

## Editorial

It is our pleasure to introduce this volume of *Computación y Sistemas* that includes eleven regular articles and five articles of the thematic issue. On one hand, regular articles cover a wide range of computer science subfields, such as computer vision, robotics, software engineering and signal processing. On the other hand, thematic issue papers focus on text authorship analysis.

It is well known that the Web is not only the greatest repository of digital information ever invented but also the largest communication platform. Its current development has allowed the exchange of information among people from different places, ages, cultures and conditions. However, it also has facilitated the dissemination of anonymous texts as well as the inappropriate copy and use of content from others. This situation has raised great research interest in authorship analysis approaches, which focus on answering important questions such as, given a document, who wrote it? And what are its author's traits? This thematic issue presents to the reader five papers devoted to authorship analysis. In the following lines we outline the main contribution of each article.

Hernández-Castañeda and Calvo (Mexico) propose using semantic information to solve the author verification problem. Particularly they create a semantic space model by means of Latent Dirichlet Allocation (LDA). Their experimental results on the corpus used at PAN 2014 and PAN 2015 showed that LDA aids to verify authorship when there is limited training data, i.e., less than five short texts written by a specific author.

Castro et al. (Cuba, Spain) further develop the topic of authorship verification. They propose a neighborhood classification method that considers the similarities between a document of

unknown authorship and some sample documents from the author of interest. Similar to the previous paper, they also show results in datasets used at PAN 2014 and 2015.

Alekseev and Nikolenko (Russia) address the problem of author profiling. In their paper entitled "Word Embeddings for User Profiling in Online Social Networks", they consider the application of word embeddings to user profiling. In particular, they study the effectiveness of such representations to predict the age and gender of social media users.

Tutubalina and Nikolenko (Russia) continue the topic of author profiling, but in a domain specific scenario. They propose several approaches to extract demographic information, such as gender and age, from user reviews concerning medical products or services. In the experiments, they compare some modern natural language techniques, including feature rich classifiers, topic models and deep neural networks.

Finally, Litvinova et al. (Russia, Mexico) propose a method for identifying suicidal behaviors of individuals based on an analysis of their blogs. They mainly describe the design of a mathematical model to classify texts as suicidal or no-suicidal. This model considers a set of linguistic and stylistic features that are not significantly dependent on the content. Experiments are on Russian blogs; the obtained results are comparable to state-of-the-art for English texts.

This issue of the journal also contains eleven regular papers.

Pathak et al. (India, Mexico) describe a system for search and retrieval of scientific papers that contain mathematical expressions. In their paper "MathIRs: Scientific Documents Retrieval System", they propose a method for identification

and matching mathematical expressions according to the user's query mathematical text may seem "logical" and thus easy to follow by the computer, in fact the way mathematicians express their ideas is very difficult to formalize, which makes retrieval of mathematical texts a difficult and important task. The authors show that their method achieves high performance.

Pacheco-Morales et al. (Cuba, Spain) presents a work in image processing. In their paper entitled "Method for Recognition of Occluded Objects", they propose a method to recognize occluded objects in digital images. The proposed method considers the use of Hidden Markov Models for segmentation of overlapping objects. Experiments in different databases demonstrate the high effectiveness of the proposed method.

Cruz-Matías and Ayala (Mexico, Spain) presents a contribution to the field of computer graphics. In his paper entitled "Compact Union of Disjoint Boxes: An Efficient Decomposition Model for Binary Volumes", they propose a decomposition model for binary volumes called Compact Union of Disjoint Boxes (CUDB). They analyze some of the main characteristics of this model in comparison to previous works and present algorithms for conversion to and from other models. Experimental results show that CUDB is smaller in number of elements and so in storage size than existing models.

Platas-Garza and Rodríguez-Maldonado (Mexico) present a paper on halfband filters (HBF), which are very relevant to perform several signal-processing tasks. In their paper entitled "Design of Flat Halfband Filters with Sharp Transition and Differentiators through Constrained Quadratic Optimization", they propose an alternative method for the design of type I Halfband FIR filters with flat magnitude and narrow transition bands. They also show the design of type IV FIR digital differentiators through the proposed method. Design examples

are presented to demonstrate the effectiveness of the proposed methodology.

Domínguez-Guerrero et al. (Mexico) contribute with an article in robotics. In their paper, "Identification of the Workspace of a Hexapod Mobile Robot Using Multiojective Optimization", they present a method to find the workspace of a hexapod mobile robot. This method applies multi-objective optimization to estimate the optimal set of configurations for walking in any viable direction. The proposed method is validated by simulation using the Robotics toolbox of Matlab.

Martínez-García et al. (Mexico) present a paper entitled "Bridging the Gap Between Model-Based Design and Reliable Implementation of Feedback-Based Biocircuits: A Systems Inverse Problem Approach". This paper focuses on the tuning of mathematical models describing the design of synthetic biological circuits. The proposed tuning methodology combines exact algebraic parameter reconstruction with nonlinear observed-based parameter estimation. This methodology is illustrated via computer-based simulations involving the tuning of a state-based model describing a well-known cyclic feedback bio-circuit.

Arcos-Argudo (Ecuador) contributes with an article in small-world networks, a topic with lot of applications in different sciences such as sociology, geology and neuroscience. It mainly presents a comparative study of two algorithms, Kleinberg y Biased Selection, which aim to establish a direct connection between any node in a graph and a randomly "long-range neighbor".

Serna et al. (Colombia) present a paper entitled "A model for determining the maturity of automation of software testing as a research and development area". This work describes the results of a research on the maturity level of test automation. It is based on a systematic review of the related literature and its main conclusion is

that the maturity level of automation of software testing is teenager.

Toriz-Palacios and Sánchez-López (Mexico) presents a new proposal to build maps of complex environments. In their work "A B-Splines Based Data Association Method for the SLAM Problem in Complex Environments", they describe a proposal to use B-spline curves to extract characteristic points of the detected obstacles. They show the results obtained using real and simulated information, and conclude that the proposed method achieves great precisions in map construction of complex environments, a difficult task with techniques that currently exist.

Cuevas et al. (Mexico) depict a method for parameter identification in chaotic fractional systems. In the paper entitle "Parameter Estimation for Chaotic Fractional Systems by Using the Locust Search Algorithm", they describe a method that uses the evolutionary technique based on the behavior of swarms of locust for parameter identification of fractional order chaotic systems. This method avoids the

concentration of individuals in the best positions, eliminating critical flaws such as the premature convergence to sub-optimal solutions and the limited exploration-exploitation balance.

Ortiz-Rangel et al. (Mexico) contribute with an article in image processing. In their paper entitled "Using Pulse Coupled Neural Networks to Improve Image Filtering Contaminated with Gaussian Noise", they propose an algorithm to reduce the effect of Gaussian noise in grayscale images. This algorithm is based on the Intersection Cortical Model (ICM), but it also considers a Time Matrix (TM) that provides information about the iteration when the neuron (pixel) fires for first time. Simulation results varying the degree of Gaussian noise show better effectiveness of the proposed method than well-known filters.

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