Abstract

Extreme Learning Machine (ELM) has recently emerged as a fast classifier giving good performance. Circular–Complex extreme learning machine (CC-ELM) is recently proposed complex variant of ELM which has fully complex activation function. It has been shown that CC-ELM outperforms real valued and other complex valued classifiers. In both CCELM & ELM parameters between input and hidden layer are initialized randomly and the weights between hidden and output layer are obtained analytically. Due to this randomization, the performance of both ELM & CC-ELM fluctuates. In this paper, performance fluctuation due to random parameter of CC-ELM and the circular transformation function have been analyzed first, then by using an Ensemble approach namely Bagging, a variants Bagging. C1 is proposed to bring the stability in the performance of CC-ELM. In Bagging, C1 various data samples are generated by using random parameters of circular transformation function. Performance of proposed classifier ensemble is evaluated using a set of benchmark real-valued classification problems from the University of California, Irvine machine learning repository.
- G. B. Huang, N. Liang, H. Rong, P. Saratchandran and N. Sundararajan, "On-line sequential Extreme Learning Machine", IASTED International Conference on Computational Intelligence (CI 2005), Calgary, Canada, July 4-6, 2005.

Index Terms

Computer Science

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Keywords

Classification; complex-valued neural networks; extreme learning machine