

GENERALIZATION PERFORMANCE ANALYSIS BETWEEN FUZZY ARTMAP AND GAUSSIAN ARTMAP NEURAL NETWORK

Abstract

This paper examines the generalization characteristic of Gaussian ARTMAP (GAM) neural network in classification tasks. GAM performance for classification during training and testing is evaluated using the k-folds cross validation technique. A comparison is also done between GAM and Fuzzy ARTMAP (FAM) neural network. It is found that GAM performs better (98-99%) when compared to FAM (79-82%) using two different types of dataset. The difference between GAM and FAM is that input data to be classified using FAM must be normalized in prior. Hence, three different normalization techniques are examined namely; unit range (UR), improved unit range (IUR) and improve linear scaling (ILS). This paper also proposes an alternative technique to search the best value for gamma γ parameter of GAM neural network, known as gamma threshold. A small number of training required for GAM also shows that its fundamental architecture retain the attractive parallel computing and fast learning properties of FAM.