Studies in Computational Intelligence

Volume 654

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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 14th International Conference on Software Engineering, Artificial Intelligence Research, Management and Applications (SERA 2016) held on June 8–10, 2015 at Towson University, USA is 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 13 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 Chap. “[Human Motion Analysis and Classification Using Radar Micro-Doppler Signatures](#)”, Amirshahram Hematian, Yinan Yang, Chao Lu, and Sepideh Yazdani present a novel nonparametric method to detect and calculate human gait speed while analyzing human micro motions based on radar micro-Doppler signatures to classify human motions.

In Chap. “[Performance Evaluation of NETCONF Protocol in MANET Using Emulation](#)”, Weichao Gao, James Nguyen, Daniel Ku, Hanlin Zhang, and Wei Yu leverage the Common Open Research Emulator (CORE), a network emulation tool, to conduct the quantitative performance evaluation of NETCONF in an emulated MANET environment.

In Chap. “[A Fuzzy Logic Utility Framework \(FLUF\) to Support Information Assurance](#)”, E. Allison Newcomb and Robert J. Hammell discuss the use of fuzzy logic for accelerating the transformation of network monitoring tool alerts to actionable knowledge, suggest process improvement that combines information assurance and cyber defender expertise for holistic computer network defense, and describe an experimental design for collecting empirical data to support the continued research in this area.

In Chap. “[A Framework for Requirements Knowledge Acquisition Using UML and Conceptual Graphs](#)”, Bingyang Wei and Harry S. Delugach present a

knowledge-based framework to drive the process of acquiring requirements for each UML model. This framework is based on a central knowledge representation, the conceptual graphs.

In Chap. “[Identification Method of Fault Level Based on Deep Learning for Open Source Software](#)”, Yoshinobu Tamura, Satoshi Ashida, Mitsuho Matsumoto, and Shigeru Yamada propose a method of open-source software reliability assessment based on the deep learning. Also, they show several numerical examples of open-source software reliability assessment in the actual software projects.

In Chap. “[Monitoring Target Through Satellite Images by Using Deep Convolutional Networks](#)”, Xudong Sui, Jinfang Zhang, Xiaohui Hu, and Lei Zhang propose a method for target monitoring based on deep convolutional neural networks (DCNN). The method is implemented by three procedures: (i) Label the target and generate the dataset, (ii) train a classifier, and (iii) monitor the target.

In Chap. “[A Method for Extracting Lexicon for Sentiment Analysis Based on Morphological Sentence Patterns](#)”, Youngsub Han, Yanggon Kim, and Ikhyeon Jang propose an unsupervised system for building aspect expressions to minimize human-coding efforts. The proposed method uses morphological sentence patterns through an aspect expression pattern recognizer. It guarantees relatively higher accuracy.

In Chap. “[A Research for Finding Relationship Between Mass Media and Social Media Based on Agenda Setting Theory](#)”, Jinhyuck Choi, Youngsub Han, and Yanggon Kim analyze important social issues using big data generated from social media. They tried to apply the relationship between agenda setting theory and social media because they have received social issues from official accounts like news using social media, and then users shared social issues to other users; so they choose tweets of Baltimore Riot to analyze.

In Chap. “[On the Prevalence of Function Side Effects in General Purpose Open Source Software Systems](#)”, Saleh M. Alnaeli, Amanda Ali Taha, and Tyler Timm examine the prevalence and distribution of function side effects in general-purpose software systems is presented. The study is conducted on 19 open-source systems comprising over 9.8 million lines of code (MLOC).

In Chap. “[Object Oriented Method to Implement the Hierarchical and Concurrent States in UML State Chart Diagrams](#)”, Sunitha E.V. and Philip Samuel present an implementation pattern for the state diagram which includes both hierarchical and concurrent states. The state transitions of parallel states are delegated to the composite state class.

In Chap. “[A New and Fast Variant of the Strict Strong Coloring Based Graph Distribution Algorithm](#)”, Nousseiba Guidoum, Meriem Bensouyad, and Djamel-Eddine Saidouni propose a fast algorithm for distributing state spaces on a network of workstations. Our solution is an improved version of SSCGDA algorithm (for Strict Strong Coloring based Graph Distribution algorithm) which introduced the coloring concept and dominance relation in graphs for finding the good distribution of given graphs.

In Chap. “[High Level Petri Net Modelling and Analysis of Flexible Web Services Composition](#)”, Ahmed Kheldoun, Kamel Barkaoui, Malika Ioualalen, and

Djaouida Dahmani propose a model to deal with flexibility in complex Web services composition (WSC). In this context, they use a model based on high-level Petri nets called RECATNets, where control and data flows are easily supported.

In Chap. “[PMRF: Parameterized Matching-Ranking Framework](#)”, Fatma Ezzahra Gmati, Nadia Yacoubi-Ayadi, Afef Bahri, Salem Chakhar, and Alessio Ishizaka introduce the matching and the ranking algorithms supported by the PMRF. Next, it presents the architecture of the developed system and discusses some implementation issues. Then, it provides the results of performance evaluation of the PMRF.

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.

June 2016

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