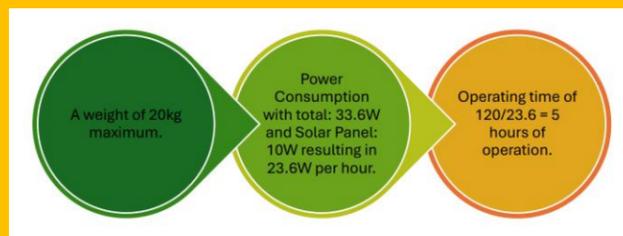


Monitoring levels of seeds and water

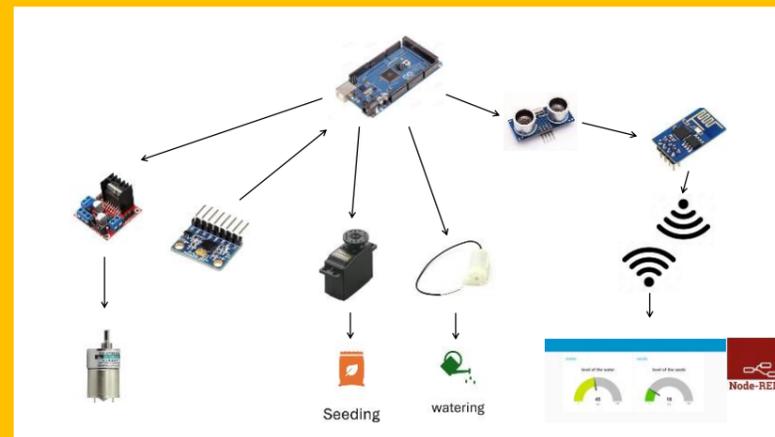


Automated digging, planting, watering, and covering holes.

## Constraints



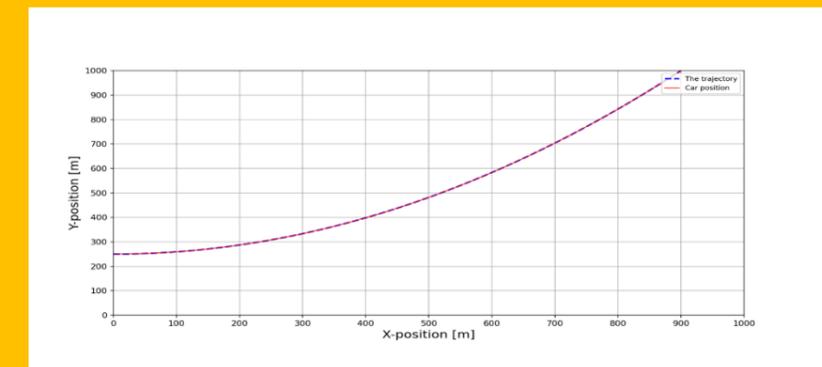
## Process Design



### SYSTEM FLOW



## Path Planning Simulation

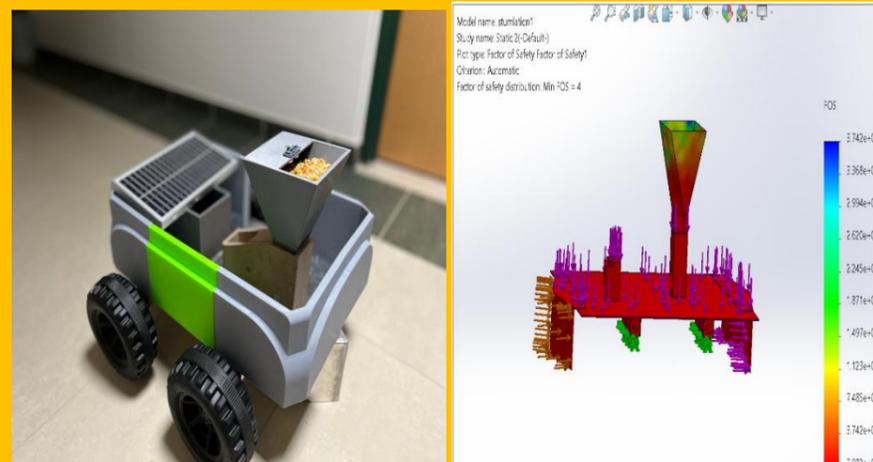


Simulation using python to verify the Model based controller of a path planning car that follows a predetermined trajectory

## Objective

To develop a cost-effective, automated seeding robot that plants 2500 seeds in 12 hours, minimizes human labor, and supports sustainable farming.

## Design Analysis



### Constraints validation and verification



The total weight is 14.6kg, which is less than 20kg



Consume: Wheel 24W, Sensors 6W, Servo: 2W, Microcontroller: 1.6W and solar panel produce 10W



It can operate up to 5.08 hours

### Specifications validation and verification



THE SPEED OF THE ROBOT MEETS THE REQUIRED NUMBER OF SEEDS PER HOUR OF 208



USING NODE-RED TO MONITOR THE LEVELS



THE ROBOT DOES ALL FOUR MAIN TASKS SIMULTANEOUSLY

## Conclusion

RoboSeed demonstrates a practical solution for modern agriculture, reducing costs, labor, and environmental impact. Further improvements include enhanced automation and better obstacle detection systems.