

Abstract:

A robot is an option to improve productivity in industrial automation. Automated manipulators have been applied to hazardous environments and routine manufacturing functions. Because automated manipulators are nonlinear dynamic systems with a high degree of uncertainty, it is difficult to obtain precise dynamic equations to design control laws. VR is an important part of applications in industrial, medicine, statistics, and other areas where 3D object can help understand complex systems. In this application, interaction with the virtual system can be enhanced by a sense of touch, and rapid feedback can be used to apply representative forces from the virtual environment to a human user. The ANFIS approach has become one of the main areas of interest because it gains the benefits of neural networks (NN) as well as mysterious logic systems and eliminates individual defects by combining them with common features. The artificial neural network (ANN) has injected new momentum into the mysterious literature. ANN can be used as a universal learning model for any smooth parameter models, including the mysterious inference system. The mixed learning base used to combine the gradient ratios technique and the Least Square Estimator (LSE) to train the ANFIS network for a particular problem. This chapter introduces the design of the ANFIS for the 7-DOF manipulator model built by the VR environment and simulates this model by connecting Matlab / Simulink with VR to execute commands produced by the system-based ANFIS console. Satisfactory results are obtained in simulations which improve the design as a basic application of this control design.