The Fourth International Symposium on Artificial Intelligence

Randy Goebel and Francisco J. Cantu-Ortiz

The Fourth International Symposium on Artificial Intelligence (ISAI) was held in Cancun, Mexico, 13–15 November 1991. What, another international AI conference, you say? In Mexico? Yes.

The first symposium was held in 1988. This fourth consecutive annual conference drew the participation of visitors from several international AI communities, including the United States, Mexico, Canada, Germany, Japan, England, France, Italy, The Netherlands, Spain, China, Belgium, Australia, and Singapore—an impressive breadth of participants for a conference that has existed for only four years.

ISAI was born in the summer of 1987 when Francisco Cantu-Ortiz, the director of the Centro de Inteligencia Artificial at Instituto Tecnologico y Estudios Superiores de Monterrey (ITESM), with support from senior ITESM administrators, decided that hosting an international AI conference would help build an awareness of the technological importance of AI and help create an opportunity for Mexican researchers and industrial developers to learn more about AI from the international community. ITESM was an appropriate birthplace for the conference; it is known as the MIT of Latin America. ITESM is a private educational institution consisting of 26 campuses, the main campus of which is at Monterrey.

The conference has not only enjoyed the generous support of the ITESM system but is also supported by the Mexican national AI society, Sociedad Mexicana de Inteligencia Artificial, and IBM of Mexico. Internationally, ITESM has managed to secure support from several major AI organizations, including the Canadian Society for Computational Studies of Intelligence; the International Joint Conferences on Artificial Intelligence, Inc. (IJCAII); the American Association for Artificial Intelligence (AAAI); and the International Association of Knowledge Engineers.

As we all know, there seems to be some form of AI conference almost every month, so it isn't strange to wonder what this conference offers that others cannot? One advantage is size. Unlike AAAI- and IJCAII-sponsored conferences, this conference is small enough that it is possible to interact with the participants in a meaningful way rather than spend a majority of the time searching for discussion opportunities or being overwhelmed by the volume of presentations. The intimate atmosphere, combined with the relaxed Mexican attitude, creates a situation where

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everyone can comfortably discuss their favorite topics without the tension that is typical of the larger, faster-paced meetings such as sponsored by IJCAII and AAAI.

Another advantage is location. In 1991, the conference moved from Monterrey, where the ITESM headquarters is located, to Cancun; those interesting little impromptu discussions happened in the shade of a palm tree by the pool or on the deck by the beach.

Third, the conference adjudicates a submitted paper competition that is growing in popularity (140 papers were submitted for the 1991 conference), and the list of invited speakers is always impressive. For example, in

1991, Saul Amarel, John McCarthy, Adolfo Guzman, and Ray Reiter provided the invited presentations. Past speakers include Woody Bledsoe, Judea Pearl, Alan Mackworth, Raj Reddy, Mark Fox, Richard Stern, Masaru Tomita, Mitsuru Ishizuka, Robert Cartwight, Nick Cercone, David Poole, Romas Aleliunas, Gerhard Fischer, and Sarosh Talukdar.

Yet another advantage is that each year, the symposium has a focusing theme. Past themes include manufacturing and engineering design, knowledge-based systems, and AI applications. The theme for this conference was intelligent informatics and included sessions such as Intelligent Decision Support Systems, Intelligent Databases, Computer Networks, Software Engineering, and Management Information Systems. In addition, the yearly theme encourages significant industrial participation, so that there is often an opportunity to investigate the potential industrial impact of recent research ideas.

Finally, the organizers of this symposium intend it to become internationally recognized as the AI technology transfer conference—the place to go to find out what's happening in terms of using AI laboratory techniques in real-world applications and various socioeconomic environments. These environments include industrialized and developing countries, as well as the various economic blocks being created worldwide, such as the North American block (Canada, the United States, and Mexico), the European Economic Community, and the Pacific Rim.

Enough said about the general idea of ISAI: In 1991, there was plenty to stimulate the participants' thinking, including two general talks on expert systems; four invited plenary talks; a panel discussion on the pending trilateral United States–Mexico-Canada trade negotiations; and, of course, the resort diversions of Cancun.

In the first of the invited presentations, Saul Amarel confronted the audience with a challenge to consider the use of computational design problems to focus AI research. In a presentation of epic proportion, Amarel introduced his thesis with strong economic and scientific motivation and pointed out that many of the major problems in developing computer-aided design tools raise issues that have long drawn interest in AI circles. One example is the development of design specifications

that automatically emphasize their most appropriate features under particular views. For example, the hydrodynamic properties of a boat hull might be the focus of one view of a boat design, but structural integrity in terms of stress analysis might be another. As other researchers working on the design of digital circuits have discovered, the principled development of a history of design evolution, typically in terms of a series of design records, is a fundamental challenge in the development of general design tools. In presenting these fundamental problems, Amarel emphasized the need for AI researchers to embrace all of computing science to use the best ideas in the most appropriate way.

Ray Reiter's talk focused on a specification of database updates in terms of first-order situation calculus. In reviving situation calculus for database applications, Reiter stressed the relationship between a history of transactions and the description of an evolving logic database; he established this relationship in terms of the situation calculus description of *state change* as a term denoting a nested sequence of actions. Reiter's thesis is that his reconstruction of database updates in terms of situation calculus provides a stable framework for understanding and extending several existing ideas about modern database theory and logic programming. These ideas include the notion of projection as question answering and the application of logic programming's notion of unfolding as the most general kind of regression planning.

John McCarthy apologized for not being sure about what situation semantics is but suggested that formalizing the notion of context might provide us with a way to understand the role of context in commonsense reasoning. McCarthy sketched a formalization based on a binary is-true predicate, which provides the basis for asserting truths relating named contexts and first-order sentences. Although admitting to only a partially worked-out theory, McCarthy demonstrated a few of what he considered to be fundamental problems and suggested that they seemed to be what motivates the more abstract work in situation semantics.

Adolpho Guzman rounded out the group of invited speakers with a presentation that explained the value of viewing interconnected software tools as black boxes. In this view, Guzman addressed the problem of how two (or more) tools can be made to interact when the code of the tools cannot be changed, only augmented. With so many software productivity tools available today, there is a frequent need to integrate, interconnect, or force collaboration among two or more such tools whose design never anticipated such interaction. In addition, the tools most likely were developed by different manufacturers with a resistance to sharing or publishing source code. Guzman presented some revisions to existing methods for solving this problem and proposed extensions based on design time knowledge of anticipated future connections.

In addition to these speakers, a special session on expert systems included invited talks from Jay Leibowitz and Robert Moore. Moore is currently the president of Gensym, a successful vendor of expert system software development tools. He provided a fast-paced introduction to the structure and successful applications of the G2 system.

In one of the presentation highlights of the conference, Leibowitz seized the opportunity provided by the conference venue to present a *dual talk*, one that interwove the most recent ideas about software development methodologies for expert systems with a historical analysis of the development of ancient Mayan culture. A description would not do the talk justice—you really did have to be there. Liebowitz, from George Washington University, is the general chair of the highly successful, first-ever World Congress on Expert Systems, which was held in December 1991 in Orlando, Florida.

A lively discussion panel chaired by Francisco J. Cantu-Ortiz addressed the theme of AI technology transfer and focused on issues related to the role of government policies, university programs, industry requirements, consulting firms, and international agencies in transferring AI. The emphasis was on the role of technology in the formation of new economic blocks, such as the Free Trade Agreement being negotiated between Canada, the United States, and Mexico. Panelists included Randy Goebel and Aldo Dagnino from Canada, Paul Harmon and Dick Simmons from the United States, and Antonio Sanchez and Sergio Delgado from Mexico.

Perhaps the best summary of this fourth ISAI meeting is to note that unlike many of the big impersonal meetings, the thought about why one actually attended is not the first idea that comes to mind during the trip home. If you understand this thought, perhaps we will see you in Cancun on 7–11 December 1992 for the Fifth ISAI, whose theme is manufacturing and robotics. Hasta luego, amigos.

Randy Goebel is an associate professor in the Department of Computing Science at the University of Alberta in Edmonton, Canada.

Francisco J. Cantu-Ortiz is currently director of the Center for Artificial Intelligence and professor of computer science and artificial intelligence at the Instituto Tecnologico y Estudios Superiores de Monterrey in Monterrey, Mexico.