

Editorial

It is our honor to present a new edition of this international thematic issue of *Computación y Sistemas*. This thematic issue includes twelve articles on the topic of Trends in Computing Research. The scope of this issue is to present recent developments and key topics in computing and systems. At the same time, this special issue has the objectives of promoting relevant studies with the participation of Mexican researchers supported by CONACYT grants and studies where Mexican researchers have collaborated with international groups.

As in the 2017 and 2018 Topic Trends in Computing Research editions of *Computación y Sistemas*, the international participation is mainly concentrated in Catalonia and other regions of Spain. Additionally, a contribution of Tunisia is included. Moreover, the edition of this special issue contributes to the efforts in the promotion of the scientific relationships between Spain, Catalonia, and Mexico. The twelve contributions are summarized below.

Kheir Eddine Daouadi et al. present the paper named "Organization, Bot, or Human: Towards an Efficient Twitter User Classification". In this paper, they offer a statistical-based approach for classifying user account on Twitter. One purpose of this approach is to use limited resources to identify the presence of bots. The method is based on the three main following steps: data acquisition, features extraction and classification. Additionally, they describe an application case of their methodology to classify user account on Twitter.

Sebastián Salazar-Colores et al. performed the paper "The Dark Channel Applied to Reduce the Effects of Non-uniform Illumination in Image Binarization". In this work, they present an approach to reduce the effects of non-uniform illumination conditions in image binarization. For this last purpose, their study considered the combination of the dark channel and the atmospheric scattering model. They describe the results of the application of the proposed approach to studying five different images with different non-uniform lighting conditions.

G. Desirena-Lopez et al. introduce the research paper "A flexible framework for Real-Time Thermal-Aware schedulers using Timed Continuous Petri Nets". In this document, they present TCPN-ThermalSim a software tool for testing Real-Time Thermal-Aware Schedulers. In the text, they describe the conceptual model of the software and also they include application examples.

Rogelio Ladrón de Guevara et al. performed the paper "Neural Networks Principal Component Analysis for estimating the generative multifactor model of returns under a statistical approach to the Arbitrage Pricing Theory. Evidence from the Mexican Stock Exchange". In this paper, they show that the use of the Neural Networks Principal Component Analysis (NNPCA) is in many cases, an appropriate procedure to reproduce the observed returns.

The paper "A Computational Tool for Detection and Parameters Estimation of Microbubbles Generated with Lasers in Optical Fibers" is presented by Gabriela Villegas-Sanchez et al. In this text they describe a computational tool to estimate parameters of microbubbles. The analysis of the microbubbles is done using images that are obtained in an image processing system.

Luis F. Luque-Vega et al. performed the paper "Educational Methodology Based on Active Learning for Mechatronics Engineering Students: towards Educational Mechatronics". In this paper, they propose an educational methodology oriented to be more attractive the university program of Mechatronic Engineering. This methodology considers new aspects as the inclusion of more active learning activities.

Miriam Carlos-Mancilla et al. present the work "A Cyber-Physical System Modelling Framework for an Intelligent Urban Traffic System". This paper presents a new modelling framework for a component-based architecture that allows validating control strategies for urban traffic networks integrating intelligent traffic control based on cyber-physical transport systems, specifically using V2X (vehicle-to-vehicle) technology. The

primary purpose of this architecture is to observe the behavior of different vehicular conditions and to propose functional strategies to improve urban conditions before to be implemented in real life.

Moreover, “Computer Simulation Studies of a Kainate (GluK1) Receptor with Two Glutamate Analogues” is the title of the paper of Pavel Andrei Montero-Domínguez et al. In this paper, they present a computational approach not only to ranking the binding affinity of analyzed ligands toward the protein receptor correctly but also to reveal, at atomic resolution, the dynamic nature of such ligand–LBD interaction.

Enrique Javier Arriaga-Varela et al. introduce the research paper “Detection, Count, and Classification of Visual Ganglia Columns of *Drosophila* Pupae”. The main objective of this work is to present a semi-automatic detection-counting system and give the main characteristics of images of the visual ganglia columns in *Drosophila*. They present a semi-automatic detection, count, segmentation process with a python GUI “CC Analyzer” which can be used by neurobiology laboratories whose research interests are focused on this topic.

The paper “Analysis of the key features of the seismic actions due to the three main earthquakes of 11th of May 2011 in Lorca, Spain” is presented by Aguilar et al. In this document, they describe the most relevant results of investigation of seismic records of the main three Lorca earthquakes that occurred during the 11th of May, 2011. The computations required during the study were performed with the recent software Seismograms Analyzer-e. According to their results, some new recommendations can be included in the new seismic codes for Spain to reduce the seismic risk in buildings.

Another paper included in this special issue is named “DIALCAT: Diabetes as an accelerator of cognitive impairment and Alzheimer’s disease, comprehensive approach and adherence to treatment”, which is presented by Cristian Barrué et al. In this article, they present the design of a mHealth system to support senior citizens with chronic diseases in managing their adherence to pharmacological treatment. The DIALCAT system consisting of a smart pill dispenser and a mobile application will be tested in a clinical study for 18 months by patients suffering diabetes with mild cognitive impairment. The clinical trial aims to study the effect of diabetes as an accelerator of cognitive impairment and Alzheimer’s disease and the impact of adherence to treatment.

Otilio Rojas et al performed the paper “Artificial Neural Networks as Emerging Tools for Earthquake Detection”. In this document, they describe relevant advances in the application of Artificial Neural Networks to analyze seismic data to obtain relevant parameters of these data (for instance, the size and location of the earthquakes). Mainly, they analyze the use of both supervised and unsupervised Artificial Neural Networks.

This issue also contains regular papers selected by the editorial board of the journal.

We hope that the readers can enjoy this thematic issue, as well as the thematic section and regular papers.

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