

MOBILE ROBOTIC ARM

Introduction:

A device which can perform works like human hand. Device is programmed such that it can move towards an object and lift it from one place to other. The machinery in device mainly does rotational and translational operations.

Inspiration:

We came up an IDEA by seeing a You tube video based on robotic arm and some more online resources.[You Tube Link.](#)



Components may require and approximate cost:

- RC Servo motor. Rs.850
- Arduino UNO Rs.800
- Metal gear.Rs.700
- DC servo motor.Rs.300
- DC adaptor(12V & 1A current specification): Rs.100
- DC adaptor(5V & 5A current specification): Rs.500
- Gripper with DC motor.Rs.600
- Screws, nuts and L-clamp.Rs.100
- Acrylic sheet: Rs.150
- Ball bearings.Rs.50

- Two & three way keys.Rs.150
- Multimeter.Rs.150
- 4 Motors for car Rs 200 * 4
- Wheels Rs. 50
- Wires.Rs.30

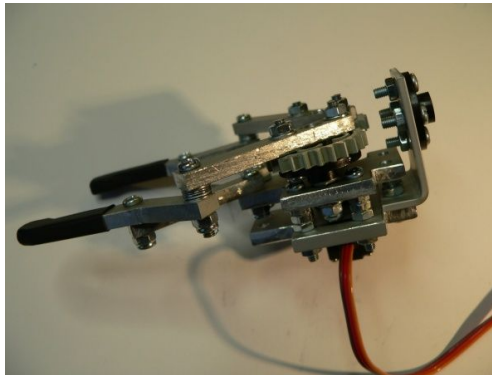
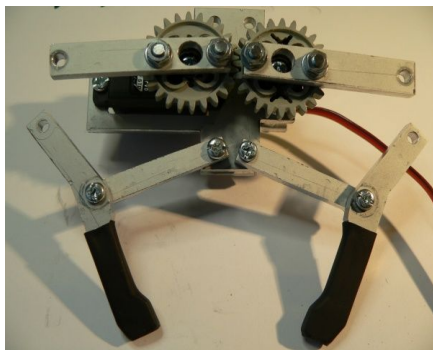
*we may require some machinery more than one. So approximate cost would be around 6000.

Approach

The robotic arm would reach the target object via controlling the rotation of each of the motors one at a time. Our shoulder base spin would be entire 360 degrees so as to cover the maximum area. The shoulder pitch, elbow pitch and the wrist pitch where the servos are used could be rotated upto 180 degrees as necessary so as to pick up the object. Microcontroller programming would be done so as to stall the servo motors. We would be using arduino Duemilanove/UNO for the purpose.

Implementation

We will use remote controlling system to control .First we will make the car. The car will go front or back if both the pair of motors operate in one direction and left or right if they operate in different directions. At the top of the car, there will be a motor(for orienting the arm towards object) whose degree of rotation can be controlled by us remotely. We have thought of making switches on controller for each of the motors used in the arm movement to control its degree of rotation. There will be a gripper installed at the top whose movement as per user desire to lift the objects is controlled by moving gears and motors.



(Gripper Top and Side View)

Timeline:

Week 1:

- Making diagrams and design on solid work.
- Perform necessary calculations and gathering of devices.

Week 2:

- Learn more about the designs.
- Integrating the components.

Week 3:

- Completion of base part i.e Car.
- Gathering the remaining parts.

Week 4:

- To work upon electrical and mechanical section.
- Completion of circuit.

Week 5:

- Start programming.
- Focus on remote control.

Week 6:

- Testing and debugging the code.
- Checking for errors and removing it.
- Giving Final touch to the device.

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