Abstract

Fuzzy logic provides a formal framework for constructing systems exhibiting both good numeric performance (precision) and linguistic representation (interpretability). Fuzzy
Designing and Modeling Fuzzy Control Systems

modeling—meaning the construction of fuzzy systems—is an arduous task, demanding the identification of many parameters. This paper analyses the fuzzy-modeling problem and different approaches to coping with it, focusing on evolutionary fuzzy modeling— the design of fuzzy inference systems using evolutionary algorithms. The purpose of this paper is twofold. We first provide an overview of the standard approach to constructing a fuzzy control system and then identify a wide variety of relevant system modeling techniques. The later part of the paper deals with discussing Fuzzy modeling problem – curse of dimensionality and techniques to solve the problem. The paper provides an introduction to the use of fuzzy sets and fuzzy logic for the approximation of functions and modeling of static and dynamic systems. The concept of a fuzzy system is first explained. Afterwards, the motivation and practical relevance of fuzzy modeling are highlighted.

Reference

- Kevin M. Pasino, Stephen Yurkovich, 1998, Fuzzy Control, Department of Electrical Engineering, The Ohio State University.
- Guanrong Chen, Young Hoon Joo, 2001, Introduction to Fuzzy Control Systems, Department of Electrical and Computer Engineering, University of Houston, Houston, Texas 77204-4793, USA.
- E. H. Mamdani and S. Assilian, 1975, An experiment in linguistic synthesis with a fuzzy
- C.W. Omlin, L. Giles, and K.K. Thornber, 2000, Fuzzy knowledge and recurrent neural
Designing and Modeling Fuzzy Control Systems


- Hao Ying, Fuzzy systems technology: A brief overview.

**Index Terms**

Computer Science  
Fuzzy Systems

**Key words**

Fuzzy system modeling  
Fuzzy logic controller

Fuzzy modeling problem

Fuzzy learning approaches