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Mobile, ubiquitous multimedia and digital convergence

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Welcome to this special issue of Cluster Computing. This special issue contains a collection of best papers presented at the mobile ubiquitous multimedia convergence that are reviewed and accepted. This issue includes papers from researchers in academia along with professionals from different industries to share computing techniques, algorithms, solutions, and digital convergence, as well as their experiences. As such, we believe that this special issue will be comprehensive in solving problems in digital convergence as well as presentingmobile and cluster computing technologies. One of the challenges is processing multimedia data, cooperation, and analysis, in a ubiquitous environment. Therefore, modeling, algorithms, unstructured data, systems, and convergence solutions regarding digital convergence should be considered, including the following fundamental issues.

- Cluster Computing and Solutions
- Reconfigurable, Adaptable, and Reflective Approaches
- Digital Convergence Solutions for Ubiquitous Computing
- Multimedia Modeling, Analysis, Design and Management
- Ubiquitous multimedia for Cluster Computing and Personal Area Networks
- Digital Convergence for Services and Composition
- Digital Convergence for Embedded Systems
- Digital Convergence for Ubiquitous and Mobile
- Digital Convergence for Grid Computing, Reliable, Fault Tolerance, and Quality-Of-Service
- Digital Convergence support for Novel Communication Protocols and Architectures
- Software Modeling, Development and Maintenance for Convergence
- Methodologies and Tools for Designing, Implementing, Verifying, and Evaluating Systems

This special issue covers one of the hottest topics in mobile and ubiquitous multimedia and digital convergence. We believe that this special issue will have a high citation in the areas of Cluster Computing.

The paper by Yoo and co workers [1] introduces a data-centric storage scheme for high storage utilization in wireless sensor networks. The proposed scheme stores the sensed data equally in the entire sensor network to improve storage utilization. When data generation patterns change, the scheme resets all storage ranges to relieve the inequality of storage. It is possible to store the data evenly and to increase the network lifetime. The paper by Cho and Park [2] introduces technological-level evaluation using patent statistics (models and applications) in mobile communications. This paper evaluates relative technological capability in terms of patent statistics for technology domains. The authors propose a patent statistic model for relative technological capability based on patent activity, intensity, and market power, and a citation index for mobile communications technologies.

The paper by Choi and co workers [3] presents factors influencing the acceptance of telemedicine for diabetes management. This study aimed to examine the factors that influence the acceptance of telemedicine services for enhanced management of diabetes mellitus based on the unified theory of acceptance and use of technology model. This uses partial least squares regression to determine and analyze the causal relationship between the variables. The paper by Nam [4] presents interactive narratives for mobile augmented reality.

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This paper presents design factors for interactive mobileAR storytelling systems, and applies narrative theory to design and explore actual possibilities of interactivity levels achievable using a mobile AR medium. The proposed concepts are developed as three kinds of prototype, each reflecting a different level of narrative interactivity.

The paper by Baek and Yoo [5] proposes emulating OpenGL ES 2.0 over desktop OpenGL. The authors aimed to provide fully OpenGL ES 2.0-compliant graphics facilities on desktop PCs, and present implementation details and final results. Their efforts concentrated on the six major areas: function interface design, fixed-point data type support, core pipeline support, shading language support, frame buffer support, and extensions support. The paper by Lee and co workers [6] presents an evolutionary rule decision using similarity-based associative chronic disease patients to normalize clinical conditions by utilizing information about each patient and recommend guidelines corresponding to detailed conditions from Clinical Decision Support Systems (CDSS) rule-based inference.

The paper by Ro [7] introduces modeling and analysis of memory virtualization in cloud computing. The authors developed an SRN hierarchical model of a cloud system focused on memory virtualization and availability. The authors present an availability model that accounts for failure repair behavior of memory pages, and a performance model to compute the measures of interest, such as memory utilization. The paper by Seo and co workers [8] develops a Korean spine database and ontology for realizing what they call "e-Spine". They constructed a spine database with normal spines and degenerative spinal diseases, and a spinal ontology to provide a wealth of information related to the spine. The spinal ontology contains the anatomy of the spine, methods of treatment, and cause and classification information related to the spine.

The paper by Lee and co workers [9] presents a digital convergence service from the viewpoint of a provider, and user factors by using a technology acceptance and diffusion model. The purpose is to examine the role of the two factors, which affect the usefulness perception of an IT convergence service and subsequent intentions for its extended usage. The paper by Kim and Song [10] presents a dynamic partition lock method to reduce transaction abort rates for serializable snapshot isolation techniques in a cloud data management system. The proposed method monitors the number of transactions that access each partition and the number of records in each partition. It determines the number of transaction aborts while performing read/write operations.

The paper by Yang and co workers [11] shows a multi-voxel-activity–based feature selection method for human cognitive state classification via functional magnetic resonance imaging data. The proposed method selects informative features from Functional Magnetic Resonance Imaging (fMRI) data. The idea is to extract the most active voxels from the most active regions of interest. The paper by Jo and co workers [12] shows how to alleviate the cold-start problem by incorporating Facebook movie pages. The authors propose a recommendation system domain by introducing a combination of similarity results obtained from movie ratings systems and Facebook movie page information, such as likes and co-likes of the movie. The paper by Park and co workers [13] introduces a machine-to-machine (M2M)-based smart health service for human UI/UX using motion recognition. The proposed method carries out motion recognition as well as bio-information collection, unlike existing healthcare platforms. Emotional state according to life patterns can be detected by measuring an individual's life pattern through motion recognition and by observing changes in a particular behavior over a long time. This smart health service was developed to support mobility.

The paper by Lee and co workers [14] develops freight station indicators for digital convergence. The idea is to develop indicators to establish procedures that can be used in adjusting functions of a freight station based on different characteristics of railway logistics. The authors established indicators and procedures that considered characteristics of railway logistics, such as freight items, the volume of freight transportation, the distance between stations, and relevant facilities. The paper by Jung and Chung [15] introduces sequential pattern profiling based on bio-detection for smart health services. Sequential patterns are analyzed by mining, which is a method to extract useful but unrecognizable information from abundant data. Convergence health services will lead to the creation of a new industry of special technologies and applications, and will advance existing industries with derivative technologies.

This fine collection of papers was achieved by fruitful collaborations. We gratefully acknowledge and express heartfelt thanks to all the authors for their worthy contribution to this special issue. We also would like to thank all the members of the ICCC Program Committee and anonymous reviewers for their help in identifying the novel papers and for their careful reading of earlier drafts. Furthermore, we would like to thank Professor Salim Hariri, editor-in-chief of the international research journals Cluster Computing, for his valuable remarks and his undeterred help throughout the publication process of this special issue.

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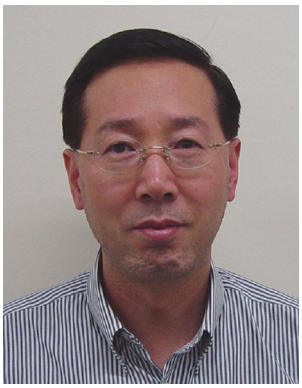

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