Special Issue on Applications of Artificial Neural Networks

Guest Editorial

Artificial Neural Networks (ANN) are inspired by the functioning of biological neural networks. ANNs have rich features as well as high processing speeds and the capability to learn the answer to a problem from a set of examples. ANN structure consists of three layers. The first layer is the input layer through which data is fed; second layer contains hidden units where calculation is done according to the function provided; the final layer is the output layer, which gives output. ANNs have been implemented in almost every field of science and technology, *viz.*, speech synthesis and recognition, pattern classification, adaptive interfaces between humans and complex physical systems, clustering, function approximation, image data compression, nonlinear system modeling, associative memory, combinatorial optimization, control and several others, as they have proved valuable tools for obtaining the required output. ANN provides an exciting alternative method for solving a variety of problems in different areas of science and engineering.

The aim of this special issue is to discover the recent advances in the applications of ANN and provide an overview of the field, where the ANNs are used and discuss the critical role that ANNs play in different fields.

This special issue consists of four papers that highlight the application of ANN in different areas. As a guest editor, I received many papers for this special issue; but after critically review; I have selected the following four best papers for publication:

In paper one, authors introduce a power control strategy of a flywheel energy storage system based on an ANN as a current decoupling network to charge/discharge the flywheel for grid connected applications such as grid frequency support/control, power conditioning and UPS applications.

Second paper highlights the applicability of radial basis function network (RBF) for the modeling and simulation of turbogenerators. RBF model is compared with Multi Layer Perceptron (MLP) model, which is another important architecture of ANN. The results obtained showed that the proposed RBF model is more accurate and reliable than MLP model.

Third paper discusses the ANN modeling techniques for dynamic phased array smart antenna. Authors have optimized the seven element dynamic phased array smart antenna using RBF and MLP ANN. The beam ship prediction of seven elements has been done up to 60 degree scan angle and results of RBF and MLP have been compared to find out the better ANN approach for smart antenna optimization.

Fourth paper reports the use of Cascade ANN models for predicting the shelf life of processed cheese. Body & texture, aroma & flavour, moisture and free fatty acids were taken as input parameters, and sensory score as output parameter for developing the models. Cascade ANN models very well predicted the shelf life of processed cheese.

At last, I would like to express my gratitude to all the reviewers for their help and their contribution to the success of this special issue, and to the Editor-in-Chief of JAIT, Professor A.C.M. Fong for his professional assistance, which was very valuable in achieving this special issue in the present form.

Guest Editor

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