

Editorial

Frequently, informatics confronts the challenge of finding acceptable engineering solutions in a multidimensional space of different approaches, knowledge areas, technologies and restrictions.

It seems impossible to elaborate an exact definition of informatics application space. When an efficient approach is developed, new paradigms and technologies appear. They often overcome the arguments that supported a family of previous solutions.

Due to these reasons, many solutions for complex problems are based on empirical or functional principles. Sometimes, such solutions are generated using criteria that lack clear explanation. Therefore, there is a need to develop a scientific approach to capture the essentials on which proper solutions are built.

Commonly, the diversity of problems requires a particular focus and specific theoretical frame in order to justify experiments aimed at validating experimental results in case studies.

A similar phenomenon takes place in Computer Science. The results obtained from theoretical considerations require an implementation of radical refinements under architecture and design restrictions imposed by technologies.

The special issue of the journal *Computación y Sistemas*, "Informatics: from Engineering to Science", presents a collection of extended and revised papers selected carefully from those accepted for the I International Congress on Informatics Engineering and Information Systems. This congress was held under the auspices of the XVI Scientific Convention on Engineering and Architecture at the Higher Polytechnic Institute José Antonio Echeverría (Cujae), in Havana, Cuba.

The first paper entitled "Indexing and Comparison of Multi-Dimensional Entities in a Recommender System Based on Ontological Approach" by Bakaev and Avdeenko proposes a frame based model to build ontologies that contain domain elements and basic terms to be applied in indexing. This model is used for developing a recommender system whose task is to assist interface designers.

The article by Espinosa and López discusses how to apply business process modeling for different university projects within the information technology domain. It reports a number of good practices validated experimentally and explains the factors which influenced the assimilation and incorporation of Business Process Management (BPM) paradigm in a given institution.

Darlene Gómez et al. analyze some tools for automatic test execution. Their paper focuses on unit testing in software projects developed with Java and C#. The authors also present a proposal to apply their experience in project development within a university environment. They emphasize the need to combine commercial tools with other path generation tools and test cases.

The paper "An application of fuzzy logic for hardware/software partitioning on embedded systems" by Díaz Pando et al. is related to soft computing methods (fuzzy logic and metaheuristics) as tools for solving a co-design problem.

A flexible implementation of Recurrent Neural Networks permitting development of a desired topology based on specific application problems is presented by Iseñ Grau et al. This implementation also allows managing knowledge bases with instances of variable length.

Pelaiz and Tejera describe the design principles for developing a pseudo-random seed generator built on a secure symmetric block cipher, and present the idea of using it as a pseudo random bit generator.

Aldape et al. argue that the associative memory paradigm and parallel computing can be combined to perform feature selection tasks. Their approach demonstrates a computational cost reduction necessary for finding an optimal subset of features with a subsequent classification performance optimization.

Finally, Franco-Arcega et al. introduce algorithms for building decision trees from large datasets. The proposed algorithms process all training instances without storing the whole dataset in the main memory. The developed algorithms exhibit better performance than the

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most recent algorithms for building decision trees
from large datasets.

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