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.

References
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Index Terms

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Classification; complex-valued neural networks; extreme learning machine