最小風險神經網路

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摘要

This study proposed the Minimum Risk Neural Network (MRNN), which is based on back-propagation network (BPN) and combined with the concept of maximization of classification margin of Structural Risk Minimization Theory. Its purpose is to improve the generalization of BPN classification model and overcome the over-learning to increase accuracy of validation examples. To prove the performance of this network, five artificial classification problems and one real classification problems were examined. The results proved that the accuracy of MRNN is superior to BPN. Moreover, this study revealed the relations between MRNN and SVM, which formed a unified theoretical framework for them. Besides, this study proved that the weight decay technology is the simplification of MRNN, which build a more rigorous theoretical foundation for this technology.

關鍵字：back propagation network, structural risk minimization, SVM, weight decay.