EDITORIAL
MACHINE LEARNING AND ITS APPLICATIONS

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Dear readers, authors and reviewers,

recently, machine learning has attracted close attention of researchers and has also been applied successfully in real-life problems, for example, the areas of administration, commerce, and industry. These successful applications of machine learning in the real-world problems have caused increased interest in learning techniques, dictating further effort in informing people from other disciplines about the art in machine learning and its uses.

The objective of this Special Issue of Neural Network World on Machine Learning and Its Applications is to encourage the researchers who could provide their significant recent developments on machine learning, and machine learning for real-world applications. By publishing this Special Issue, we hope to make a modest contribution to the effort of introducing the most significant recent developments on the topics of Machine Learning and Its Applications.

Among all the submissions received for the special issue, we finally selected 5 articles.

The paper titled "*Bus arrival time prediction using support vector machine with genetic algorithm*" (by Yang, *et al.*, 2016) proposed a prediction model of bus arrival time based on support vector machine with genetic algorithm (GA-SVM). To increase the speed and optimality of the parameter selection, GA was used to search the optimal combination of the various parameters in the SVM. The experimental results showed that the prediction model the authors proposed were superior to the traditional SVM model and the Artificial Neural Network (ANN) model.

In the paper titled "*Multi-step hybrid prediction model of baltic supermax index based on support vector machine*" (by Guan, *et al.*, 2016) a hybrid multistep prediction model to predict the Baltic index was proposed. In the hybrid model, the direct prediction and iterative prediction were combined. The iterative model was used for a rough prediction and the direct model was used for adjustment. Compared with history mean prediction model, ARMA model and simple iterative prediction model, the hybrid multistep prediction model based on SVM had high accuracy, and was feasible in the BSI index prediction.

The paper titled "*Possibilistic LVQ neural network- an application to childhood autism grading*" (by Kanimozhiselvi and Pratap, 2016) was concerned with a Po-LVQ based assessment support system for the diagnostic confirmation in grading

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childhood autism. The diagnostic system assessed the grades as: 'Normal', 'Mild-Moderate', 'Moderate-Severe', 'Severe'. The implementation results were compared with the performance of a general LVQ and other existing applied models. Based on the result comparison, Po-LVQ based childhood autism grading seemed to be better and could be applied to grading childhood autism while developing autism assessment support system.

In the paper titled "*A comparison of the performance of ANN and SVM for the prediction of traffic accident duration*" (by Yu *et al.*, 2016) artificial neural network (ANN) and support vector machine (SVM) was used to predict the accident duration. The numerical test showed that both ANN and SVM models had the ability to predict traffic accident duration within acceptable limits. But the ANN model got a better result for long duration incident cases while the SVM model had better comprehensive performance.

In the paper titled "*Harmonic estimation based support vector machine for typical power systems*" (by Özdemir, *et al.*, 2016) Support Vector Machine (SVM) was applied for harmonic estimation in energy distribution systems. Total Harmonic Distortion (THD) was measured and estimated by using the SVM method, the ANN and LR estimation methods. The numerical results showed the THD estimation values of SVM, ANN and LR were close and SVM based estimation method was valid for harmonic estimations in power system.

All submitted papers will be subjected to the journal's standard peer review process. Criteria for acceptance include originality, scientific merits and contributions to advancing the fundamental research and application in the field of machine learning.

It has been our pleasure to organize this Special Issue of Neural Network World. We sincerely thank all the authors for submitting their work to this Special Issue. It is our hope that this issue helps to bring about enhancement of research in machine learning and its applications.

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References

[1] Yang M., Chen C., Wang L., Yan X.X., Zhou L.P. Bus Arrival Time Prediction Based on the GA-SVM Model. *Neural Network World*. 2016, 26(3), pp. 205–217, doi: 10.14311/NNW.2016.26.011.

[2] Guan F., Peng Z.X. Wang K.M., Song X.L., Gao J.J. Multi-Step Hybrid Prediction Model Of Baltic Supermax Index Based On Support Vector Machine. *Neural Network World*. 2016, 26(3), pp. 219–232, doi: 10.14311/NNW.2016.26.012.

[3] Özdemir S., Demirtaş M., Aydin S. Harmonic Estimation Based Support Vector Machine (Svm) For Typical Power Systems. *Neural Network World*. 2016, 26(3), pp. 233–252, doi: 10.14311/NNW.2016.26.013.

[4] Kanimozhiselvi C.S., Pratap A. Possibilistic LVQ neural network- An application to childhood autism grading. *Neural Network World* 2016, 26(3), pp. 253–269, doi: 10.14311/NNW.2016.26.014.

[5] Yu B., Wang Y.T., Yao J.B., Wang J.Y. A comparison of the performance of artificial neural networks and support vector machines for the prediction of traffic accidents. *Neural Network World*. 2016, 26(3), pp. 271–287, doi: 10.14311/NNW.2016.26.015.