

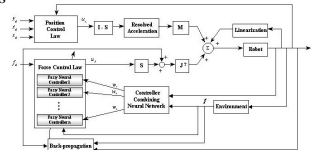
Fuzzy Logic Systems

Chairs: Toshio Fukuda, Ren C. Luo

Application of Multiple Fuzzy-Neuro Force Controllers in an Unknown Environment Using Genetic Algorithms

K. Kiguchi¹, K. Watanabe¹, K. Izumi¹ and T. Fukuda²¹Saga University and ²Nagoya University

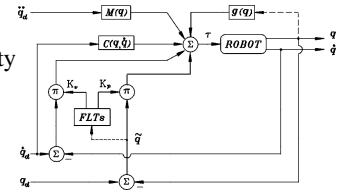
- Realize precise force control in an unknown environment
- Multiple fuzzy neuro force controllers are combined with a proper ratio using GA
- Desired force response has been generated in several kinds of environments
- An effective force control method has been proposed using soft computing



Fuzzy PD+ Control for Robot Manipulators

¹V. Santibanez, ²R. Kelly and ¹M. Llama¹Instituto Tecnológico de la Laguna and ²CICESE

- Introduction
- Fuzzy PD+ Control: Stability Analysis
- Experimental Evaluation
- Conclusions



Mobile Target Tracking Using Hierarchical Grey-Fuzzy Motion Decision-Making Method

T. M. Chen and R. C. Luo

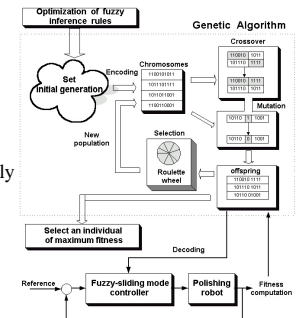
National Chung Cheng University

Fuzzy-Sliding Mode Control with the Self Tuning Fuzzy Inference Based on Genetic Algorithm

S. J. Go and M. C. Lee

Pusan National University

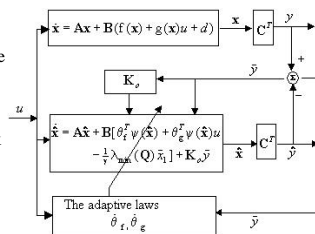
- The fuzzy inference rules should be determined only by an expert.
- A self tuning fuzzy inference method by the genetic algorithm.
- The optimal fuzzy inference rules by the genetic algorithm are automatically selected.
- Although designer is a non-expert, the fuzzy-sliding mode controller can be designed by the self tuning fuzzy inference method.



Adaptive Fuzzy-Neural Observer for A class of Nonlinear Systems

Yih-Guang Leu¹ and Tsu-Tian Lee²¹Lee-Ming Institute of Technology and ²National Taiwan University of Science and Technology

- Designing an adaptive fuzzy-neural observer for a class of uncertain nonlinear systems
- Obtained by H-infinity control technique and the strictly positive real Lyapunov design approach
- Simulating the observer for a single-link robot plant and showing satisfactory performance
- Providing the modeling error and the external bounded disturbance attenuation with H-infinity performance



Fuzzy and Recurrent Neural Network Motion Control among Dynamic Obstacles for Robot Manipulators

J. B. Mbende, X. Huang and M. Wang

Huazhong University of Science and Technology

- In the potential field approach to path planning, the development of the APF is computationally intensive operation.
- The proposed fuzzy obstacle avoidance entails attractive and repelling forces provided by two inputs.
- The robot using the proposed robust neuro-fuzzy motion control, successfully avoids the moving, unknown and static obstacles.
- The use of the proposed neuro-fuzzy motion controller is very attractive for real time applications where manipulator dynamics can experience parameter variations, load changes and any possible external disturbances.

