Design of The Six-Axle Linking-Up Robot Arm Which Is Controlled by Embedded of MRC Neural Network Application

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ABSTRACT

Most robots used currently by industries are available for precision control, with program database required in great demand that causes difficult learning and operation for staff. A broader application can be achieved if robots can be set out to a simplified design for its structure, humanized operation, and reasonable price. In view of this point, this essay intends to bring up a design of the robot arm which is controlled by embedded Atmega16 IC microprocessor of MRC network application in terms of neural networks theory, so as to learn to drive the robot arm for accurate position control by means of neural networks of model reference control (MRC) architecture and training. In the design presented by this essay, a PC picture will be designed for the graphic edition of graphic control that might correct the position control command for each axle of the robot arm easily through graphic control as well as conduct effective embedded design through a transmission of RD232 to microchip control, in hope of bringing on a design philosophy by putting such design into practice to enhance and simplify the control command of the robot to drive the robot. Structure of this essay is consisted of two parts: first, the reference control which uses MRC to offer control to be transmitted to the microprocessor, making the robot arm achieve the optimum efficiency control; second, systematic power which employs the IC microprocessor of Atmega16 to control six micro servo motors to conduct the control motion for six-axle linking-up of the robot arm.

Keywords : MRC (model reference control) neural networks ; Embedded ; RA (robot arm) ; ATmega16 microprocessor ; Micro servo motor

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