

## Special Issue on ICONIP 2012

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The 19th International Conference on Neural Information Processing (ICONIP) has successfully been held in November 11–15, 2012, Doha, Qatar, and it provided a high-level international forum for scientists, engineers, and student worldwide, to present the latest research in the field of neural information processing and applications. This special issue has included 6 extended selective papers which cover theoretical contributions and applications in joint sparse representation, fault-tolerant learning method, multi-task learning, hand shape identification, multi-agent cooperative task allocation, and neural network algorithm.

The first paper entitled “Image Fusion by Hierarchical Joint Sparse Representation” in this issue focuses on cognitive science techniques for image processing. Yao et al. propose a two-layer hierarchical framework based on joint sparse representation. In this paper, extensive experiments demonstrate that effectively combining features in images of different fineness does improve the quality of the fused image significantly.

In “An Improved Fault-Tolerant Objective Function and Learning Algorithm for Training the Radial Basis Function

Neural Network,” the authors propose a fault-tolerant learning method for training radial basis function networks that may contain the coexistence of the stuck-at-zero node fault and the stuck-at one node fault.

“A Learner-Independent Knowledge Transfer Approach to Multi-task Learning” proposes a learner-independent multi-task learning scheme in which knowledge transfer is running beyond the learner, and the effectiveness and robustness of the proposed knowledge transfer is evaluated, respectively.

In “Abductive Learning Ensembles for Hand Shape Identification,” the authors present a novel method for hand shape identification based on abductive machine learning. Three groups of geometric measurements of the finger, palm, and hand were used. Three identification approaches have been proposed and compared.

“Exploiting a Modified Gray Model in Back Propagation Neural Networks for Enhanced Forecasting” shows that direct use of the back propagation neural network may lead to the loss of forecast reliability during its evolutionary process by using a prototype for the forecast of atmospheric radiation and atmospheric ozone concentration in the state of Ohio, USA,

In “A Consensus-Based Grouping Algorithm for Multi-agent Cooperative Task Allocation with Complex Requirements,” Hunt et al. study consensus algorithms for agent cooperation with unmanned aerial vehicles. The proposed algorithm converges to a conflict-free, feasible solution of which previous algorithms are unable to account for.

In summary, we hope the selected papers in this special issue can demonstrate some of the latest neural information processing research and applications presented at the ICONIP 2012, and also hope the readers will share our joy and find this special issue very useful.

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