

# IJCAI-05

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Proceedings of the Nineteenth International  
Joint Conference on Artificial Intelligence

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Edinburgh, Scotland  
July 30–August 5, 2005

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# DEDICATION

These proceedings are dedicated to the memory of  
Robert William Milne (1956–2005),  
Local Arrangements Chair of IJCAI-05,  
who died of a heart attack on June 5, 2005, 400 metres below the summit of Mt. Everest,  
having already climbed the highest peaks of the other six continents.

A graduate of MIT and the University of Edinburgh, Rob was a pioneer  
in the applications of Artificial Intelligence, having created a successful company,  
Intelligent Applications Ltd, based on his research on model based diagnosis.

He was a Fellow of the Royal Society of Edinburgh, and a past Chairman of the  
European Coordinating Committee for Artificial Intelligence.

We remember him as a committed and successful scientist, a wonderful colleague, and a friend.



# PAST IJCAI PROCEEDINGS

The proceedings of these conferences constitute one of the primary archival sources for literature on artificial intelligence. In the past they were available through Morgan Kaufmann Publishers, San Francisco, USA. Following the take-over of Morgan Kaufmann by Elsevier, the proceedings are no longer available from Morgan Kaufmann. See <http://www.ijcai.org> for more information about how to obtain previous IJCAI proceedings.

IJCAI-03: Acapulco, Mexico

IJCAI-85: Los Angeles, California, USA

IJCAI-01: Seattle, Washington, USA

IJCAI-83: Karlsruhe, Germany

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IJCAI-69: Washington, D.C., USA

# FOREWORD

These proceedings contain the papers and poster papers accepted for presentation at the Nineteenth International Joint Conference on Artificial Intelligence (IJCAI-05) to be held in Edinburgh, Scotland, July 30–August 5, 2005. This year, we had an unprecedented number of papers (1,339) submitted. We made extra room in the program, which allowed us to accept 240 papers, of which 3 were later withdrawn. The original acceptance rate was 18 percent.

The work of selecting these papers was done by an army of dedicated volunteers from the academic community. The 6 members of the senior program committee, 54 members of the program committee, and 1,037 reviewers put in an enormous amount of work and did a great job. Each paper was carefully reviewed by at least three reviewers and discussed by two members of the program committee.

The reviewers and program committee members were asked to recommend papers for distinction, and a subcommittee of the senior program committee selected three to be highlighted at the conference. They are: “Learning Coordination Classifiers” by Yuhong Guo, Russell Greiner, and Dale Schuurmans; “A Probabilistic Model of Redundancy in Information Extraction” by Doug Downey, Oren Etzioni, and Stephen Soderland; and “Solving Checkers” by Jonathan Schaeffer, Yngvi Björnsson, Neil Burch, Akihiro Kishimoto, Martin Müller, Robert Lake, Paul Lu, and Steve Sutphen.

Continuing an excellent innovation from IJCAI-03, IJCAI-05 hosts a poster track. The goal is to give researchers with exciting new ideas that are not yet well enough validated or polished for publication in a full paper a venue to present their work and to discuss it with others. Papers for this track were selected by another dedicated group of 9 senior program committee members, 35 regular program committee members, and 236 reviewers. A total of 453 papers were submitted to the poster track, of which 112 were accepted, for a 24.7 percent acceptance rate.

In addition to the technical paper and poster program, which is documented in this volume, the conference includes excellent programs of tutorials, organized by Bob Givan, and workshops, organized by Carlos Guestrin.

We would like to express our gratitude to Teresa Cataldo for her administrative support and to Kurt Steinkraus and Luke Zettlemoyer for their technical support during this process. There is absolutely no way we could have done this without them! In addition, we have benefited greatly from the help and support of the IJCAI Secretary-Treasurer, Samy Uthrusamy, as well as local arrangements chairs Rob Milne and Ann Macintosh, and IJCAI-05 Conference Chair Fausto Giunchiglia. It has also been a joy to work with Jennifer Ballentine of Professional Book Center; they have done an amazing job of making the production process go very smoothly, resulting in this volume.

*Leslie Kaelbling, Program Chair  
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Cambridge, Massachusetts, USA*

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Center for Applied Autonomous Sensor Systems  
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## IJCAI-05 AWARDS

### The IJCAI-05 Award for Research Excellence

Geoffrey E. Hinton, University of Toronto (Canada)  
Talk: *What kind of a graphical model is the brain?*

### The Donald E. Walker Distinguished Service Award

Raj Reddy, Carnegie Mellon University (USA)

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## DISTINGUISHED PAPERS

*A Probabilistic Model of Redundancy in Information Extraction*, by Doug Downey, Oren Etzioni, and Stephen Soderland

*Learning Coordination Classifiers*, by Yuhong Guo, Russell Greiner, and Dale Schuurmans

*Solving Checkers*, by Jonathan Schaeffer, Yngvi Björnsson, Neil Burch, Akihiro Kishimoto, Martin Müller, Robert Lake, Paul Lu, and Steve Sutphen

## INVITED SPEAKERS

Andrew Blake, Microsoft Research, Cambridge  
*Visual Tracking of Objects in Motion*

Adnan Darwiche, University of California–Los Angeles  
*The Quest for Efficient Probabilistic Inference*

Nir Friedman, Hebrew University  
*Understanding Molecular Regulatory Mechanisms*

Alison Gopnik, University of California–Berkeley  
*Babies and Bayes Nets: Causal Inference in Computers and Children*

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*Designing Robots: From Artificial Limbs to Powerful, Energetic, Autonomous Humanoids*

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