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Guest-editorial

Special issue: Extended papers selected from KES-2006

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KES-2006, the tenth KES International Conference in Knowledge Based and Intelligent Information and Engineering Systems, was held in Bournemouth, England from October 9^{th} to 11^{th} 2006. This special issue of the KES Journal comprises the extended version of the six best papers selected by the conference programme committee. The KES International organization is aimed at facilitating and supporting research into the applications of intelligent systems, the tools and techniques of artificially intelligent computer systems. KES has organized an annual conference since 1996, which now regularly attracts about 500 delegates.

KES International has established two Best Paper Awards for the best papers presented in KES2006 this year. The Best Research Paper Award recognizes an outstanding research paper in general for intelligent systems; the Best Student Paper Award recognizes and encourages an outstanding research paper produced by a student author. The Awards are selected by the Conference Award Panel. The Best Paper Award was attributed to the paper entitled "Design and Evaluation of a Rough Set-Based Anomaly Detection Scheme Considering Weighted Feature Values" by Ihn-Han Bae, Hwa-Ju Lee and Kyung-Sook Lee. The Best Student Paper Award was presented to "Adapting Robot Kinematics for Human-Arm Motion Recognition" by Chee Seng Chan, Honghai Liu and David Brown. Detailed introductions to the papers selected for the Special Edition are given in the following text.

Bae et al., presented an efficient rough set based anomaly detection method that can effectively identify a group of especially harmful internal attackers for wireless networks and mobile computing systems. They employed trace data of the wireless application layer as feature values. Rough sets and their membership functions with weighted feature values effectively captured the used pattern of a mobile's user and identified the mobile's abnormal behaviour.

In the second paper, Chan et al., propose a novel framework for recognizing human-arm motion based on approximate reasoning. A stick model of human arm was constructed by the combination of robotic kinematics and fuzzy qualitative reasoning; qualitative normalized templates are developed to describe arm motions. A matching algorithm was developed to recognize parameters calculated from image sequences to the templates. Experimental evaluation demonstrated the effectiveness of the proposed method. Their future work targets more complex human body motion.

The third paper was presented by Bashar et al., who studied facial recognition in difficult situations, e.g., facial expression, view point and illumination conditions. Their system first partitions face images into several image contexts based a newly proposed adaptive cluster validity approach and then takes adaptation to individual partitioned groups. The system achieved encouraging results in comparison with Dunn's measuring.

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In the next paper, Stiglic and Kokol introduced evolutionary principle to tune multiple parameter of the combined multiple models technique. The proposed parameter tuning enables fine tuning of parameter that are usually set to pre-defined values, taking advantage of the combination of evolutionary tuning and validation dataset, the method provided a tool of levelling the accuracy of comprehensible classifiers.

The last two papers are both on bioinformatics applications. Pham et al., developed methods based on vector quantization and a Markov model for classification of cellular phases using time-lapse fluorescence microscopic image sequences in order to facilitate the automation of cell screening. Relaxation labelling technique and fuzzy data fusion are combined to attack the proposed problem. The former is used to reduce uncertainty among cell-phase models having overlapping properties; the latter is to further improve the classification rate for combining individual results obtained from multiple classifiers.

Xia et al., targeted cellular multi-phenotypic mitotic in high content screening with a focus on applying feature reduction before recognition. The results showed that the cellular phase identification system using feature reduction achieved 99.17% recognition rate, which is considerably better than those generated by methods without feature reduction.

Finally, we would like to thank all the reviewers for their close cooperation and all authors for their valuable contributions to KES2006. Special thanks go to the Best Paper Award Selection Panel for their eminent assistance.