



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

5 Degree of freedom robotic arm

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Significance of study:

Robotic Arms are primarily utilized in industrial areas for many various applications. In this project, we want to illustrate that diverse technologies may join together in order to create works more realistic. Android device utilization is constantly rising, and android smartphones are widely used. we want to demonstrate that any electrical circuit can interact with bluetooth installed devices. Assume this robotic arm is employed at a manufacturing. With my concept, any employee may control the robotic arm with his or her Android-based smartphone or tablet.

Objective:

Design and development of a five-degree-of-freedom robotic arm, as well as an Android application controller that acts as a virtual game pad for controlling the robotic arm.

Methodology:

A microcontroller (Arduino UNO) is employed to process the commands coming from android application and update the moment of arm by changing the servo rotation angle.

Only 180 degrees of rotation is possible for all joints. The rotary actuators (servo motors) that regulate and update the rotation of the joints are controlled and updated by the microcontroller . Potentiometers, a graphical user interface and an Android App can be used to send commands to the microcontroller.

When we use potentiometer microcontroller reads data from it in the range of 0 to 1023 and mapping it in a range of 0 to 180. Further this value is used to open or close the arm joints.

Conclusion:

This initiative has the potential to grow in the future. Servo motors with better angle placement, greater torque, and broader angle movement produce superior outcomes. Encoder sensors can read the locations of servo motors to improve angle positioning. To prevent shaking while servo motors are rotating, better and stronger materials can be utilized in the body. Servo motors with larger torques can be used to lift heavy loads. This is a low-budget, low-cost project whose primary goal is to operate a system using an Android application and an HC 05 bluetooth module.

Project model:



