



A Special Issue of Intelligent Automation and Soft Computing

GUEST EDITORIAL

THEORETICAL INVESTIGATION OF DEPENDABLE COMPUTING

BY

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This issue includes fifteen papers selected from the 2010 Conference on Dependable Computing (CDC2010). The papers in this issue mainly focus on the theoretical investigation of Dependable Computing. Thorough theoretical investigation is the cornerstone of successful applications. It is an excitement to have all experts, professionals and scholars share their creative thoughts and inspirations on the theoretical aspects of dependable computing.

In the first paper, Junqing Liu et al. proposed a blotch identification algorithm for archive film restoration based on edge detection, where the blotch identification area is limited to edge pixels and pixels nearby. In addition, a non-blotch edge removal approach is proposed to remove partial non-blotch edge points and a scanning method is used to identify all blotches from remaining edge points. Xinsai Wang et al. presented an adaptive algorithm with automatic estimation of gradient histogram threshold for segmentation of infrared images. Yuan Tian et al. proposed a new combination strategy for high-accuracy recognition of wheat leaf diseases, which is based on supervised vector machine for pattern recognition of wheat leaf diseases. Zhang Jingcheng et al. presented spectral feature selection method for winter wheat yellow rust detection based on continuous wavelet analysis. It was found that the variation of chlorophyll content is closely associated with the yellow rust infection. Four spectral features are identified by the continuous wavelet analysis, which are proved to be powerful in discriminating the yellow rust infected and non-infected winter wheat plants.

To reduce the multicast communication traffic in hypercube networks, a novel ACO (ant colony optimization)-based multicast path algorithm (AMPA) was proposed by Hongwei Wang et al. An optimized distrustful algorithm for AMPA is also proposed using clustering strategy, whose time cost satisfies the requirements of the actual networks. Xu Feng et al. developed a new verifiable threshold decryption scheme without trusted center, which forces the members to submit a commitment at the beginning of the process, and has several advantages such as cheat-proof and dynamic member revoking. Chunyan Hou et al. discussed the fault repair policy and proposed a hybrid infinite server queuing model to describe the fault correction process. Xiaofeng Ding et al. used covariance features in combination with quasi-Monte Carlo filters to track visual objects. The proposed covariance based trackers are robust and versatile with a modest computational cost, and are capable of successfully track the object in the presence of appearance variations, cluttered background and even severe occlusions.

A fast navigation-placement tree algorithm for reconfigurable computing systems was proposed by Huanhuan Song et al., which formulates the scheduling problem for guarantee-based scheduling of hardware tasks. Dawei Wang et al. developed a new anomaly detection scheme using neighborhood negative selection. Guangming Dai et al. presented the implementation and optimization for Tate pairing based on Miller's algorithm. Xiuling Zhou et al. developed a frame of reliability model optimization with a hyper-volume based multi-objective evolutionary algorithm. A new algorithm, set hyper-volume contribution by slicing objective, is proposed to calculate the exclusive hyper-volume contribution of a subset to the whole nondominated set directly for small dimension. Yuanyuan Fu et al. proposed a new fusion algorithm for face recognition under varying illumination. Jiangting Zhou and Jianxi Yang developed analysis of bridge safety assessment with correlation between measuring points for bridge health monitoring. In the last paper, Jingyao Jiang et al. proposed an improved integrated tender evaluation method based on analytic hierarchy process.



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