Editorial

Fifty years ago, in 1958, UNAM brought the first digital computer to Mexico, an IBM 650, which was installed at the "Centro Nacional de Cálculo" (Electronic Center of Computing). This event represents, in a symbolic way, the beginning of research in computer science in Mexico. Over the years, a variety of research groups have developed and consolidated in our country, mainly at universities and research centers. Although the critical mass of researchers is still relatively small (slightly above 500), first rate developments take place in several areas, with an important impact, both nationally and internationally. Recently, an analysis of the citations generated in different research fields undertaken by CONACYT, highlights the fact that computer science is the area with the highest number of citations per researcher in Mexico.

This issue of *Computación y Sistemas* commemorates this important historical landmark, publishing a sample of the diversity of research projects and developments undertaken in Mexican institutions. Evidently, this selection is not, and does not aim to be, comprehensive. Thus, areas and projects of great relevance have been omitted, which, for different and varied reasons could not be included in this special issue. In response to the call for papers, 19 articles were received. After a rigorous peer-review process, only six were selected for publication. These papers come from different institutions, and present diverse topics, from some that are highly theoretical, such as argumentation theory, to high impact applications, such as ubiquitous computing in hospitals. Next, we briefly describe each of the papers contained in this issue.

The paper by Sánchez, Zapata and Osorio is from the robotics area, and presents a survey of the state-of-the-art in the field known as "probabilistic roadmap" (PRM) planners, which is a strategy that allows us to plan trajectories for robots with many degrees of freedom, without requiring an explicit representation of the working space. Several Mexican researchers have made important contributions in this field, most of which are summarized in this paper, together with the main developments of this area in the world.

González, Rodríguez and Cruz present a paper on information security, in which the authors point out security failures in the official norm issued by the "Servicio de Administración Tributaria" (the Mexican Internal Revenue Service) regarding the generation of electronic invoices. Some of the failures detected are mild, but others are quite serious. Thus, the authors also provide a set of recommendations that aim to eliminate them.

Natural language processing, particularly in Spanish, has had important contributions within several research groups in Mexico. Montes, Villaseñor and López provide us an overview of the experiences and contributions of their group within question answering systems. Question answering consists of finding the response to a specific question from a user within a collection of documents. The authors describe two approaches that have been adopted for dealing with this problem, emphasizing their participation in the CLEF forum from 2004 to 2007.

The paper by Nieves, Osorio and Cortés focuses on an area relatively young within non-monotonic reasoning, which is called argumentation theory. This area is devoted to the study of mechanisms which humans use to elaborate arguments, as well as the methods that allow us to implement them in a computer. This paper presents a general overview of this discipline, aiming to motivate the interest in it. Additionally, and seeking to illustrate the possible applicability of this discipline, the authors present an example of an application in medicine.

López and Monroy present a study of the state-of-the-art in a research topic in which two, apparently unrelated, areas intersect: formal verification methods and information security. This paper presents an analysis of the different forms in which the results and tools from formal verification methods have been used to design security protocols, and even for their synthesis and diagnosis. The authors also discuss the great challenges that must be faced in the years to come in the development of good security protocols.

The application of computing in medicine is another area in which there is a lot of interest in Mexico. Favela *et al.* describe their experience in the development of ubiquitous computing for the support of hospitals, something that they call “iHospital”. They present their methodology based on mobile devices and the use of contexts, as well as an assessment of the system that they developed in a public hospital in Mexico.

We hope that this sample of the research in computer science conducted in Mexico is of interest for the readers of this special issue. We also hope that the next 50 years of research and applications of computing are even more fructiferous.

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