

Title: Artificial neural networks for clustering and rule extraction

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Abstract: Rule extraction with neural networks has been a common research topic over the last decades. This master thesis proposes a novel growing fuzzy inference neural network, based on the principle of growing neural structures. This allows the network to adjust iteratively its number of hidden neurons. For the purpose of this network an existing clustering algorithm is enhanced to improve the sensitivity to the requested output. A novel fast weights adaptation, inspired by the fuzzy set theory, is also suggested. The characteristics of the proposed model and a new method of the selection of significant input features support the induction of a relatively small amount of simple fuzzy rules. The introduced techniques have been experimentally tested on real-world data describing the relationship between various types of housing in the Boston area and its price. The data was obtained from the “Boston housing” dataset.