

Project Name : Wall climbing robot

TEAM NAME : The wildlings

TEAM MEMBERS :

1. Rahul Meena
2. Shubham Raj Sinha
3. Krishna Mugunar
4. Harshal Pawar

Problem Statement:

A robot that can move vertically along an unpleasant surface, for example, concrete, offers extensive military and citizen points of interest. Situated high on a building, the robot, serving as a perception stage, could give significant military insights and also support in hunt and salvage operations. Following features of the robot comes under the requirements of the robot:-

1. Simple Design & Portable in use
2. Light weight
3. Automatic operation while working.

DESCRIPTION :

We are trying to make a robot which is capable of climbing a wall .

CONCEPT :

In it we will be using the vacuum pumps of high vacuum level application so that the suction cups adhere on the surface of any ordinary smooth wall . While one leg set is adhered to wall the other set of legs will move forward and attach to the wall . In this manner bot will move forward/backward.

COMPONENTS REQUIRED :

1. Vacuum pump cost-1600 to 3100
2. Suction cups
3. Valves
4. Metal legs

5. Metal body
6. Servo motors
7. Arduino
8. Misc. - connecting wires , supporting rods, screws,pins ,etc.

COST ESTIMATES : 8000/- TO 10000/-

TIMELINE :

- 1.In the 1st week,we will study the various ways of implementig the suction mechanism and movement of the bot, then we will choose one amongst them. Meanwhile, we will also learn about arduino and other electronics required for the project.
2. In the 2nd week, we will test the suction mechanism and develop the basic structure of the bot.We will also work on the coding required for the arduino.
3. In the 3rd week, we will integrate all the components of the bot and test it.
4. The 4th week will be for debugging and improvising the design for the bot to work as it should.
- 5.If the bot is able to climb wall perfectly, then in the fifth week we will add some additional functionalities to it.

FUTURE SCOPE :-

- 1.A controller is to be designed to control the robot
- 2.Further improvements like appropriate mechanism for turning the robot, increasing the degrees of freedom for the robot.
- 3.Further analysis can be focused on how to detect obstacles and generate path while moving upward. This requires artificial intelligence.

LEARNING EXPECTATIONS:

1. Basic programming on arduino.
2. Making mechanical design attractive and efficient.

REFERENCES:-

<https://www.youtube.com/watch?v=eXW40xBNZuw>

<https://www.youtube.com/watch?v=RFekE6fluRM>

<http://ijact.org/volume3issue3/IJ0330018.pdf>

S. Fish, UGV's in future combat systems, Proceedings of the SPIE-unmanned Ground Vehicle Technology VI, Orlando, USA, (2004), 288–291.