Position control of arm mechanism using PID controller

ABSTRACT

This paper presents the application of rotary encoder for a motion of a gripper mechanism using PID controller. The approach consists of a robotic arm's whose movement are controlled by a brush DC motor. The brush DC motor shaft was mounted to the rotating wheels where a rope and pulley system was used to lift the robotic arm. The strategy of feedback compensation is used when controlling a system using a PID controller. With the presence of rotary encoder enables the microcontroller to control the speed of the robotic arm with the PID controller. As results, the robotic arm can be operated smoothly and achieved the desired position compared to the ON and OFF controller. The program using PID controller has been created with the microcontroller as the controller for the system. The robotic arm has been interface with rotary encoder and implemented with PID controller and it is possible for any robotic application if the feedback signal is provided.

Keyword: Gripper mechanism; PID controller; Rotary encoder; Robotic motion