# Eighth IEEE International Conference on Tools with Artificial Intelligence

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Proceedings

# Eighth IEEE International Conference on Tools with Artificial Intelligence

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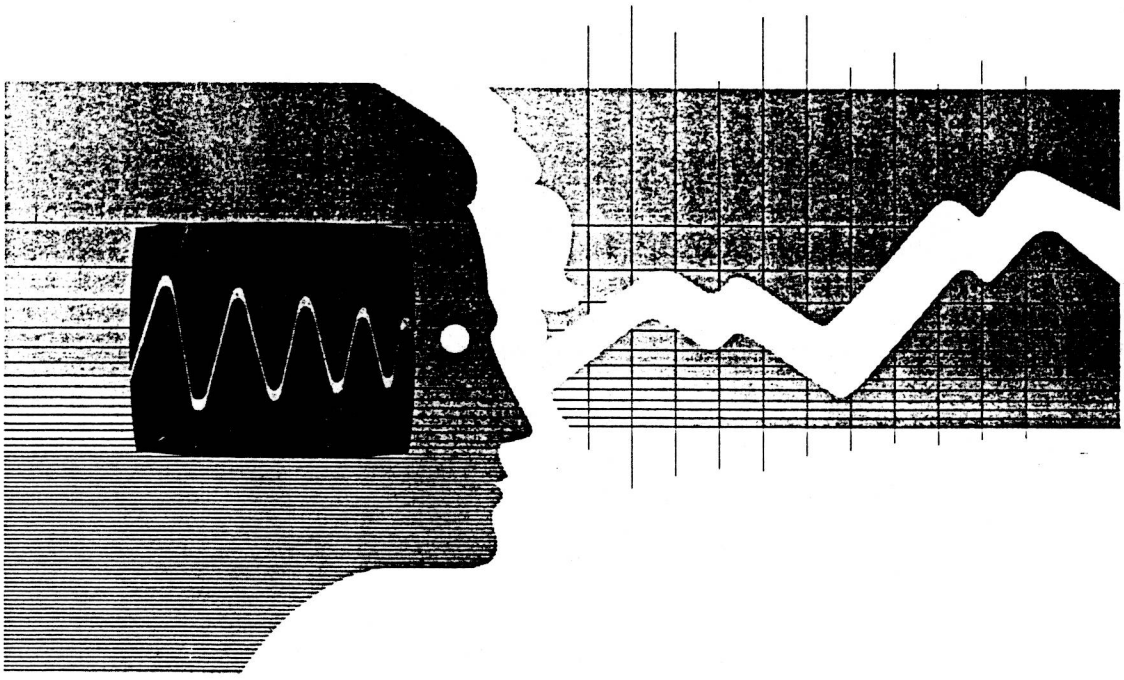

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# General Chair's Foreword

Welcome to the eighth International Conference on Tools with Artificial Intelligence, a conference dedicated to the missing gap between AI theory and life applications. It brings people of the different branches of AI paradigms together — from the symbolic, the evolutionary, and the neural network field (like me), all with the same objective: adding intelligence to computers.

This year, we have taken a great step — moving the conference outside the U.S. for the first time. I am glad that we found the lovely place of Toulouse for this purpose and that the broad contributions made possible a very attractive conference program. I hope that this encourages the conference to move to other parts of the world, too.

I would like to thank everybody who worked for this success, namely the two co-program chairs, Pierre Marquis and Bill Manaris, along with the team of vice chairs and referees. Also many thanks go to the local organization of Michel Cayrol, to the registration work of Mark Radle, and the publicity work of John Vassilopoulos.

Last but not least, I want to thank you, the conference participant, for your engaged attendance of this interdisciplinary exchange of ideas.

**Rüdiger Brause**
***ICTAI '96 General Chair***

# Program Co-Chairs' Foreword

The IEEE International Conference on Tools with Artificial Intelligence is now in its eighth year. Since its inception, ICTAI has grown and matured under the guidance of a long list of individuals who have maintained the vision of its significance from one year to the next. ICTAI has been, and continues to be, the only international forum that focuses on AI Tools as a unifying theme for supporting the creation and transfer of AI-related ideas, and for promoting their cross-fertilization over all AI application domains and AI paradigms. ICTAI has focused - and continues to focus - on both theory and developmental methodologies, and encompasses all aspects of specifying, developing, implementing, and evaluating theoretical and applied frameworks that may serve as tools for developing artificially intelligent systems and applications.

ICTAI '96 is characterized by two major changes with respect to previous years: This is the first year the conference is being held in Europe. The second change is that this year's list of focal topics was extended to reflect the current interests and needs of the professional community of AI researchers and practitioners. This was a result of the realization that AI, as a field, is now being viewed by many as providing a cultural foundation for coherently joining together ideas and concepts from many different disciplines such as computer science, mathematics, engineering, psychology, the neurosciences, fine arts, and philosophy into a unifying computational framework. This computational framework provides the foundation for the development of a wide variety of AI tools.

In response to our call for papers, we received 162 submissions from Australia, Austria, Belgium, Brazil, Canada, China, Finland, France, Germany, Greece, Hong Kong, Israel, Italy, Japan, Korea, Moldavia, Poland, Portugal, Russia, Saudi Arabia, Spain, Switzerland, Taiwan, Ukraine, UK, and the USA. This broad international presence strongly reaffirms the reputation of ICTAI as an international conference of high scholarly and technical standards.

Although the overall quality of this year's submissions was high, we had to turn down many valuable contributions since ICTAI attempts to maintain a 1:3 acceptance ratio (excluding posters). Specifically, the review of submitted papers was handled by one or two program vice-chairs in each topic area. Vice-chairs were responsible for distributing papers to referees for collecting reviews (at least three per paper), and for making recommendations to the program committee. This year, we were very fortunate to have 302 reviewers who provided detailed expert opinions on the merit of submissions and constructive feedback to our authors. Additional reviews were carried out on papers receiving conflicting reviews at the program committee meeting held on July 5th in Toulouse.

The program committee meeting focused on combining the results from the two different components of the program committee — one based in Europe, and the other in North America — and on establishing borderlines among different categories of papers. As in past years, we identified three categories of papers; namely, regular, short, and poster papers. Regular papers offer well-conceived ideas, good results, and clear presentations. Short papers offer the same, but in fewer pages. Poster papers present preliminary results that demonstrate potential for more complete development. Based on the recommendations of the program committee and the reviewers, we accepted 37 regular papers, 21 short papers, and 22 poster papers.

The success of the technical program is largely due to the efforts of the program committee to continue to maintain the highest possible standards for the paper review process. We would like to express our sincere gratitude to all of the program committee members. We are also very grateful to the reviewers and the publicity chairs for their excellent work. Our special thanks are extended to the authors, panelists, keynote speakers, and session chairs. We are

indebted to Rüdiger Brause, General Chair of ICTAI '96, Michel Cayrol, Local Arrangements Chair, and to Mark Radle, Registration Chair/Proceedings Editor, for their invaluable help. Without them, ICTAI '96 would not have been possible. Special thanks also goes to Nick Bourbakis, Cris Koutsougeras, and the rest of the 1996 ICTAI Steering Committee for their strong leadership and guidance throughout this year's organizational activities.

Pierre Marquis would like to thank CRIN-CNRS and INRIA-Lorraine — with recognition in particular to Martine Kuhlmann — and to CRIL/ Universite' d'Artois, for their support. In addition, Bill Manaris would like to acknowledge the support of the University of Southwestern Louisiana, especially the efforts of Maxia Hutchinson.

We welcome you to the 8th IEEE International Conference on Tools with Artificial Intelligence, and we hope that you will enjoy this year's conference program, as well as "La Ville Rose," Toulouse, France.

**Bill Manaris and Pierre Marquis**
***ICTAI '96 Program Co-Chairs***

# Proceedings Editor's Foreword

Welcome to the Eighth IEEE International Conference on Tools with Artificial Intelligence in Toulouse, France!

The ICTAI '96 proceedings contain both papers and posters. These papers went through at least three independent reviews and were selected, based on the reviewer's comments, by the program committee at their meeting in France. It is our hope that the papers contained within these covers reflect the research and achievements that are being realized across AI application domains and paradigms. It is also our hope that you, the reader, find this volume both enlightening and inspiring.

We would like to thank all of the authors who responded to the call for papers with submissions of their work. It is their commitment to their work, participation, contribution to our community, and willingness to share ideas that makes an assemblage like this possible. We would also like to thank the reviewers for their time and dedication in reviewing the submissions and for lending their expertise to the selection process.

I would like to especially thank the authors for their cooperation and promptness in providing the camera-ready versions of their submissions, with recommended revisions, in standard IEEE format. Their cooperation made the job of editing these proceedings relatively painless. I would also like to thank Regina Spencer Sipple of the IEEE Computer Society Press for her guidance and coordination of the final production stage. It is our intention that, in its technical aspect, these proceedings are error free.

Again, welcome to the 1996 IEEE International Conference on Tools with Artificial Intelligence.

**Mark G. Radle**
*ICTAI '96 Proceedings Editor*

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***Benjamin W. Wah***
*University of Illinois, Urbana-Champaign, USA*

*"Title to Be Announced"*

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*University of South Carolina, USA and*
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*KTH, Sweden*

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*Mike Pittarelli, SUNY / Utica, USA*
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