

# **Studies in Computational Intelligence**

Volume 789

## **Series editor**

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# Software Engineering Research, Management and Applications

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Software Engineering and Information  
Technology Institute  
Central Michigan University  
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ISSN 1860-949X                      ISSN 1860-9503 (electronic)  
Studies in Computational Intelligence  
ISBN 978-3-319-98880-1              ISBN 978-3-319-98881-8 (eBook)  
<https://doi.org/10.1007/978-3-319-98881-8>

Library of Congress Control Number: 2018953311

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# Foreword

The purpose of the 16th International Conference on Software Engineering, Artificial Intelligence Research, Management and Applications (SERA 2018) held on June 13–15, 2018 at Kunming, China is aimed at bringing together scientists, engineers, computer users, and students to share their experiences and exchange new ideas and research results about all aspects (theory, applications, and tools) of Software Engineering Research, Management and Applications, and to discuss the practical challenges encountered along the way and the solutions adopted to solve them. The conference organizers selected the best 17 papers from those papers accepted for presentation at the conference in order to publish them in this volume. The papers were chosen based on review scored submitted by members of the program committee and underwent further rigorous rounds of review.

In Chapter “[Temporal Locality with a Long Interval: Hybrid Memory System for High-Performance and Low-Power](#)”, Bo-Sung Jung and Jung-Hoon Lee designed a DRAM and PCM hybrid memory system with low power consumption and high performance based on effective temporal locality. They proposed a page management method based on the temporal locality of a write reference center. According to the simulation results, the proposed hybrid memory achieved performance improvement from about 13 and 10% from energy-delay product compared with CLOCK-DWF and CLOCK-HM.

In Chapter “[Design and Evaluation of a MMO Game Server](#)”, Youngsik Kim and Ki-Nam Kim implement a simple MMO Game Server using IOCP and evaluates its performance. Also, IOCP packet design and processing method are presented. The simple MMO Game Server implemented in this paper also supports multi-thread synchronization and dead reckoning.

In Chapter “[Automatic Generation of Image Identifiers Based on Luminance and Parallel Processing](#)”, Je-Ho Park, Young B. Park, and Mi-Eun Ko propose a method to construct indexing of images utilizing the concept of the luminance area. The experimental evaluation of the proposed method illustrates that the proposed method satisfies the requirements for the image identification while reducing the processing cost.

In Chapter “[Interface Module for Emulator-Based Web Application Execution Engine](#)”, Hyunwoo Nam and Neungsoo Park propose a modified web-based emulator with the interface module and API, called as the web emulator-based execution engine. The experimental emulator-based web application was implemented and tested to evaluate the overall system.

In Chapter “[A Study on the Influence and Marketing Effect of Korean Wave Events and Festivals Organization](#)”, Jae Ho Park, Jeong Bae Park, and Cheong Ghil Kim introduce a method of measuring the influence and marketing effect of organizations for Korean Wave Events and Festivals. The feasibility of measuring results is also ensured by exploratory factor analysis.

In Chapter “[Understanding the Success Factors of R&D Organization](#)”, Donghyuk Jo and Jongwoo Park attempt to understand the contributing factors of Research & Development (R&D) project in terms of social capital perspective, which is being considered key resource of business management today. The significance of this study is in validating the importance of team capital and competence building under R&D project environment and presents strategic direction for R&D project success and team competence.

In Chapter “[Study on Detection Algorithm of Live Animal in Self-bag-Drop Kiosk in Airport Using UWB Radar](#)”, Kiwon Jung, Younghwan Bang, and Sun-Myung Hwang proposed a method of detection by UWB (Ultra-Wide Band) to prevent against safety accidents which could be occurred in Self-Bag Drop installed and unmanned operated in airport by the unexpected intrusions such as alive animals, humans especially.

In Chapter “[A Study on Success Factors for Business Model Innovation in the 4th Industrial Revolution](#)”, Sung-Hwan Yoon, Nguyen Si Thin, Vo Thi Thanh Thao, Eun-Tak Im, and Gwang-Yong Gim conduct an analysis that will be made to see what factors are important for unicorn enterprises. While the existing studies emphasized regulations and entrepreneurship aspects, the unicorn enterprises that are currently governing the world have been realized by having innovative business models as the key competence with entrepreneurship and regulations added.

In Chapter “[A Study on the Efficiency of Global Major Mobile Operators](#)”, Jeongil Choi, Youngju Park, and Yonghee Kim analyzed the efficiency of global major mobile operators and the reason for their efficiency. For this purpose, the financial data of 96 operators in 40 OECD member countries were utilized. Based on this financial data, this study conducted a comparative analysis of the efficiency among operators and among countries.

In Chapter “[A Study on Effects of Supporting Born Global Startups Policy Affecting the Business](#)”, Jung-Ran An, SungTaek Lee, Ju-Hyung Kim, and Gwang-Yong Gim focused on corporate finance and nonfinancial performance. This study not only provides meaningful information on the implementation of policy research and the implementation of startup policy, but it also provides a framework for the study.

In Chapter “[Design of the Model for Indoor Location Prediction Using IMU of Smartphone Based on Beacon](#)”, Jae-Gwang Lee, Seoung-Hyeon Lee, and Jae-Kwang Lee propose a room location prediction model that can improve user’s position accuracy and detect user’s position in case of signal loss using Beacon and smartphone sensor.

In Chapter “[IoT Implementation of SGCA Stream Cipher Algorithm on 8-bits AVR Microcontroller](#)”, Mouza Ahmed Bani Shemali, Chan Yeob Yeun, Mohamed Jamal Zemerly, Khalid Mubarak, Hyun Ku Yeun, Yousef Al Hammadi, and Yoon Seok Chang designed a lightweight and secure stream ciphers for IoT to secure hardware and software that can fit constrain resources devices. Thus, they implement their proposed solution on 8-bit AVR microcontroller in order to study the required memory and speed.

In Chapter “[A Study on Upgrading Non-urban Areas-Using Big Data the Case of Hwang Ze and Danggok Districts](#)”, Yong Pil Geum examines areas with potential future growth in resident populations through political implication from population expansion in non-urban areas. Using big data, Hwang Ze and Danggok districts in Gyeongsangbuk-do, South Korea, were chosen as research subjects owing to their proximity to Jillyang-eup of Gyeongsain-si, where rural and industrial areas are in contact and urbanization is taking place for upgrading non-urban area using big data.

In Chapter “[Simulation of Flood Water Level Early Warning System Using Combination Forecasting Model](#)”, Kristine Bernadette Barrameda, Sang Hoon Lee, and Su-Yeon Kim explore the use of BPNN and SVM techniques as a combined model using the Minimum Variance (MV) method to predict the upcoming flood water level events in Calinog River, Iloilo, Philippines.

In Chapter “[A Study on the Components that Make the Sound of Acceleration in the Virtual Engine of a Car](#)”, Sang-Hwi Jee, Won-Hee Lee, Hyungwoo Park, and Myung-Jin Bae study the virtual engine sounds that can enhance the feeling of acceleration by controlling the playback speed of a virtual engine sound. An MOS test showed that the virtual engine sound was not much different from the engine sound of an existing engine.

In Chapter “[A Study on the Characteristics of an EEG Based on a Singing Bowl’s Sound Frequency](#)”, Ik-Soo Ahn, Bong-Young Kim, Kwang-Bock You, and Myung-Jin Bae analyzed the sound of a singing bowl, which is used as a method to restore and maintain the balance of the natural frequency of the human body, and studied the EEG (electroencephalogram) of the listener according to the frequency band of the singing bowl’s sounds.

In Chapter “[A Study on the Stability of Ultra-High Frequency Vocalization of Soprano Singers](#)”, Uk-Jin Song, Ik-Soo Ahn, Myung-Sook Kim, and Myung-Jin present a study on the Stability of Ultra-High Frequency Vocalization of Soprano Singers. To confirm whether these soprano singers actually show distinct vibrations

in the high frequency range, they analyze the vibration characteristics of four Korean sopranos to ascertain the depth of their vocal vibration.

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

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