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GUEST EDITORIAL

Guest Editorial: Pervasive Multimedia Computing—Systems Applications and Services

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1 Introduction

The advent of techniques in pervasive computing has affected human life that freely uses Internet environment, and advances in ubiquitous networks, telecommunications, and information technology, along with the proliferation of multimedia smart devices—such as laptops, iPods, personal digital assistants (PDA), and cellular telephones—have stimulated the development of intelligent pervasive multimedia applications. These key technologies are creating a multimedia revolution that will have significant impact across a wide spectrum to consumer, business, healthcare, and governmental domains. Yet, many challenges remain, especially when it comes to efficiently indexing, mining, querying, searching, and retrieving multimedia data.

This special issue attempts to offer an open discussion in the realm of pervasive multimedia computing, including efficient delivery and distribution of multimedia content, applications, and services over the wired and wireless networks as well as multimedia QoS support for such networks. This issue also interests in looking at service architectures, protocols, and standards for multimedia communications along with the related security issues, such as secure multimedia information sharing. Finally, this issue expects to explore works on novel applications

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and real-world products (and practices as well) empowered by intelligent pervasive multimedia computing techniques.

The topics have been more aggressively covered by journals in the advanced in pervasive multimedia computing: systems, applications, and services. Potential topics include, but are not limited to, the area of "network and operating system support for multimedia," "multimedia file systems and databases," "pattern recognition, computer vision, and medical applications," "multimedia processor architecture," "multimedia delivery for pervasive computing," "security and privacy for pervasive multimedia computing," "multimedia streaming techniques and architectures," "mobile content and application distribution networks," "QoS support for wired and wireless networks," "protocols, infrastructure for pervasive multimedia," "interactive multimedia systems and applications," "human-centric design and cognitive engineering for multimedia service design," "Internet of Things and multimedia sensing techniques," "distributed services middleware and systems for multimedia communications," "TV-centric home networks, digital TV, and home-networked entertainment and games," "multimedia languages, standards, and formats for content distribution, synchronization, and migration," "GRID and distributed systems for multimedia content production and retrieval," and "practices, surveys, and case studies."

2 Related works

Ben De Meester et al. proposed a domain-agnostic framework that annotates multimedia resources that can automatically select and integrate different types of web services to evaluate multimedia analysis methods. By making full use of currently available analysis methods, it is expected that the performance of the framework will increase as the performance of the individual analysis methods improves [3]. Automatic selection and reuse of Web services is achieved by matching their semantic descriptions with the semantic description of the request, where more general services can be selected by reasoning over the semantic descriptions of the services and the semantic descriptions of the problem domain.

Hai-Cheng Chu et al. presented the disclosure of evaporating digital trails respecting the combinations of Gmail and IE for pervasive multimedia. This paper illustrates the essence of generic procedures to provide the probative digital evidences for a typical Gmail Chat session in connection with the IE browser under different scenarios [6]. When the computer-related information security issues arise with regard to the company, the corporate information incident response team should be able to disclose and preserve the evaporating digital trails following the right procedures to avoid the volatile characteristics in their natures.

Byeong-Seok Shin et al. shows an idea for reducing geometric artifacts such as geo-popping. They present the paper entitled "Vertex Relocation: A Feature-Preserved Terrain Rendering Method for Pervasive Computing Environments" that proposes a novel mesh simplification method by concentrating on the vertices of regular grids in a rugged area using the concept of attraction and elastic forces [2].

Ming-Hour Yang et al. solves problems in the mobile authentication system that includes traditional password-based authentication schemes which are vulnerable to shoulder-surfing attacks [5]. They propose a novel graphical password authentication scheme that is based on a scalable cellular architecture. Even though attackers record the user's input vector, the probability of breaking the authentication scheme remains low because the challenge characters change in

every session. They will prove in the following sections that our authentication scheme is able to increases security strength; to provide convenience; and to decrease cost.

Sang Uk Shin et al. proposed the concept for digital rights management (DRM) Cloud framework to support heterogeneous digital rights management systems. They define a reference model of DRM Cloud to represent some DRM functions provided by the DRM Cloud [7]. The proposed DRM Cloud allows for the consumer to use some DRM-protected contents in various smart devices regardless of the DRM technique applied to the purchased content. And, the costs for development or for content service are able to be decreased from the advantage of the cloud computing.

Hak-Hyun Choi et al. describes expressive promotional techniques and proposes editing techniques for public relations videos through a study of the recent technology. Authors expand the manner in which it is used to develop stories through a connection between information and communications technology (ICT) and art and culture by considering the increase in the connection between ICT and art and culture.

Yueh-Min Huang et al. presented a paper with a new idea based on motion sensing technologies to offer a ubiquitous multifunctional entertainment system, using the multifunctional feet motion collection to detect feet motion and combine system applications to implement body movement games for smart phones and tablet computers [4]. In this study, a sensor-based gait recognition was proposed to provide a novel natural user interface for control systems except the operating modes of gesture.

Y. Kim proposes a collusion-secure forensic mark design technique for protecting copyrights on digital contents. A group anti-collusion codes (ACCs) algorithm shows excellent expandability than existing methods, and it also reduced the code complexity compared to existing collusion-secure codes.

S.K. Kim presented a paper entitled “Comparison of OpenCL and RenderScript for Mobile Devices” that introduces GPGPU technologies for mobile devices, and comparison of similarities and differences. This research shows a performance estimation of different types of platforms.

Sanggil Kang et al. develops a database for evaluation 3D audio core algorithms. The 3D audio evaluation database is verified for the performance of new 3D audio core algorithms and automatically evaluated for audio systems [1]. Evaluations for other 3D core algorithms are needed for the further research for developing 3D core algorithms such as sound source localization, artificial reverberation, and crosstalk cancellation.

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