Ninth International Conference on Principles of Knowledge Representation and Reasoning KR2004

Conference Brochure

Westin Resort & Spa
Whistler, Canada
2 - 5 June 2004

Important Events at a Glance

Tuesday, June 1	KR-MED Workshop		
Wednesday, June 2	**KR2004 Technical Program** **KR2004 Reception at 19:00**		
Thursday, June 3	**KR2004 Technical Program** **KR2004 Banquet at 19:00**	ICAPS2004 Tutorials	
Friday, June 4	**KR2004 Technical Program** ICAPS2004 Reception	ICAPS2004 Workshops	
Saturday, June 5	**Joint ICAPS/KR2004 Technical Program** **Joint ICAPS/KR2004 Festival**		
Sunday, June 6	ICAPS2004	NMR2004	DL2004
Monday, June 7	ICAPS2004	NMR2004	DL2004
Tuesday, June 8		NMR2004	DL2004

Sponsors

Sponsored by Principles of Knowledge Representation and Reasoning, Incorporated (KR Inc.), IBM Research, University of Technology Sydney, Simon Fraser University, American Association for Artificial Intelligence (AAAI) and Canadian Society for the Computational Studies of Intelligence (CSCSI), National ICT Australia, and the *Artificial Intelligence: An International Journal*.

Organisational support was provided by AAAI and the proceedings printed by AAAI Press.

Welcome to KR2004

Welcome to the Ninth International Conference on Principles of Knowledge Representation and Reasoning. Knowledge Representation and Reasoning (KR&R) lies at the crossroads between Artificial Intelligence research and modern Information Technology driven by the World-Wide-Web. Its ambition is to pave the road to the possibility of storing, retrieving and exploiting human knowledge by means of computers in a rational and efficient way. It relies on a blend of logics, graphical representations, and other formal languages for representing and reasoning about one's and other agent's beliefs about time, space, motion, as well as more specific domains of interest. KR&R is multidisciplinary and brings together philosophers, linguists and computer scientists. KR&R provides crucial foundation for a wide range of applications with tremendous potential economic impact.

KR&R conferences have established themselves as the major forum for discussing these issues, and every other year collect a representative selection of the most advanced work in the computational manipulation of knowledge. This tradition goes back to 1989, when Ray Reiter was Conference Chair for the first KR&R conference in downtown Toronto. This year, we are proud to christen the best paper award the *Ray Reiter Best Paper Award* in his honour. This prestigious award is sponsored by *Artificial Intelligence: An International Journal*.

Papers presented at KR2004 span the traditional areas in the field, covering various kinds of logics, languages, reasoning algorithms, and formalisms dedicated to space, time, action, decision and belief, as well as progress on the representation of ontologies, system evaluations, and the formalization of various reasoning issues such as belief revision, information merging, and argumentation. Continuing a fruitful tradition initiated in 2000, the final day of KR2004 is co-organized with the ICAPS2004 planning conference, where papers that lie in the intersection of both conferences are presented with the goal of cross-fertilizing the two areas. The corresponding papers are published in both proceedings. In addition, KR2004 and ICAPS2004 have organized a joint festival which includes the inaugural KR&R Doctorial Consortium. Student travel support for the Doctorial Consortium was provided by AAAI and CSCSI.

KR2004 initiates a new series of invited talks on "Great Moments in Knowledge Representation," sponsored by IBM Research. The first two of these talks will be given by John McCarthy and William Woods. Two more invited talks will be presented by Itzhak Gilboa, who bridges the gap between knowledge representation, decision theory and economics, and Peter Patel-Schneider, who was a major contributor to the development of the semantic web language OWL. Lastly, Patrick Doherty, whose career has included outstanding achievements in both KR and Planning start off our joint day with ICAPS.

Finally, three workshops will take place around KR2004 on Description Logics, Nonmonotonic Reasoning, and Biomedical Knowledge Representation. Enjoy the event, fun, and scholarship filled week in the beautiful setting of Whistler!

Didier Dubois and **Chris Welty** (Program Chairs), and **Mary-Anne Williams** (Conference Chair)

General Information

Conference Location

The first three days of KR2004 will be held at the **Westin Resort and Spa**, Whistler, British Columbia, Canada, and the final shared day with ICAPS2004 will be held at the **Whistler Conference Center**. Presentations on the first and third days will be held in the Emerald Rooms, and on the second day they will take place in the Alpine Rooms at the Westin Resort and Spa.

The **KR2004 registration desk** will be located at the **Westin Resort and Spa**. Onsite registration will be possible at the registration desk. The KR2004 registration desk will be located on the Conference Level Foyer of the Westin Resort & Spa. Onsite registration will be possible at the registration desk during registration hours. Registration hours are:

Wednesday, June 2	8:00 AM - 5:00 PM
Thursday, June 3	8:00 AM - 5:00 PM
Friday, June 4	8:30 AM - 5:00 PM
Saturday, June 5	8:30 AM - 5:00 PM
Sunday, June 6	8:00 AM - 5:00 PM
Monday, June 7	8:00 AM - NOON

Internet Access at the Westin

A wireless LAN and pre-ordered wireless cards will be available for CAN$18 for the duration of the KR2004 and ICAPS2004 conferences.

Internet Cafes

Hotbox Coffee & Internet	**Jody's Internet Services**	**Soapy's Internet Station**
26B-4314 Main Street, Whistler	122a-4338 Main Street, Whistler	109-4369 Main Street, Whistler
Tel: 1-604-905-5644	Tel: 1-604-932-8380	Tel: 1-604-932-6773

KR2004 Reception at the Westin

The KR2004 Conference Reception will be held on Wednesday, June 2 evening from 19:00 – 20:00 at the Westin Hotel in the **Emerald A Ballroom**.

Banquet

The KR2004 Conference Banquet will be held at 7:00pm on Thursday, June 3 at the restaurant **Araxi** located at 4222 Village Square Whistler (http://www.araxi.com). The banquet is optional and tickets MUST be purchased during registration hours (US$70) by the lunch break on Wednesday, June 2. Banquet tickets will not be available for sale at the Restaurant.

Presentations

All presentation rooms will include an LCD projector, an overhead projector and sound equipment. All presenters are responsible for bringing their own computer (if necessary). Presentations on the first 3 days are 30 minutes in length and on the final day 25 minutes. Presenters should leave at least 5 mins for questions.

Invited Talks

ADVANCED RESEARCH WITH AUTOMOMOUS UNMANNED AERIAL VEHICLES

Patrick Doherty University of Linköping, Sweden

The emerging area of intelligent unmanned aerial vehicle (UAV) research has shown rapid development in recent years and offers a great number of research challenges for artificial intelligence and knowledge representation. For both military and civilian applications, there is a desire to develop more sophisticated UAV platforms where the emphasis is placed on intelligent capabilities and their integration in complex distributed software architectures. Such architectures should support the integration of deliberative, reactive and control functionalities in addition to the UAV's integration with larger network centric systems.

In my talk I will present some of the research and results from a long term basic research project with UAVs currently being pursued at Linköping University, Sweden. The talk will focus on knowledge representation techniques used in the project and the support for these techniques provided by the software architecture developed for our UAV platform, a Yamaha RMAX helicopter. Additional focus will be placed on some of the planning and execution monitoring functionality developed for our applications in the areas of traffic monitoring, surveying and photogrammetry and emergency services assistance.

Biography

Patrick Doherty is a professor of computer science at the Department of Computer and Information Science (IDA), Linköping University, Sweden. He is the director of the Artificial Intelligence and Integrated Computer Systems Division at IDA and head of the Knowledge Processing Laboratory. He is also President of the Swedish Artificial Intelligence Society. His current research interests include formal knowledge representation and approximate reasoning, automated planning, reasoning about action and change, autonomous aerial robotics systems, and software architectures for autonomous systems.

EVIDENCE AND BELIEF

Itzhak Gilboa Tel-Aviv University, Israel

We discuss the representation of knowledge and of belief from the viewpoint of decision theory. While the Bayesian approach enjoys general-purpose applicability and axiomatic foundations, it suffers from several drawbacks. In particular, it does not model the belief formation process, and does not relate beliefs to evidence. We survey alternative approaches, and focus on formal model of case-based prediction and case-based decisions.

Biography

Itzhak Gilboa is a Professor at Eitan Berglas School of Economics and Recanati School of Business, Tel-Aviv University, and a Fellow of Cowles Foundation for Research in Economics, Yale University. He graduated from Tel-Aviv University (in economics) in 1987, and has been on the faculty of Kellogg School of Management, Northwestern University, for ten years before returning to Israel. His main topic of research is decision under uncertainty, in situations where there is too little information for the generation of a Bayesian prior. Together with David Schmeidler, Gilboa has developed axiomatic theories of decision making when information is modeled by sets of prior probabilities, and by cases. Their joint project may be viewed as providing decision theories and axiomatic foundations for formal models representing information and belief that differ from the Bayesian one. The emphasis of this project is not scarcity of information rather than on irrational behavior of mistakes. Other topics that Gilboa has worked on include game theory, computational complexity, social choice, and consumer behavior.

WHAT IS OWL (AND WHY SHOULD I CARE)

Peter Patel-Schneider Bell Labs Research, USA

OWL is the new ontology language produced by the W3C Web Ontology Working Group. OWL is thus poised to be a major formalism for the design and dissemination of ontology information, particularly in the Semantic Web. OWL has influences from several communities, including the RDF community, the Description Logic community, and the frame community. These influences resulted in a wide variety of requirements on OWL, some of which appear to be conflicting. OWL contains innovative solutions to several of these apparent conflicts, but it has not been possible to completely satisfy all the desired requirements for OWL.

In this talk I will describe the development and design of OWL, concentrating on what makes OWL important, the relationship of OWL to other formalisms, the place of OWL in the Semantic Web, the innovative solutions that were required in its design, and the impact of the conflicting requirements on OWL. I will also propose a different foundation for the Semantic Web, one that I think would allow for easier and better development of new formalisms for the Semantic Web.

Biography

Peter F. Patel-Schneider is a Member of Technical Staff in Bell Labs Research. He received his Ph. D. from the niversity of Toronto in 1987. Peter was a member of the AI Principles Research Department at AT&T Bell Laboratories from 1988 to 1995, and went to AT&T Labs---Research when AT&T split up. In August 1997 he rejoined Bell Labs. From 1983 to 1988 he worked in the AI research group at Fairchild and Schlumberger. Peter has taught courses at both the University of Toronto and Rutgers University.

Peter's research interests center on the properties and use of description logics. He has designed and implemented large sections of CLASSIC, a Description Logic-based Knowledge Representation system. He designed and implemented DLP, a heavily-optimized prover for expressive description logics and propositional modal logics. He has performed extensive empirical evaluation of DLP and other provers for description logics and propositional modal logics. He is currently involved with the Web Ontology Working Group of the World Wide Web Consortium, designing the OWL language for representing ontologies in the semantic web.

Peter is also interested in rule-based systems, including more-standard systems derived from OPS as well as newer formalisms such as R++. He designed many of the techniques used in R++ and the R++ translator, and wrote the first several prototype implementations of the R++ translator.

Great Moments in Knowledge Representation and Reasoning

HISTORICAL REMARKS ON NONMONOTONIC REASONING ESPECIALLY CIRCUMSRIPTION

John McCarthy Stanford University

Humans have always done nonmonotonic reasoning, but rigorous monotonic reasoning in reaching given conclusions has been deservedly more respected and admired. Euclid contains the first extended monotonically reasoned text available to a large public. I suspect that even Euclid did nonmonotonic reasoning in arguing for the postulates. It is unfortunate that the rigorous monotonic reasoning of Euclid has been de-emphasized in education, because Euclid generates in people who are not mathematically minded a respect for rigor.

Conclusions derived by monotonic logical reasoning from precisely stated premises have always been the ideal. When people jump to conclusions, they are criticized for the gaps in their reasoning, because the conclusions are not guaranteed to follow from the premises. Worse yet, the premises are often unstated.

Biography

John McCarthy is an emeritus professor at Stanford University and living treasure in the field of Knowledge Representation. John completed his PhD in Mathematics at Princeton in 1951 at the age of 23 and since then has been working in the area of Artificial Intelligence. In fact, he is credited with coining the term "Artificial Intelligence" in 1955 and in 1956 he organised the now famous first workshop on Artificial Intelligence at Dartmouth. John has made several groundbreaking discoveries in and contributions to the field of computer science. For example, he invented time sharing, conditional expressions, recursion, and the functional programming language LISP. He developed Situation Calculus with Pat Hayes. Situation Calculus is now one of the major representations used in the field of Reasoning about Actions. These days John is still active in Knowledge Representation and Reasoning and focuses on the ambitious task of modeling commonsense reasoning using logic-based methods.

MEANING AND LINKS: A SEMANTIC ODYSSEY

William Woods Sun Microsystems

"What's in a Link" [Woods, 1975], advocated a standard of rigor for the representational conventions used in semantic networks and has been widely cited as providing a useful perspective for people working in this area. I have been asked how this paper came to be, what was happening in the field at the time, and how the ideas have evolved since then. This talk will describe my perspective on some of the things that led me to write the paper, some of the background thoughts that led to the ideas presented there, and how some of those ideas have evolved since then.

Biography

William A. Woods is a Principal Scientist and Distinguished Engineer at Sun Microsystems Laboratories in Burlington, MA. He is internationally known for his research in natural language processing, continuous speech understanding, and knowledge representation and is currently interested in technology for improving people's access to information. He earned his doctorate at Harvard University, where he then served as an Assistant Professor and later as a Gordon McKay Professor of the Practice of Computer Science. He is a past president of the Association for Computational Linguistics, a Fellow of the American Association for Artificial Intelligence, and a Fellow of the American Association for the Advancement of Science. Dr. Woods built one of the first natural language question answering systems (LUNAR) to answer questions about the Apollo 11 moon rocks for the NASA Manned Spacecraft Center, while he was at Bolt Beranek and Newman (BBN), where he was a Principal Scientist and manager of the AI Department in the '70's and early 80's. He was the principal investigator for BBN's early work in natural language processing and knowledge representation and for its first project in continuous speech understanding. Many people in this field worked for him at BBN and/or were students of his at Harvard. Subsequently, he was Principal Scientist for Applied Expert Systems, Inc. and Principal Technologist for On Technology Inc., two startup companies in Cambridge, Mass., before joining Sun in 1991.

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Frank Wolter, University of Liverpool, UK
Mike Wooldridge, University of Liverpool, UK

KR2004 Program

Wednesday June 2, 2004 – Emerald Rooms, Westin Spa & Resort

8:45 — **Opening Ceremonies**

9:00 — **Invited Talk: Peter Patel-Schneider - What is OWL (and why should I care)**
Chair: Didier Dubois
Room: Emerald C

10:00 — Break

10:30

Conditioning & Conditional Logics
Chair: Andreas Herzig
Room: Emerald C

Causation and Causal Conditionals
John Bell

Sleeping Beauty Reconsidered
Joseph Halpern

Weak Nonmonotonic Probabilistic Logics
Thomas Lukasiewicz

Knowledge Discovery by Reversing Inductive Knowledge Representation
Jens Fisseler, Gabriele Kern-Isberner

Spatial Reasoning
Chair: Nicola Guarino
Room: Emerald B

Multidimensional Mereotopology
Antony Galton

Parthood as Spatial Inclusion
Udo Hahn, Stefan Schulz

A Logic-Based Formulation of Active Visual Perception
David Randell, Murray Shanahan

Indoor Classification and Perceptual Matching
Fiora Pirri

12:30 — Lunch

14:00

Great Moments in KR Talk: John McCarthy Historical Remarks on Nonmonotonic Reasoning, Especially Circumscription
Chair: Chris Welty
Room: Emerald C

Space and Time
Chair: Anthony Galton

Logic of Motion
Dana Nau, V.S. Subrahmanian, Fusun Yaman

Axiomatizing the Cyclic Interval Calculus
Jean-francois Condotta, Gérard Ligozat

Philosophical and Psychological Issues
Chair: Thomas Eiter
Room: Emerald B

What's in a model? Epistemological analysis of Logic Programming
Marc Denecker

Ontological Theory for Ontology Engineering
Werner Ceusters, James Fielding, Jonathan Simon, Barry Smith

Intransitivity and Vagueness
Joseph Halpern

An Experimental Analysis of Possibilistic Default Reasoning
Salem Benferhat, Jean François Bonnefon, Rui Da Silva Neves

16:00 — Break

16:30

Description Logics
Chair: Ian Horrocks
Room: Emerald C

Combining Answer Set Programming with Description Logics for the Semantic Web
Thomas Eiter, Thomas Lukasiewicz, Roman Schindlauer, Hans Tompits

Reducing SHIQ- Description Logic to Disjunctive Datalog Programs
Boris Motik, Ulrike Stattler, Ullrich Hustadt

Optimization Techniques for Retrieving Resources Described in OWL/RDF Documents: First Results
Volker Haarslev, Ralf Möller

Argumentation
Chair: Ramon Pino-Perez
Room: Emerald B

Reaching Agreement through Argumentation: A Possibilistic Approach
Leila Amgoud, Henri Prade

Characterization of Semantics for Argument Systems
Philippe Besnard, Sylvie Doutre

On the use of an ATMS for Handling Conflicting Desires
Leila Amgoud, Claudette Cayrol

19:00 — **KR2004 Conference Reception in Emerald A Ballroom**

Thursday June 3, 2004 – Alpine Rooms, Westin Spa & Resort

8:30	**Compact Representations of Preference** **Chair: David Poole** **Room: Alpine ABC** Expressive Power and Succinctness of Propositional Languages for Preference Representation *Sylvie Coste-Marquis, Jerome Lang, Paolo Liberatore, Pierre Marquis* Complex Preferences for Answer Set Optimization *Gerhard Brewka* GAI Networks for Utility Elicitation *Christophe Gonzales, Patrice Perny*	**Agents** **Chair: Stuart Shapiro** **Room: Alpine DE** A First-Order Theory of Communicating First-Order Formulas *Ernest Davis* Observation Expectation Reasoning in Agent Systems *Margaret Hamilton, James Harland, Binh Tran* Regulative and Constitutive Norms in Normative Multiagent Systems *Guido Boella, Leendert van der Torre*
10:00	Break	
10:30	**Ontology** **Chair: Ernest Davis** **Room: Alpine ABC** Social roles and their descriptions *Emanuele Bottazzi, Carola Catenacci, Roberta Ferrario, Aldo Gangemi, Nicola Guarino,Claudio Masolo Laure Vieu* Ontological Knowledge Base Reasoning with Sort-Hierarchy and Rigidity *Ken Kaneiwa, Riichiro Mizoguchi* The four dimensions of artifacts *Pawel Garbacz* How to Interweave Knowledge about Object Structure and Concepts *Carola Eschenbach*	**Belief Revision and Update** **Chair: Gabriele Kern-Isberner** **Room: Alpine DE** Logical foundations of negotiation: strategies and preferences *Norman Foo, Rex Kwok, Thomas Meyer, Dongmo Zhang* Distance Semantics for Relevance-Sensitive Belief Revision *Samir Chopra, Norman Foo, Pavlos Peppas* Explanations as an Unifying Tool for Knowledge Dynamics *Isabelle Bloch, Ramon Pino-Perez, Carlos Uzcategui* Updating of a Possibilistic Knowledge Base by Crisp or Fuzzy Transition Rules *Boris Mailhé, Henri Prade*
12:30	Lunch	
14:00	**Invited Talk: William Woods** **Meaning and Links: A Semantic Odyssey** **Chair: Chris Welty** **Room: Alpine ABC** **Merging Belief Bases** **Chair: Pavlos Peppas** A Split-Combination Method for Merging Inconsistent Knowledge Bases in Possibilistic Logic *David Glass, Qi Guilin, Weiru Liu* On Merging Strategy-Proofness *Patricia Everaere, Sébastien Konieczny, Pierre Marquis*	**Complexity Analysis I** **Chair: Tomi Janhunen** **Room: Alpine DE** Satisfiability for Propositional Contexts *Floris Roelofsen, Luciano Serafini* Complexity of Model Checking and Bounded Predicate Arities for Non-ground Answer Set Programming *T Eiter, W Faber, M Fink, G Pfeifer, S Woltran* Automated Reformulation of Specifications by Safe Delay of Constraints *Marco Cadoli, Toni Mancini* Towards a Structured Analysis of Approximate Problem Solving: a Case Study in Classification *Perry Groot, Annette ten Teije, Frank van Harmelen*
16:00	Break	
16:30	**Logic Programming** **Chair: Fangzhen Lin** **Room: Alpine ABC** Causal Logics of Logic Programming *Alexander Bochman* Condensed Representations for Inductive Logic Programming *Luc De Raedt, Jan Ramon* On Eliminating Disjunctions in Stable Logic Programming *Thomas Eiter, Michael Fink, Hans Tompits, Stefan Woltran*	**Query Processing for Ontologies** **Chair: Sheila McIlraith** **Room: Alpine DE** Approximative Query Techniques for Agents using Heterogeneous Ontologies *P Doherty, W Lukaszewicz, A Szalas* What to Ask to a Peer: Ontology-based Query Reformulation *D Calvanese, G De Giacomo, D Lembo, M Lenzerini, R Rosati* Qualitative Probabistic Matching with Hierarchical Descriptions *David Poole, Clinton Smyth*
19:00	**Banquet Dinner at Araxi**	

Friday June 4, 2004 – Emerald Rooms, Westin Spa & Resort

9:00

Invited Talk: Itzhak Gilboa - Evidence and Belief
Chair: Didier Dubois
Room: Emerald C

10:00 Break

10:30

Real Knowledge Representation Systems **Chair: Daniel Bobrow**
Room: Emerald C

A Question-Answering System for AP Chemistry: Assessing KR&R Technologies
Ken Barker, Vinay Chaudhri, Jason Chaw, Peter Clark, James Fan, David Israel, Sunil Mishra, Bruce Porter, Pedro Romero, Dan Tecuci, Tomas Uribe, Peter Yeh

GlossOnt: A Concept-focused Ontology Building Tool
Youngja Park

Towards a Quantitative, Platform-Independent Analysis of Knowledge Systems
Noah S. Friedland, Paul G. Allen, Michael Witbrock, Gavin Matthews, Nancy Salay, Pierluigi Miraglia, Jurgen Angele, Steffen Staab, David Israel, Vinay Chaudhri, Bruce Porter, Ken Barker, and Peter Clark

Complexity Analysis II
Chair: Jerome Lang
Room: Emerald B

Improving the Forward Chaining Algorithm for Conceptual Graphs Rules
Jean-Francois Baget

Inferential Complexity Control for Model-Based Abduction
Gregory Provan

12:00 Lunch

13:30

Reasoning about Action
Chair: Michael Thielsher
Room: Emerald C

Situations, si! Situation terms, no!
Gerhard Lakemeyer, Hector Levesque

C&L Intention Revisited
Andreas Herzig, Dominique Longin

Discovering State Invariants
Fangzhen Lin

Inductive Situation Calculus
Marc Denecker, Eugenia Ternovska

Reasoning about Triggered Actions in AnsProlog and its Application to Molecular interactions in cells
Chitta Baral, Nam Tran

Knowledge Representation Logics
Chair: Gerhard Brewka
Room: Emerald B

A Logic of Arbitrary and Indefinite Objects
Stuart Shapiro

Reasoning about Knowledge by Variable Forgetting
Guanfeng Lv, Kaile Su, Yan Zhang

Majority Logic
Eric Pacuit, Samer Salame

Partial Implication Semantics for Desirable Propositions
XiaoPing Chen, Yi Zhou

A Logic of Limited Belief for Reasoning with Disjunctive Informatiion
Gerhard Lakemeyer, Hector Levesque, Yongmei Liu

16:00 **Sessions Close**

Saturday June 5, 2004 - Whistler Conference Center	
8:50	**Opening**
9:00	**Invited Talk: Patrick Doherty - Advanced Research with Autonomous Unmanned Aerial Vehicles** **Chair: Mary-Anne Williams** **Room: Rainbow Theatre**
10:00	Break - Valley Foyer
10:25	**Cognitive Robotics** **Chair: Thomas Lukasiewicz** **Room: Rainbow Theatre** Extending the Knowledge-Based Approach to Planning with Incomplete Information and Sensing *Ronald P. Petrick, Fahiem Bacchus* Knowledge of Other Agents and Communicative Actions in the Fluent Calculus *Yves Martin, Iman Narasamdya, Michael Thielscher* Precondition Control and the Progression Algorithm: A Situation Calculus Approach *Alfredo Gabaldon* A Preference-Based Interpretation of Other Agents' Actions *Jerome Lang*
12:05	Lunch
13:30	**Knowledge in Planning** **Chair: Adele Howe** **Room: Rainbow Theatre** From Hybrid Systems to Universal Plans via Domain Compilation *Anthony Barrett* Planning Graphs and Knowledge Compilation *Hector Geffner* Domain-Specific Preferences for Causal Reasoning and Planning *James Delgrande, Torsten Schaub, Hans Tompits* Learning Probabilistic Relational Planning Rules *Hanna M. Pasula, Luke S. Zettlemoyer, Leslie Pack Kaelbling*
15:10	Break - Valley Foyer
15:35	**Search in Planning and Scheduling** **Chair: Robert Holte** **Room: Rainbow Theatre** An Improved Integer Local Search for Complex Scheduling Problems *Weixiong Zhang, Xiaotao Zhang* Breadth-First Heuristic Search *Rong Zhou, Eric A. Hansen* Phase Transitions in Classical Planning: An Experimental Study *Jussi Rintanen* A Polynomial Time Algorithm for Constructing k-Maintainable Policies *Chitta Baral, Thomas Eiter*
17:15	**Closing Remarks**
18:00	***Joint ICAPS/KR FESTIVAL and DOCTORIAL CONSORTIA* – Westin Spa and Resort**
20:00	**KR2004 Closes**

KR2004 Program Outline

WEDNESDAY June 2, 2004 – Emerald Rooms, Westin Spa & Resort		
8:45	Opening Ceremonies	
9:00	**Invited Speaker: Peter Patel-Schneider**	
10:00	Break	
10:30	**Conditioning & Conditional Logics**	**Spatial Reasoning**
12:30	Lunch	
14:00	**Great Moments in KR: John McCarthy**	**Philosophical & Psychological Issues**
	Space and Time	
16:00	Break	
16:30	**Description Logics**	**Argumentation**
18:00	Sessions End	
19:00	**KR Reception** in Emerald A Ballroom	
THURSDAY June 3, 2004 – Alpine Rooms, Westin Spa & Resort		
8:30	**Compact Representations of Preference**	**Agents**
10:00	Break	
10:30	**Ontology**	**Belief Revision and Update**
12:30	Lunch	
14:00	**Great Moments in KR: William Woods**	**Complexity Analysis I**
	Merging Belief Bases	
16:00	Break	
16:30	**Logic Programming**	**Query Processing for Ontologies**
18:00	Sessions End	
19:00	**Conference Banquet at Araxi**	
FRIDAY June 4, 2004 – Emerald Rooms, Westin Spa & Resort		
9:00	**Invited Speaker: Itzhak Gilboa**	
10:00	Break	
10:30	**Real KR&R Systems**	**Complexity Analysis II**
12:00	Lunch	
13:30	**Reasoning about Action**	**Knowledge Representation Logics**
16:00	Sessions End	
SATURDAY June 5, 2004 – Whistler Conference Center		
8:50	Welcome to Joint ICAPS/KR Sessions	
9:00	**Invited Speaker: Patrick Doherty**	
10:00	Break	
10:25	**Cognitive Robotics**	
12:05	Lunch	
13:30	**Knowledge in Planning**	
15:10	Break	
15:35	**Search in Planning and Scheduling**	
17:15	Closing Remarks	
18:00	**ICAPS/KR FESTIVAL & DOCTORIAL CONSORTIA @ Westin Spa & Resort** *Free with ICAPS or KR registration!*	
20:00	**KR2004 Concludes**	