

Editorial Preface

Special Issue on Technologies and Innovation

Gema Alcaraz-Marmol, University of Castilla-La Mancha, Department of Modern Philology, Castilla-La Mancha, Spain

Miguel Ángel Rodríguez-García, King Abdullah University of Science and Technology, Computational Bioscience Research Center, Thuwal, Saudi Arabia

Rafael Valencia-García, University of Murcia, Department of Informatics and Systems, Murcia, Spain

The field of Computer science and technology has big impact on the growth of our modern society. The interaction between society and technology has created powerful computer machines that provide great beneficial advances for our society. The Internet of Things, Cloud computing and Artificial intelligence are having an incredible impact in the habits of our society. By using them, thermostat, alarm system, air conditioning can be managed in a ubiquitous way. On the other hand, the increase of computer performance has involved an incredible advance in relevant research areas like Medical or agricultural informatics, where this performance has incited to find out novel methodologies based on Natural Language Processing and Soft computing, especially Machine Learning research area and semantic technologies like Knowledge representation to collect and process the information.

The aim of this special issue is to explore innovative and advanced methods and techniques and their application in different domains in the field of Computer Science and Information Systems that represent an innovation in the current society.

The call for papers of this Special Issue was announced on several international email lists, on the home page of the journal, as well as on the home page of several universities. A substantial amount of submissions was received and peer-reviewed by top experts in the field. After the review process, editors selected 4 high-quality ones to be published. Contributions of these papers are briefly analyzed as follows:

In the first paper entitled “A brief review of game engines for educational and serious games development” Humberto Marin-Vaga, Giner Alor-Hernández, Ramon Zatarain-Cabada, Maria Lucia Barron-Estrada and Jorge Luis García-Alcaraz, present a literature review of the most widely used serious games and educational games development. The analysis aims to identify game and learning attributes supported for such learning tools. It also presents a classification of games engines based on language programming used for developing the framework. Furthermore, it analyses the types and subtypes of learning activities used in game, and classifies games based on their learning attributes. Finally, it shows a quality evaluation of selected game engines, which consists in analyzing their game attributes and game category.

The second contribution entitled “An extension of the MiSCi Middleware for Smart Cities based on Fog Computing” by Jose Aguilar, Manuel B. Sanchez, Marxjhony Jerez and Maribel Mendonca presents an extension of Autonomic Reflective Middleware for Smart Cities (MiSCi). First, it introduces the theoretical framework analyzing the basics of the middleware and Fog computing paradigm. It then describes how the middleware has been extended to be interoperable with Fog

computing. Finally, it presents two different cases of study to test the utility of this paradigm in the extended middleware.

In the third paper entitled “An Ontology-Based Decision Support System for the Diagnosis of Plant Diseases” by Katty Lagos-Ortiz, José Medina-Moreira, Mario Andrés Paredes-Valverde, Winston C Espinoza-Moran and Rafael Valencia-García, an ontology-based decision support system for plant disease diagnosis is presented. It deeply describes the proposed system analyzing the implemented phytopathology ontology, the rule-based engine developed for identifying diseases and its corresponding treatments and recommendations, and semantic indexing module for retrieving phytopathology documents. It concludes with the evaluation of the system.

Finally, the last paper entitled “Knowledge Acquisition Through Ontologies from Medical Natural Language Texts” by José Medina-Moreira, Katti Lagos-Ortiz, Harry Luna-Aveiga, Oscar Omar Apolinario Arzube, María del Pilar Salas-Zárate and Rafael Valencia-García presents a novel framework for evolving ontologies that is mainly based on Natural Language Processing (NLP) techniques and semantic role labeling technologies. The framework aims to provide a general solution that minimizes the participation of the experts during the evolution process. It utilizes linguistic patterns and grammatical tagging for concept identification; and when extracting relationships from those identified concepts, the proposed methodology uses role-labelling technologies. The framework has been validated in the domain of diabetes.

Last but not least, we would also like to express our gratitude to the reviewers who kindly accepted to contribute with the evaluation of papers at all stages of the editing process. We equally and especially wish to thank Professor Francisco García-Peñalvo (Editor in Chief) of the Journal of Information Technology Research (JIRT) for their help and for providing us with the opportunity to edit this special issue.

Gema Alcaraz-Mármol
Miguel Ángel Rodríguez-García
Rafael Valencia-García
Guest Editors

ACKNOWLEDGEMENT

The preparation of this Special Issue has been partially supported by the Spanish Ministry of Economy and Competitiveness and the European Commission (FEDER / ERDF) through project KBS4FIA (TIN2016-76323-R).