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EDITORIAL

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Advanced Technologies and Applications for Security and Multimedia Computing

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1. Introduction

The Journal of Information Processing Systems (JIPS), which is the official international journal of the Korea Information Processing Society, aims to enable researchers and professionals to promote, share, and discuss all major research issues and developments in the field of information processing technologies and other related fields.

JIPS publishes diverse papers, including theoretical research contributions presenting new techniques, concepts, or analyses; experience reports; experiments involving the implementation and application of new theories; and tutorials on state-of-the-art technologies related to information processing systems. The subjects covered by this journal include, but are not limited to, topics related to computer systems and theories, multimedia systems and graphics, communication systems and security, and software systems and applications.

This issue includes an invited paper by Professor Arabnia and his colleagues and 13 peer-reviewed papers. This issue contains diverse papers in the area of advanced technologies and applications for security and multimedia computing, which includes theoretical research presenting new techniques, concepts, or analyses. It also includes experience reports, experiments that involve the implementation and application of new theories, and tutorials on state-of-the-art technologies related to information processing systems.

2. Related Works

Khatamian et al. [1] have introduced a survey on 3D surface reconstruction from 3D point clouds to explain concepts for surface reconstruction and they described the various factors used to evaluate surface reconstruction methods [2]. This surface reconstruction concept is a tradeoff between data resolution or accuracy and processing speed in order to deal with the issue of the raw 3D point cloud data. The authors introduced and explained these research areas by providing an overview of the state-of-the-art methods on surface reconstruction.

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Bousmaha et al. [3] proposed the idea for a hybrid approach for the Morpho-lexical disambiguation of Arabic to reduce the ambiguity rate. This disambiguation approach, which is based on the diacritics at the various analysis levels, was used to combine a linguistic approach with a multi-criteria decision, and the authors used both the Nelkel and Shieber [4] and Azmi and Almajed [5] algorithms to get the optimal number of diacritical marks.

The third paper is also about the novel methodology of the two-dimensional joint Bayesian method for face verification by Han et al. [6]. This research shows an improved Joint Bayesian method to separate two symmetric terms from three terms of the JB log likelihood ratio function, and it shows the outperformance more than one percent in the LFW database [7].

Boussaad et al. [8] proposed another face recognition method for determining variations in age based on DCT feature extraction and kernel fisher analysis by combining the three most popular tools that are normally used in pattern recognition. Their combination of methods provided a high identification rate and low EER for verification, thus the combination of AAM and DCT was significant for for allowing various programs to recognize a person's face regardless of age [9].

Another paper related to the pattern recognition was introduced by Chao and Song [10]. The paper entitled "Landmark-Guided Segmental Speech Decoding for Continuous Mandarin Speech Recognition" proposed a framework to integrate phonetic landmarks into segment-based Mandarin speech recognition [11]. The results showed that approximately 30% of decoding time can be saved without making any computations on recognition accuracy.

Choi et al. [12] proposed an interesting idea in their paper "ELPA: Emulation-Based Linked Page Map Analysis for the Detection of Drive-by Download Attacks." The main idea was inspired by the dangers that are increasingly being exposed due to the various types of internet attacks. Of course, there are some existing methods to detect those kinds of problems. However, the authors proposed a detection method for emulation-based malicious webpages that outperforms other existing methods.

Chantrapornchai and Nusawat [13] introduced machine-learning studies on the prediction of the discharge rate of mobile phones. Their framework to create a battery usage model utilized seven factors, such as CPU, brightness, wireless usage, etc. They performed their test by using various kernel functions to compare the multi-layer perceptron and support vector machine, and various parameters were also used [14]. Based on the different tests that they ran in the different environments, they were able to find the optimal solution to predict the remaining battery charge.

Seo et al. [15] proposed a constituent-based approach for aligning bilingual multiword expressions. Their research takes into account the compositional preferences of multiword expressions. The results showed that the constituent-based approach outperformed the general method for expression extraction in a bilingual multiword [16]. However, improvements are still needed for overcoming accuracy by extending target entries in the evaluation dictionaries.

Ammar et al. [17] introduced another study on the dimensional reduction of 3D face verification. They proposed a novel framework to verify a 3D face by dimensional reduction based on the distinctive local features [18]. The most efficient local descriptors of LBP, LPQ, BSIF, TPLBP, and FPLBP were performed to deliver the most discriminative power.

Lee et al. [19] conducted an interesting research on detecting malware and intrusions based on human behavior analysis. As smart devices are used in many places, the people who use these devices can be exposed to security threats; thus this research was performed to analyze human behaviors in order to detect malware. HB-DIPM, in which the service model detects malware, was proposed to create

the novel model. By using this research model, authorized users were able to use services in the environment of secure protocol authentication.

Hou [20] introduced an effective algorithm for the detection of video copy. This research was performed with the use of the OM features and SURF descriptor. Those two algorithms were used to improve the video detection performance with the multi-features. The proposed method was proven to be robust against video copy detection precision, and recall was greatly improved as compared to other existing algorithms.

For network virtualization, VLAN has been used for a long time in places such as campuses and enterprise networks. However, concerns about it have emerged in many places because the use of VLAN is complicated [21], time-consuming, error prone, etc. Thus, software defined networking was introduced as another solution for it. Nguyen and Kim [22] introduced a research case of VLAN management for SDB-based enterprises and campus networks. Their solution provides an interactive graphic user interface for the visualization of VLAN networks.

To deliver the secured data in the network communication, data hiding is used as the basic concept. Ali Al-Hooti et al. [23] used audio files to hide data in the file based on sample value modification using the modulus function. The SVM was used to embed a secret bit within each sample. The quality of the stego audio was almost same as the original output, but it creates secret codes. Thus, this novel method was successfully achieved in terms of capacity, quality, and security.

Finally, Zhu and Lee [24] proposed another security protection framework for cloud computing. The most dominant programming in cloud computing is the MapReduce framework, but it can have security issues in regards to the integrity of the MapReduce data that can generate improper results that attack cloud computing [25]. This can be created by a person who wants to add malicious works. This research was performed to protect the secured framework by detecting malicious workers.

3. Conclusions

In this issue, we present 14 important papers from around the world. We introduce research on pattern recognition, such as face detection, to the security problems in the various technical environments. However, first we want to express our gratitude to all of the authors who have contributed to this issue by sharing their valuable research results with us. And we also want to sincerely thank all of the reviewers who kindly accepted our review invitations. Without their hard work, putting together this high-quality journal would not have been possible.

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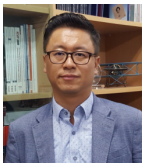

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