

Studies in Computational Intelligence

Volume 726

Series editor

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About this Series

The series “Studies in Computational Intelligence” (SCI) publishes new developments and advances in the various areas of computational intelligence—quickly and with a high quality. The intent is to cover the theory, applications, and design methods of computational intelligence, as embedded in the fields of engineering, computer science, physics and life sciences, as well as the methodologies behind them. The series contains monographs, lecture notes and edited volumes in computational intelligence spanning the areas of neural networks, connectionist systems, genetic algorithms, evolutionary computation, artificial intelligence, cellular automata, self-organizing systems, soft computing, fuzzy systems, and hybrid intelligent systems. Of particular value to both the contributors and the readership are the short publication timeframe and the worldwide distribution, which enable both wide and rapid dissemination of research output.

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Foreword

The purpose of the 4th ACIS International Conference on Computational Science/Intelligence and Applied Informatics (CSII 2017) which was held on July 9–13, 2017 in Hamamatsu, Japan was to gather researchers, scientists, engineers, industry practitioners, and students to discuss, encourage and exchange new ideas, research results, and experiences on all aspects of Computational Science/Intelligence and Applied Informatics and to discuss the practical challenges encountered along the way and the solutions adopted to solve them. The conference organizers have selected the best 16 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 scores submitted by members of the program committee and underwent further rigorous rounds of review.

In Chapter “[Proposed Framework Application for a Quality Mobile Application Measurement and Evaluation](#),” Mechelle Grace Zaragonza and Haeng-Kon Kim describe an object-oriented (OO) approach to a software measurement framework aimed at evaluating software products, software process, and resources. This approach includes the dynamic characteristics in software measurement, considering the behavior aspects of software metrics.

In Chapter “[Proposal and Development of Artificial Personality\(AP\) Application using the ‘Requesting’ Mechanism](#),” Yosuke Kanai and Takayuki Fujimoto developed the “Artificial Personality (AP)” that is a designed form of a personality without autonomous learning ability, a software to express more “humanlike qualities” than AI by efforts for manual steps.

In Chapter “[Load Experiment of the vDACS Scheme in Case of the 300 Simultaneous Connection](#),” Kazuya Odagiri, Shogo Shimizu, and Naohiro Ishii perform a load experiment of the cloud type virtual PBNM named the vDACS Scheme, which can be used by plural organizations, for applications to the small and medium size scale organization.

In Chapter “[Hearing-Dog Robot to wake People up Using its Bumping Action](#),” Yukihiro Yoshida, Daiki Sekiya, Tsuyoshi Nakamura, Masayoshi Kanoh, and Koji Yamada propose a robot inspired by the behavior of hearing dogs. They conducted an experiment to evaluate the usefulness of the robot to wake up sleeping people.

In Chapter “[Implementation of Document Production Support System with Obsession Mechanism](#),” Ziran Fan and Takayuki Fujimoto consider the work efficiency in people’s work style today, and focus on the task of document production. They focus on the most essential point in producing document, which is “to complete within a deadline.”

In Chapter “[Detecting Outliers in Terms of Errors in Embedded Software Development Projects Using Imbalance Data Classification](#),” Kazunori Iwata, Toyoshiro Nakashima, Yoshiyuki Anan, and Naohiro Ishii examine the effect of undersampling on the detection of outliers in terms of the number of errors in embedded software development projects. Their study aims at estimating the number of errors and the amount of effort in projects.

In Chapter “[Development of Congestion State Guiding System for University Cafeteria](#),” Takafumi Doi, Hiroataka Ito, and Kenji Funahashi develop a congestion state guide system for a university cafeteria. This system confirms the congestion state of a cafeteria using iBeacon, and displays it on a mobile device in real time.

In Chapter “[Analog Learning Neural Circuit with Switched Capacitor and the Design of Deep Learning Model](#),” Masashi Kawaguchi, Naohiro Ishii, and Masayoshi Umeno, in a neural network field study, used analog electronic multiple and switched capacitor circuits. The connecting weights describe the input voltage.

In Chapter “[Study on Category Classification of Conversation Document in Psychological Counseling with Machine Learning](#),” Yasuo Ebara, Yuma Hayashida, Tomoya Uetsuji, and Koji Kotamada developed a system for visualizing the flow of conversation in counseling. They have implemented on the category classification method for text data of conversation document with SVM (support vector machine) as machine learning technique.

In Chapter “[Improvement of “Multiple Sightseeing Spot Scheduling System”](#),” Kazuya Murata and Takayuki Fujimoto develop “Multiple Sightseeing Spot Scheduling System” that enables a guide of new sightseeing in this research. In this paper, they consider an improvement plan for the application under development and implement the plan.

In Chapter “[Advertising in the Webtoon of Cosmetics Brand—Focusing on ‘tn’ Youth Cosmetics Brands](#),” Sieun Jeong, Hae-Kyung Chung, and Cheong-Ghil Kim suggest ways to improve the effects of advertisement setting and story structure, character setting and story structure, which can attract youth’s interest by studying advertisement analysis of youth cosmetics brand Webtoon.

In Chapter “[Testing Driven Development of Mobile Application Using Automatic Bug Management Systems](#),” Mechelle Grace Zaragoza, Haeng-Kon Kim, In-Han Bae, and Jong-Hak Lee propose an approach to derive tests from the model of the mobile applications system as well as a diagram by using automatic bug management system. Using this technique, they can achieve more effective testing on hardware-related software areas.

In Chapter “[Shape Recovery of Polyp from Endoscope Image Using Blood Vessel Information](#),” Yuji Iwahori, Tomoya Suda, Kenji Funahashi, Hiroyasu Usami, Aili Wang, M. K. Bhuyan, and Kunio Kasugai aim to help medical doctor by proposing a new approach to estimate the size and 3D shape of polyp as a

medical supporting system. This proposed approach uses blood vessel as a target with a known size to estimate the absolute size of polyp.

In Chapter “[Design of Agent Development Framework for RoboCupRescue Simulation](#),” Shunki Takami, Kazuo Takayanagi, Shivashish Jaishy, Nobuhiro Ito, and Kazunori Iwata design and implement an agent development framework for a RoboCup Rescue Simulation project that unifies the structure within the project to facilitate such technical exchange.

In Chapter “[Mist Computing: Linking Cloudlet to Fogs](#),” Minoru Uehara proposes placing a mist between cloudlets and fogs. The mist is a data center of cloudlets and a fog device. They describe the requirements and functions of mist computing.

In Chapter “[Self-Recognition and Fault Awareness in OpenFlow Mech](#),” Suguru Yasui and Minoru Uehara propose a computing system that adapts to environments and whose continued development will be made possible by replacing faulty and aging component in the system dynamically. They implement the two functions of self-recognition and fault awareness for a calculating unit in the system.

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.

July 2017

Takayuki Fujimoto
Toyo University, Bunkyo, Japan

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