PROJECT:

TWO-AXIS ROBOT ASSEMBLY USING TEACH PENDANT & MOTION SMOOTHENING ALGORITHM

DESCRIPTION:

This project consists of a two-axis prototype assembly that can be taught the required motion conveniently using a teach pendant and retraces the learnt motion sequence repetitively over a smooth trajectory. The controller implements a motion smoothening algorithm so that the robotic motion is not jerky or discontinuous allowing curvilinear paths to be implemented. The entire process can be conveniently controlled using the teach pendant and the motherboard.

FEATURES:

TWO-AXIS ASSEMBLY:

The assembly is a two-axis polar assembly with a gripper attached along as an end-effector. The entire assembly operates in a semi-circular workspace in the normal plane.

TEACH PENDANT:

The teach pendant allows the robot to be taught the required motion (LEARN MODE) and then control it when repeating the same (REPEAT MODE). The teach pendant also additional buttons like speed control.

MOTION SMOOTHENING ALGORITHM:

The motion smoothening algorithm is implemented while repeating the step sequence. The algorithm generates a fixed curve between the two points stored, allowing a smooth transition between the steps.

SERIAL INTERFACE:

The mother board has a serial interface that allows for the recording of the current status and angular values of the robot assembly.

MOTHER BOARD:

It is an ATmega16 development board that processes i/p's from the teach pendant and controls the assembly.

TEACH PENDANT:

This is operated by the user to teach the required steps to the robot.

GRIPPER: Used as an end effector

ELBOW: Controls the second link of the assembly

BASE: Controls the base link of the assembly.