

## Editorial

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It has been over 19 years since the first international conference on neural information processing (ICONIP) held in Seoul, Korea in 1984. ICONIP 2012 was held in Qatar, Doha. It is an annual event organized by the Asia Pacific neural network assembly (APNNA). The aim of ICONIP is to bring together scientists, practitioners, and students worldwide, especially from the Asia-Pacific region, to discuss the challenges and trends in the field of neural information processing. This special issue on “Neural Information Processing” aims at disseminating the latest developments in neural information processing. We are pleased to have different scholars from different regions in Asia Pacific to contribute to this special issue. Eventually, seven papers are included in this issue.

“Reconfigurable neuromorphic computing system with memristor-based synapse design” proposes a memristor-based design of bidirectional transmission excitation/inhibition synapses and implement a neuromorphic computing system based on the proposed synapse designs. The robustness of the system is also evaluated by considering the actual manufacturing variability with emphasis on process variation.

In “Landslide deformation prediction based on recurrent neural network”, a method based on recurrent neural network for landslide prediction is presented. Genetic algorithm is used to optimize the initial weights and biases of the network. The results show that the prediction accuracy of recurrent neural network model is much higher than the feed forward neural network model for Baishuihe landslide, China.

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“Noise-robust detection of symmetric axes by self-correcting artificial neural network” proposes a noise-robust neural network model that can correct asymmetric corruptions and returns clear symmetry axes. For efficient detection of bilateral symmetry as well as asymmetry correction.

“Bayesian cell force estimation considering force directions” proposes a Bayesian algorithm by introducing a prior force direction that is based on cellular morphology. The authors apply the Bayesian framework to synthetic datasets in conditions under which the bead density is low and cellular attachment points are unknown. The authors demonstrate that the Bayesian algorithm improves accuracy in force estimation compared with the previous algorithms.

“Predicting multivariate time series using subspace echo state network” proposes a new model on the basis of echo state network, termed as fast subspace decomposition echo state network. The core of the model is to utilize fast subspace decomposition algorithm for extracting a compact subspace out of a redundant large-scale reservoir matrix in order to remove approximate collinear components, overcome the ill-posed problem, and improve generalization performance.

“A hybrid genetic algorithm for the energy-efficient virtual machine placement problem in data centers” has proposed a genetic algorithm for a new virtual machine placement problem that considers the energy consumption in both physical machines and the communication network in a data center. Aiming at improving the performance and efficiency of the genetic algorithm, this paper presents a hybrid genetic algorithm for the energy-efficient virtual machine placement problem. Experimental results show that the hybrid genetic algorithm significantly outperforms the original genetic algorithm, and that the hybrid genetic algorithm is scalable.

“TaskRec: a task recommendation framework in crowdsourcing systems” proposes a task recommendation (TaskRec) framework based on a unified probabilistic matrix factorization, aiming to recommend tasks to workers in dynamic scenarios. Unlike traditional recommendation systems, workers do not provide their ratings on tasks in crowdsourcing systems, thus the authors infer user ratings from their interacting behaviors. This conversion helps task recommendation in crowdsourcing systems. Complexity analysis shows that the obtained framework is efficient and is scalable to large datasets. Finally, the authors conduct experiments on real-world datasets for performance evaluation. Experimental results show that TaskRec outperforms the state-of-the-art approach.

In summary, all of these seven selected papers presented recent developments of neural-network-related research, with a focus on information processing, modeling, and control using computational intelligence. These papers presented the latest researches in a coherent way.

We hope the reader will share our joy and find this special issue very useful.