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Abstract
This thesis presents the control system based on fuzzy neural network for the tracking control of robot manipulators. Two different approaches have been applied to two-link robot manipulator with the same reference inputs under external disturbances. One is the online adaptive controller, based on fuzzy neural networks combined with Proportional-Integral-Derivative controller (PID controller), while the other controller is based on sliding mode fuzzy neural networks. The learning algorithms of the two controllers are achieved based on Lyapunov theorem for guaranteeing the system-tracking stability. Computer simulation of the two-link robot manipulator is presented and demonstrates the robust tracking performance can be obtained. Furthermore, the root-mean-square errors are compared to show their advantages and disadvantages of each controller under uncertainties.
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