Guest Editorial Preface

Special Issue on Applied Data Engineering and Systems

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Applied Data Engineering and Systems focuses on the theory, methodologies, and software systems in this area. The papers in this special issue includes quite a few sub-areas related to the theme of Applied Data Engineering and Systems, from data collection and quality management, data store methodologies, data analytics, modeling and design of systems and tools for data processing, data security, data and software engineering, to applications.

The papers in this special issue were selected from best papers of the 21st ACIS International Semi-Virtual Winter Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD 2021), The International Semi-Virtual Workshop on Software Engineering in IoT, Big data, Cloud and Mobile Computing (SE-ICBM 2020), and The International Semi-virtual Workshop on Data Science and Digital Transformation in the Fourth Industrial Revolution (DSDT 2020), which were held at Soongsil University in Seoul, Korea.

Due to the pandemic, there were very few submissions from outside of Korea. Soognsil University has the largest computer science department in South Korea, and that is one reason there are many papers from South Korea.

This special issue will provide a platform to support the state-of-the-art research and an opportunity for researchers to publish and disseminate their work on the topics in the area of applied data engineering and systems.

In Article 1, SunMyung Hwang and HeeGyun Yeom developed an algorithm game using a robot so that students can think of programming and unpacking functions expressed in pictures to solve the problem of losing interest due to difficulties in understanding and applying programming or algorithms.

In Article 2, Jun-Ki Hong propose an CNN and ANNOY algorithm to more efficiently search for clothing product images that are similar to a new input clothing product image.

In Article 3, Ha Jin Hwang, Haeng Kon Kim, Monowar Mahmood and Norazryana Mat Dawi investigate how well social media can represent the characteristics of communication, and how richness of media affects the communication on social media. It was observed that one type of social media does not completely replace another but rather becomes integrated in dealing with various communication needs. From the perspective of niche theory, the comparative utility of social media to fulfil users' needs and provide them with gratification opportunities is essential to its survival and growth in this industry.

In Article 4, Sang-Kwon Yun, Hye Jeong Kwon and Jongbae Kim apply a deep learning algorithm that was based on the DenseNet neural network which is recently the best in performance and accuracy, and its architecture was improved with a focus on increasing the learning performance. As a result of the experiment, both speed and accuracy of learning data were more increased than the existing DenseNet architecture, which means to diagnose more images than the existing methods within the same amount of time.

In Article 5, Sung Hwa Han, Min Hye Jwa, Sang Bin Jeong and Gwangyong Gim propose an approach control architecture that can protect the directory to mount with union filesystem. The proposed architecture can work at the Kernel Level to block users from bypassing access. In order to verify the effectiveness of the proposed mechanism, the Positive and Negative function tests were conducted in this study. As a result, the proposed union filesystem source directivity architecture has been verified to be effective.

In Article 6, Euntack Im, Dukjin Kim, Minhye Jwa and Gwangyong Gim analyze the Detection of Brand Identity and Image Using Semantic Network by using text extracted from social media and web page of Samsung Electronics. As a result of the analysis, it was confirmed that the brand identity and the image were consistent and that there was no significant difference.

In Article 7, SungKwang Kim and YoungHwan Im propose a method to accurately measure the resonance frequency by using a noise reduction circuit and a method of calculating the time according to the cycle of a microcontroller unit (MCU).

In Article 8, JiYoung Jung and Yongtae Shin implement a hybrid cloud computing method while maintaining the existing infrastructure, that was possible to operate an uninterrupted system as a result of system construction, and security was also enhanced. Cloud computing used to as a service unit, that both operational efficiency and functionality can be satisfied.

In Article 9, Hee-Yong Kang, Yoon-Kyu Kang and Jongbae Kim investigate an improved detection method that estimates the acceleration of the head and shoulder key point position and position change using the skeleton key point information extracted using PoseNet from the image obtained from the low-cost 2D RGB camera, and improves the accuracy of fall judgment. Their paper proposes a fall detection method based on the post-fall characteristics of the post-fall, the speed of changes in the main point of the human body, and the change in the width and height ratio of the body's bounding box.

In Article 10, JiYoung Jung, Hee Kyoung Shin, Minwoo Park and Yongtae Shin address the problem of the government's method of blocking illegal sites. They propose that the International judicial assistance should be activated to allow direct disposal of the server operating overseas, not to block access to domestic telecommunication network.

In Article 11, Sangeeta Gupta propose a novel Private Blockchain-Cloud System (PBCS) for Healthcare Services to secure patients records via e-block access platform where only the person holding the legitimate key can access the data. Security is further strengthened by deploying the blocks of a blockchain in cloud environment.

It is our sincere hope that this special issue provides stimulation and inspiration, and that it will be used as a foundation for works to come.

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