

论文与报告

基于自适应隶属度函数的特征选择

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摘要

Neuro-fuzzy (NF) networks are adaptive fuzzy inference systems (FIS) and have been applied to feature selection by some researchers. However, their rule number will grow exponentially as the data dimension increases. On the other hand, feature selection algorithms with artificial neural networks (ANN) usually require normalization of input data, which will probably change some characteristics of original data that are important for classification. To overcome the problems mentioned above, this paper combines the fuzzification layer of the neuro-fuzzy system with the multi-layer perceptron (MLP) to form a new artificial neural network. Furthermore, fuzzification strategy and feature measurement based on membership space are proposed for feature selection. Finally, experiments with both natural and artificial data are carried out to compare with other methods, and the results approve the validity of the algorithm.

关键词 [Membership function](#) [feature selection](#) [architecture pruning](#) [artificial neural networks](#)

分类号

Feature Selection Based on Adaptive Fuzzy Membership Functions

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Abstract

Neuro-fuzzy (NF) networks are adaptive fuzzy inference systems (FIS) and have been applied to feature selection by some researchers. However, their rule number will grow exponentially as the data dimension increases. On the other hand, feature selection algorithms with artificial neural networks (ANN) usually require normalization of input data, which will probably change some characteristics of original data that are important for classification. To overcome the problems mentioned above, this paper combines the fuzzification layer of the neuro-fuzzy system with the multi-layer perceptron (MLP) to form a new artificial neural network. Furthermore, fuzzification strategy and feature measurement based on membership space are proposed for feature selection. Finally, experiments with both natural and artificial data are carried out to compare with other methods, and the results approve the validity of the algorithm.

Key words [Membership function](#) [feature selection](#) [architecture pruning](#) [artificial neural networks](#)

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