

## Editorial

It is our honor to present this thematic international issue of *Computación y Sistemas*, which includes eleven articles on the topic of Trends in Computing Research. Like previous international special issues, the primary purpose of this volume is to present recent developments and key issues in the computing and systems. Besides, we try to promote international Mexican researchers supported by CONACYT grants and/or the valuable Mexican collaborations with international groups.

The international participation in the present issue is concentrated in Spain and especially at Catalonia. Moreover, this issue is also a contribution to the efforts that the CONACYT performs in the promotion of the scientific relationships between Spain, Catalonia, and Mexico. The eleven contributions are summarized below.

Rogelio Ladrón de Guevara et al present the paper named, "Extraction of the underlying structure of systematic risk from Non-Gaussian multivariate financial time series using Independent Component Analysis. Evidence from the Mexican Stock Exchange." The authors have applied an Independent Component Analysis (ICA) to estimate the underlying systematic risk factors driving the returns on equities in the Mexican Stock Exchange. The extracted systematic risk factors were considered using a statistical definition of the Arbitrage Pricing Theory. One of the most important results is that they find evidence of a proper estimation through the ICA and can achieve a more reliable estimate than that produced by principal component analysis method.

Deisy Galeana-Pérez and Eduardo Bayro-Corrochano performed the paper "Recognition System for Euro and Mexican Banknotes Based on Deep Learning with Real Scene Images". In this document, they present a Deep Learning Convolutional Neural Network which is robust to recognize both Euro and Mexican banknotes, using

real scene images taken with both sunlight and artificial light. It is exciting the analysis of learning features such as watermarks, portraits on the bills, etcetera. They concluded that the color information and some regions of the banknotes, as well as the banknote denomination written in words and numbers and the complete banknote, are the appropriate information to achieve a high rate of banknote classification and recognition.

Another paper included in this special issue is named "Pedestrian Detection and Tracking Using a Dynamic Vision Sensor", which is presented by Israel Ruelas et al. In this document the authors show the use of a bio-inspired Dynamic Vision Sensor (DVS) in order to propose a kinematic pedestrian detection using a K-means clustering, with asynchronous information. One of the most advantages of this approach is that the behavior of the DVS makes the data processing more accessible and faster due to the analysis is only in the active pixels.

The paper "Wind energy forecasting with Neural Networks. A literature review" is presented by Jaume Manero et al. In this work is highlighting the best Neural Networks methods for wind forecasting. Also, this paper analyses the characteristics of the wind speed time series data and performs a literature review of recently published works of wind power forecasting using Machine Learning approaches (neural and deep learning networks).

Aguilar et al. introduce the research paper "Sensitivity analysis of seismic parameters for a probabilistic seismic hazard assessment for Barcelona applying the new R-CRISIS". In their research, they performed the sensitivity analysis using the recent software called R-CRISIS. They assessed the probabilistic seismic hazard of Barcelona using the classical approach of Esteva and Cornel. According to the results of the sensitivity analysis, both the ground motion prediction equation and the intensity-magnitude

relationship are the variables that have the most significant influence on the final values of seismic hazard. Additionally, the authors highlight some of the advantages of the new R-CRISIS code, which works on the operating systems Windows and it is freeware software.

Sergio Mares-Sámano and Ramón Garduño-Juárez present the work "Computational Modeling of the Interactions of Drugs with Human Serum Albumin (HSA)". According to the authors, the human serum albumin represents a fundamental factor to consider when designing and developing new drugs. They have presented the implementation of a robust and cost-effective computational method to the prediction of the binding affinity of drugs towards HSA and 3D information. Perhaps the most interesting results are that the computational-based molecular docking approach incorporating AutoDock Vina may prove useful to the prediction of the binding affinities of drugs towards human serum albumin, and thus, could help alleviate a major bottleneck of the drug discovery process.

Moreover, "Medical Assistant, a Mobile Application for Medication Prescription" is the title of the paper of Silverio Pérez-Cáceres et al. In this paper, they described the first stage of the development of a mobile medical assistant application. This application has the capabilities to evaluate the data of the patients through a decision tree, suggesting the most appropriate medication according to the data of the patients. Furthermore, they presented some preliminary results with real rhinitis patients of Poza Rica.

Armando Campos-Dominguez et al. present the paper "Indirect monitoring of cane sugar crystallization via image fractal analysis". In this document, they describe a novel proposal to do indirect monitoring of the cane sugar crystallization during the industrial production of the sugar. This proposal based on the analysis of grey-scale images offers a low cost and effective method to measure the crystal size. This procedure allows taking appropriate decisions during the sugar production to satisfy the quality required in the market.

Additionally, the paper "Multiobjective Optimization of Chemical Processes with Complete Models using MATLAB and Aspen Plus" is presented by Abel Briones-Ramírez and Claudia Gutiérrez-Antonio. In this paper, they have proposed a method to perform the link between MATLAB and Aspen Plus processes of simulator including the generation of bkp files of optimal designs. According to the authors, the main advantage of this link is the reduction in computational resources, since just two software is running, and the storage capacity of all generated solutions is not limited. Finally, they claim that the availability of this code allows increasing the use of complete models in the optimization of chemical processes, which is very useful.

Claudia Olvera et al. wrote a paper called "A Bibliometric Overview of University-Business Collaboration Between 1980-2016". In this document, they describe the procedure performed to do the bibliometric study. The database of the Web of Science was their primary source of information, and they applied the VOS viewer software to show some of the results. In this paper, they also mention the main bibliometric indicators that can be used in a study of these characteristics. According to their findings, USA, England, Spain, Italy, and the Netherlands are the most productive countries in papers related to the University-Business Collaboration.

Furthermore, in the paper named "Kids and Parents Privacy Exposure in The Internet of Things: How to Protect Personal Information?" María G. Vallejo et al. present a critical study about relevant risk issues related to the Internet of Things. They emphasized the fact that we do not know certainly about how is used the data that every kid generates when he uses the Internet. This lack of knowledge is a valuable reason to explain why is so difficult to take care of the privacy of kids and parents that are using the Internet. Moreover, María Vallejo et al. describe some of the limited actions that are doing the parents to protect the privacy of their kids. At the same time, they propose some measures that can contribute to

improving the privacy of kids and parents when they are using the Internet.

This issue also contains regular papers selected by the editorial board of the journal, as well as the additional Thematic Section, whose articles were selected by the guest editor of the thematic section.

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

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