GESTURE CONTROLLED ROBOTIC ARM

ABSTRACT

A robotic arm is a type of mechanical arm, usually programmable, with similar functions to a human arm; the arm may be the sum total of the mechanism or may be part of a more complex robot.

Our basic idea is to implement a robotic arm which through image processing captures the movement of hand and fingers in real-time and repeats the process simultaneously or we can use other tech like gyrosensors and flex potentiometers.

THEORY OF IMPLEMENTATION

We maybe

i)***using a camera which takes in the precise hand movement made by the user as input for the R-arm. Input image is operated on through image processing software that uses the code written by us.

Or .,

ii)** using gyrosensor.The gyrosensors will detect the changes in angles in axis made by hand movement.

Or .,

iii) *using flex potentiometers .To verify the exact variables of the finger movements.

IMPLEMENTATION STEPS

- We will use servos to control the axis movement of the robotic arm.
- We will either be using Arduino or R-pi to constantly generate data sent in by the hand movements of the user for the R-arm most probably wireless using xbees or through internet.
- The whole assembly will be designed in a proper manner using on board battery.

TIMELINE

Week 1 and 2:Research about all aspects of the project.(learning arduino coding ,xbee transmission setup,and all the theoretical and practical setup.)

Week 3:The complete built mechanical design of the robotic arm.

Week 4and 5:doing the electrical and coding of the dev tools for proper functioning.

Week 6:Assemble both the mechanical and electrical part of our project.

If time permits, we can attach the R-arm to a remote controlled bot for locomotion,or a stand.

COMPONENTS REQUIRED

- Servos(3-hi,1-med,6-low)(4000)
- Raspberry pi or 2 Arduinos(xbees)(3500)
- Camera /gyrosensors/flex potentiometers(300/300/500)
- Aluminium sheets and acrylic sheets(400)
- Other things as required(wires,soldering,3D-printed fingers etc.,)

COST ESTIMATE

Not more than Rs.9000/-

SALIENT FEATURES

- Can be used as a part of a complex robot
- Can be used for pick and place work.
- Can be used in human inaccessible places or other dangerous places.