

Multimedia applications for intelligent fusion computing

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This special issue presents state-of-the-art research in the area of multimedia applications for Intelligent Fusion Computing. Multimedia data are used more and more widely and frequently in our daily life, e.g., 3D computer games, multimedia search, videoconferencing, visual telephone, YouTube, IPTV, IP Cam, video surveillance, etc. Recently, various intelligent fusion computing techniques have been invented, such as neural networks, fuzzy theory, evolutionary algorithm, and machine learning, which bring significant performance improvements to practical applications. For multimedia computing, these techniques can push applications closer to users' semantic meanings, e.g., the semantic based multimedia retrieval and specific human action detection, etc.

The goals of this special issue are to establish multimedia applications for intelligence fusion computing as a more prominent field of study and industry, and to exchange the latest discoveries on the strategic intelligence fusion that synergizes electronics, information media, hardware, control, human engineering, business, and industrial design to meet the social, technical demands of today's society. By doing so, we hope to lay the groundwork for the sustainable growth of IT specialists and key industries through innovative fusion and communication between fields.

The first paper entitled “An Intelligent Parking Platform of Neighborhood EV for Autonomous Mobility Service” (10.1007/s11042-014-1862-0) by Choi et al. suggests an architecture for an intelligent parking system that automatically maneuvers from a traffic lane to a designated battery-switching or recharging station supported by multimedia road servers and personal ITS station. This paper tests the spatial perception server and coordination server with sensors and devices to support that the modified EV can drive into a slot autonomously. By using this system, it's possible to cut down air pollution and energy consumption from the transportation system by shortening waste time searching for an available slot.

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The paper entitled “A Case Study of the vulnerability of OTP (One Time Password) implemented in Internet Banking Systems of South Korea” (10.1007/s11042-014-1888-3) by Changsok Yoo et al. introduces the current security status of South Korea’s Internet Banking environment. In this paper, the authors claim that OTP cannot be a silver bullet for users’ account protection. Although the OTP algorithm itself is secure, it can be vulnerable during the implementation process. They summarize the hacking methods against OTP in detail by vulnerability category. Finally, they performed the penetration test on Internet Banking sites of South Korea.

The third paper entitled “A Study on Performance Evaluation of Intelligent Collaboration System” (10.1007/s11042-013-1834-9) by Chang et al. proposes quantitative performance analysis methodology between a final production company and cooperating companies through an intelligent collaboration system. It is utilized to conduct quantitative performance analysis which carry out collaboration for procurement and production in the form of a virtual company for production of final products through electronic information sharing in a diverse range of industries including automobile, electricity, electronics, ship-building, metal and machinery.

The fourth paper entitled “Pixel Based Stroke Generation for Painterly Effect Using Maximum Homogeneity Neighbor Filter” (10.1007/s11042-013-1835-8) by Seo et al. proposes a new brush stroke generation method for painterly effect. To generate the brush strokes for painterly rendering, the homogeneity region of an image is extracted by MHN filter and it is converted to brush stroke considering the homogeneity of pixels. The proposed method results in realistic looking brush strokes of varying width that have irregular directions where necessary.

The fifth paper entitled “Developing a Job Shop Scheduling System through Integration of Graphic User Interface and Genetic Algorithm” (10.1007/s11042-014-1965-7) authored by Kim Jun Woo aims to develop a practical and comprehensive analysis tool for Job Shop Scheduling Problems (JSP).

On the basis of the intuitive user interfaces and novel genetic algorithm, the system enables the users to deal with JSPs with different sizes and additional constraints in a convenient way.

The next paper entitled “Software Robot Authoring Tools for Sharing Intelligence among Users and Content Providers” (10.1007/s11042-014-1972-8) by Lee et al. proposes the authoring tools of the software robot (Sobot) for sharing intelligence among users and content providers. The authored Sobots can connect with and move to any device such as PCs, mobile phones, PDAs, or web portal sites at any time. The experimental results verify their effectiveness based on the ubiquitous paradigm.

The seventh paper entitled “Estimating Material Properties of Deformable Objects by Considering Global Object Behavior in Video Streams” (10.1007/s11042-014-1995-1) by Choi et al. proposes the material properties estimation method for deformable objects based on computer vision techniques for tracking global position information of moving deformable objects from a video stream and the optimization routine for estimating the elasticity parameters of a mass-spring simulation.

The eighth paper entitled “A study on the effect of Hotel Intelligent Fusion system on Hotel strategy, Work Process, Employee satisfaction, and Hotel performance” (10.1007/s11042-014-2011-5) by He et al. shows the hotel information system influence on inner factors. The results of this research reflect in today’s hotel industries environment. Almost every hotel today, build their information system or adopt ERP (enterprise resource management system). Former research confirmed the positive influence on inner factors the information system has on the company and organization. The results of

this paper are the same as other industry areas. Therefore, information systems have proven effective at companies in all kinds of industries.

The ninth paper entitled “A Personalized Display Technology Integrating the Technologies of Bio-Signal Measurements and Multi-View 3D Display” ([10.1007/s11042-014-2046-7](#)) by Im et al. proposes SMART criteria as criteria for developing and applying personalized 3D display technologies. It is utilized to determine the multi-view 3D display technologies suitable for integration with bio-signal measurement technologies and to identify the types of bio-signals that could create synergy with multi-view 3D display technologies.

The last paper “Mesh Segmentation Based on Curvatures Using the GPU” ([10.1007/s11042-014-2104-1](#)) by Lee et al. proposes a mesh segmentation algorithm that is based on the discrete curvatures for an accurate partitioning criterion and applies a quick shift scheme to 3D meshes for fast clustering. It is implemented on the GPU so that more computational work is done directly on the graphics device.

1 Conclusions

We would like to express thanks for giving us the opportunity to all the people who have contributed their time and efforts in making this special issue successful. We would like to thank specially to the Editor-in-Chief, Prof. Borko Furht, for his encouragement and strong support during the preparation of this special issue.



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