Sixth International Conference on Principles of Knowledge Representation and Reasoning (KR'98)

Registration Brochure

Centro Servizi Culturali S. Chiara
Trento, Italy
June 2-5, 1998

Sponsored by KR, Inc.
With support from ITC-IRST,
*Fondazione CARITRO, COMPULOG Net, AI*IA.*
In cooperation with AAAI.

For information, see
`http://www.kr.org/kr/kr98/`

Preface

Explicit representations of knowledge manipulated by inference algorithms provide an important foundation for much work in Artificial Intelligence, including natural language dialogue systems, high level vision, robotics and other knowledge based systems.
The KR conferences have established themselves as the leading forum for timely, in-depth presentation of progress in the theory and principles underlying the representation and computational manipulation of knowledge. The traditional very high standard of papers has been maintained at KR98; to acknowledge this, a best paper award will be made, based primarily on paper content but also on the presentation of the paper at the conference.
Expanding on that role, KR'98 will be a place for the exchange of news, issues, and results among the entire community of researchers in the principles and practices of knowledge representation and reasoning systems.

We look forward to meeting you in Trento.

Tony Cohn, Len Schubert, and Stuart Shapiro

Conference at a Glance

Workshops	**Saturday, May 30**		NM'98		
	Sunday, May 31		NM'98		
	Monday, June 1		NM'98	KBS V&V'98	KRIMS II
KR'98 Conference		*evening*	Opening Reception		
	Tuesday, June 2	*morning*	Technical Program		
		afternoon	Technical Program		
	Wednesday, June 3	*morning*	Technical Program		
		afternoon	Technical Program		
	Thursday, June 4	*morning*	Technical Program		
		afternoon	*free time*		
		evening	Banquet		
	Friday, June 5	*morning*	Technical Program		
		afternoon	Technical Program		
Workshops	**Saturday, June 6**		KRNL'98	DL'98	FOIS'98
	Sunday, June 7		KRNL'98	DL'98	FOIS'98
	Monday, June 8			DL'98	FOIS'98

KR'98 Conference Organizers

Conference Chair

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M-A. Williams (U. of Newcastle, AU)

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Conference Secretariat and Registration Information

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Information Autoresponder: `kr98-info@kr.org`

Opening Reception

The KR'98 Opening Reception will be held on Monday evening, June 1, in *Palazzo Geremia*, via Bellenzani 22, from 6:30-8:00 PM. *Palazzo Geremia* is located in the city center in the heart of the medieval area at a short walking distance from the Railway Station. A conference reception desk will be available for on-site registrations.

Conference Location

The KR'98 conference will be held at the *Centro Servizi Culturali S. Chiara*, Via S. Croce 67, 38100 Trento, rooms *Teatro Sperimentale* (3rd floor left, for plenary sessions), *Sala 2* (1st floor right), and *Sala 3* (1st floor right). The KR'98 conference reception desk will be located in front of the *Sala 2* and *Sala 3*, from 8:00 AM-6:30 PM. It is possible to have lunches at the canteen (*Mensa*) of the *Centro Servizi Culturali S. Chiara*; lunch tickets are not included in the conference fee.

The *Centro Servizi Culturali S. Chiara* is located in the city center at walking distance from the Railway Station and the medieval area, where churches and other historical monuments are to be found together with elegant shops and traditional restaurants. Thus, participants will have opportunities to get out and about on relaxing walks through winding streets and beautiful piazzas. Bus transportation from the conference hotels located outside the city center to the *Centro Servizi Culturali S. Chiara* is included in the conference fee; check the bus schedule at the conference hotels.

Banquet

The KR'98 Conference Banquet will be held from 8:00-11:00 PM on Thursday evening, June 4 at the *Grand Hotel Trento*, via Alfieri 1, phone +39 (461) 271-000. This event is optional and reservations should be made at the time of registration, accompanied by the additional fee. The *Grand Hotel Trento* is located in the city center in front of the Railway station. Bus transportation from the conference hotels located outside the city center to the *Grand Hotel Trento* is included in the banquet fee; check the bus schedule at the conference hotels.

Messages

If you need to be contacted during the conference, please refer to the conference secretariat. Messages to the KR'98 attendees will be displayed on the KR'98 Message Board at the conference reception desk. A computer room with *internet* connectivity will be available for the registered participants.

Bus Transfer

Bus transportation from the conference hotels located outside the city center to the conference and banquet locations is included in the fees; check the bus schedule at the conference hotels. A night bus from the city center to the conference hotels located outside the city center will also be provided.

Colocated Workshops

Workshops registration and participation is limited to those active participants determined by each workshop organizing committee prior the conference. Please, contact the workshops organizers in order to check participation conditions.
Workshop participants should use the common *Registration* and *Hotel-Banquet-Excursion* forms included in this brochure. KR'98 conference registration for workshops participants is welcome but it is not mandatory. Workshops on-site registration is organized by the individual workshops.
Bus transportation from the conference hotels located outside the city center to the workshops locations is included in the each workshop registration fee; check the bus schedule at the conference hotels.

Sponsors

Sponsored by **KR, Inc.** - Principles of Knowledge Representation and Reasoning, Incorporated.
Organization supported by **ITC-IRST** - Istituto Trentino di Cultura, Istituto per la Ricerca Scientifica e Tecnologica. With support from **Fondazione CARITRO** - Cassa di Risparmio di Trento e Rovereto; **COMPULOG Net** - the ESPRIT network of excellence in Computational Logic; **AI*IA** - Associazione Italiana per l'Intelligenza Artificiale.
In cooperation with **AAAI** - American Association for Artificial Intelligence.

Workshops

Seventh International Workshop on Nonmonotonic Reasoning (NM'98)

May 30 - June 1, 1998
http://saturn.hut.fi/~ini/nmrw98.html
Location: Facoltà di Lettere

The aim of the workshop is to bring together active researchers interested in nonmonotonic reasoning to discuss current research, results, and problems of both theoretical and practical nature. The format of this workshop is different from earlier nonmonotonic reasoning workshops. NM'98 will consist of five specialized one day workshops to be held at least partly in parallel. The specialized workshops will be surrounded by a plenary program consisting of invited talks and panels. The following specialized workshops are part of NM'98:

- Formal Aspects and Applications of Nonmonotonic Reasoning; *Chairs*: J. Delgrande, M. Truszczynski.
- Computational Aspects of Nonmonotonic Reasoning; *Chairs*: I. Niemelä. T. Schaub.
- Logic Programming; *Chairs*: J. Dix, J. Lobo.
- Action and Causality; *Chairs*: V. Lifschitz, H. Geffner.
- Belief Revision; *Chairs*: H. Rott, M-A. Williams.

Invited speakers are B. Kowalski, I. Levi, J. McCarthy, D. Roth, and E. Sandewall.
Participation is by invitation. Those wishing to attend without submitting a paper should send a statement of interest with a short description of research interests and recent work to one of the NM'98 Co-Chairs.
Organizers: R. Reiter (Honorary Chair), G. Brewka, I. Niemelä (Co-Chairs), E. Giunchiglia (Local Chair).
Contact persons: G. Brewka (**brewka@informatik.uni-leipzig.de**).

Second International Workshop on Knowledge Representation for Interactive Multimedia Systems: Research and Experience (KRIMS II)

June 1, 1998
http://www.math.aegean.gr/KRIMSII/KRIMSII.html
Location: ITC-IRST, Povo - Sala Conferenze

Knowledge-based Interactive Multimedia Systems (IMS) possess and utilize knowledge about their own Means and about the Function of user sessions. IMS must support users in achieving their goals and performing their tasks. They must be able to reason about users in order to collaborate effectively during determination of content and communication of information:

- Concerning determination of content, IMS must assist users in navigating possibly open and heterogeneous information worlds, locating information sources, and retrieving, integrating and organizing information efficiently and effectively.
- To design and materialize a presentation, IMSs must reason about different communication means, the function of presentations, and the context of interactions with users.

Major topics to be addressed by KRIMS-II include:

- knowledge representation schemes for multimedia information repositories supporting interactivity in content determination and communication of information.
- knowledge representation for interactive multimedia information content determination, integration, co-ordination and presentation.
- methodologies and systems for construction and maintenance of KBs for IMS.
- methodologies and systems for construction and maintenance of interactive multimedia DBMS.

The target audience includes researchers in collaborative systems, personal assistants, intelligent multimedia presentation systems, adaptive interfaces, multimedia information retrieval, and intelligent integration of information.
Organizers: Marcus Herzog (TU Vienna), Paolo Petta (ÖFAI), George Vouros (Univ. of the Aegean); Supported by ÖGAI.
Contact person: Paolo Petta (**paolo@ai.univie.ac.at**).

Workshop on Validation & Verification of Knowledge-Based Systems (KBS V&V'98)

June 1, 1998

http://www.cs.vu.nl/~frankh/KR98-VV.html

Location: ITC-IRST, Povo - Sala Conferenze Edificio Est

Knowledge-Based Systems (KBS) are perhaps AI's most successful and visible application area. Ensuring reliability and enhancing quality of KBS are critical factors for their successful deployment in real-world applications. This is a broad task involving both methodological and formal aspects for designing rigorous validation methods and tools. The purpose of this workshop is to encourage exchange of ideas between researchers in the field of knowledge-representation with those concentrating on V&V of KBS specifically. There are obvious connections between the two fields, and we solicit papers on the following topics:

- Principles of V&V and their connections with Knowledge Representation Formalisms.
- New V&V techniques for more advanced knowledge representation methods (such as nonmonotonic reasoning, case-based systems, special purpose representations of time, space, actions and events)
- New V&V techniques for novel KBS architectures, such as multi-agent systems.
- New V&V techniques for novel KBS applications areas such as the Web (e.g. for navigation, searching or maintenance)
- Practical experiences with Validation and Verification in implemented systems.
- Relations between V&V of KBS and fields such as Machine Learning, Databases, Software Engineering.

Because the aim of the workshop is to stimulate discussion, some accepted papers might be preferred over others for presentation, but all papers will be included in the printed workshop proceedings. Publication of selected papers in a coherent journal format will be considered.

Program Committee: Frank van Harmelen, Vrije Univ. Amsterdam, NL; Grigoris Antoniou, Griffith University, AU; Dieter Fensel, University of Karlsruhe, DE; Alun Preece, University of Aberdeen, UK; Marie-Christine Rousset, Universite Paris Sud, FR; Jan van Thienen, Catholic University of Leuven, BE

Contact person: Frank van Harmelen (**frankh@cs.vu.nl**).

Workshop on Roles for Knowledge Representation in Natural Language

June 6 - June 7, 1998

http://www.cis.upenn.edu/~mpalmer/kr_nl.html

Location: ITC-IRST, Povo - Sala Conferenze Edificio Est

This workshop is aimed at reinvigorating the historical connection between research in Natural Language Processing and Knowledge Representation. The goal is to encourage communication between the two fields, in hopes of stimulating KR research on problems of interest to the NLP community, communication of KR discoveries from the NLP community to KR researchers, and identification of existing KR techniques that may help solve problems faced by NLP researchers. Topics will include, but not be limited to:

- Identification of linguistic knowledge representation problems for which good solutions are not known;
- Evaluation of existing knowledge representation techniques on linguistic problems, including insightful negative evaluations;
- Identification of challenge problems that would tax existing algorithms and methodologies, including scalability issues;
- Discussion of knowledge representation issues inherent in defined classes of natural language processing problems.

The workshop will also address the current state of the art in broad areas of knowledge representation technology (e.g., constraint satisfaction, uncertainty, defaults) focusing on an interdisciplinary approach.

Organizers: M. Palmer (Univ. of Pennsylvania), H. Bunt (Tilburg Univ.), D. Etherington (Univ. of Oregon), F. Pianesi (ITC-IRST).

Contact person: Martha Palmer (**mpalmer@linc.cis.upenn.edu**).

1998 International Description Logics Workshop (DL'98)

June 6 - June 8, 1998
`http://dl.kr.org/dl/dl98/`
Location: ITC-IRST, Povo - Sala Conferenze

The 1998 International Workshop on Description Logics (DL'98) continues the tradition of international workshops devoted to discussing developments and applications of knowledge representation formalisms based on Description Logics. We will discuss about the foundations of Description Logics, the extensions of Description Logics, the integration of Description Logics with other formalisms, the use of Description Logics in applications, and the building of systems based on Description Logics.
DL'98 will host a DL systems comparison session. Systems will be compared on the basis of benchmarks which will be prepared in order to emphasize the best out of each system. This first round of the comparison at DL'98 will serve mostly as an evaluation of the benchmark testing set, and it is not intended to be the last word on a possible ranking. We have four aims:

- To reach a consensus on a corpus of benchmarks for DL systems, which may become an agreed standard.
- Bringing people together with common interests in implementing various DLs.
- Giving the implementors of reasoners the opportunity to demonstrate their systems and to make them better known.
- There are many reasoning methods for DL. We propose a comparison, with no winners or prizes, of these approaches.

Organizers: E. Franconi, chair, (IRST, ITA); G. De Giacomo (Univ. Roma, ITA); R. MacGregor (USC/ISI, USA); W. Nutt (DFKI, DE); C. Welty (Vassar College, USA); F. Sebastiani (IEI-CNR, Italy).
Contact person: Enrico Franconi (**`franconi@irst.itc.it`**).

International Conference on Formal Ontology in Information Systems (FOIS'98)

June 6 - June 8, 1998
`http://krr.irst.itc.it:1024/fois98/`
Location: ITC - Sala Grande

The importance of research on ontology has been recognized in fields as diverse as qualitative modeling of physical systems, natural language processing, knowledge engineering, information integration, database design, geographic information science, and intelligent information access. Insights in this field have potential impacts on the whole area of information systems. In order to provide a solid general foundation for this work, it is important to focus on the common scientific principles and open problems arising from current tools, methodologies, and applications of ontology. The conference will have a strongly interdisciplinary character. Expected participants include computer science practitioners as well as linguists, logicians, and philosophers. Although the primary focus of the conference is on theoretical issues, methodological proposals as well as concrete applications from a well-founded theoretical perspective will be discussed:

- Foundations: parthood, constitution, identity, integrity, dependence, causality; Kinds of entity; Matter, space, time, motion, change; Natural kinds, organisms, artifacts; The ontology of social reality; The ontology of information and information processing; Top-level ontological taxonomies; Cognitive foundations of ontological distinctions; Kinds of ontology; Ontological commitment.
- Application areas: Knowledge organization, integration and standardization; Intelligent information access; Information systems design; Knowledge engineering; Conceptual modeling; Qualitative modeling; Lexical semantics; Terminology integration; Product knowledge integration; Geographic information systems; Legal information systems.
- Tools and methodologies: Ontological and linguistic instruments for conceptual analysis; Methodologies for ontology development, maintenance, and integration

Extra-copies of FOIS'98 proceedings will be available at the KR'98 conference desk, at the special price of 100,000 Italian lire and they can be ordered either by checking the appropriate box in the KR'98 registration form or by contacting the chair.
Conference Chair: Nicola Guarino, LADSEB-CNR, Italy
(**`guarino@ladseb.pd.cnr.it`**).

Tuesday, June 2

Teatro Sperimentale

8:45 - 9:00 **Plenary Session: Open Ceremony**

9:00 - 10:10 **Plenary Session: Invited Talk**
How to tailor representations to different requirements
Katharina Morik

Sala 2

10:10 - 10:40 Coffee Break

10:40 - 12:40 **Session 1: Building, Merging, Revising Theories**

Description logic framework for information integration
Calvanese, D., De Giacomo, G., Lenzerini, M., Nardi, D., Rosati, R.

A completeness result for reasoning with incomplete first-order knowledge bases
Levesque, H.L.

A strategy for revising default theory extensions
Williams, M.-A., Antoniou, G.

12:40 - 14:00 Lunch Break

14:00 - 16:00 **Session 3: Logic Programming based Representations**

A comparison of the static and the disjunctive well-founded semantics and its implementation
Brass, S., Dix, J., Niemelä, I., Przymusisnski, T.

Preferred answer sets for extended logic programs
Brewka, G., Eiter, T.

Dynamic logic programming
Alferes, J.J., Leite, J.A., Pereira, L.M., Przymusinska, H., Przymusinski, T. C.

16:00 - 16:30 Coffee Break

16:30 - 18:30 **Session 5: Building, Merging, Revising Theories**

A general approach for inconsistency handling and merging information in prioritized knowledge bases
Benferhat, S., Dubois, D., Lang, J., Prade, H., Saffiotti, A., Smets. P.

Formal theory building using automated reasoning tools
Kamps, J.

On the logic of merging
Konieczny, S., Pino Pérez R.

Tuesday, June 2

Teatro Sperimentale

8:45 - 9:00 **Plenary Session: Open Ceremony**

9:00 - 10:10 **Plenary Session: Invited Talk**
How to tailor representations to different requirements
Katharina Morik

Sala 3

10:10 - 10:40 Coffee Break

10:40 - 12:40 **Session 2: Reasoning about Actions**

Anything can happen: on narratives and hypothetical reasoning
Karlsson, L.

Combining narratives
McCarthy, J., Costello, T.

How (not) to minimize events
Thielscher, M.

12:40 - 14:00 Lunch Break

14:00 - 16:00 **Session 4: Qualitative Spatio/temporal Reasoning**

Foundations of spatioterminological reasoning with description logics
Haarslev, V., Lutz, C., Möller, R.

A model for reasoning about bidemsional temporal relations
Balbiani, P., Condotta, J.-F., Fariñas Del Cerro, L.

A qualitative theory of motion based on spatio-temporal primitives
Muller, P.

16:00 - 16:30 Coffee Break

16:30 - 18:30 **Session 6: Non Monotonic Reasoning**

Comparing consequence relations
Flach, P.A.

SYSTEM JZ - How to build a canonical ranking model of a default knowledge base
Weydert, E.

Pointwise circumscription revisited
Amir, E.

Wednesday, June 3

Sala 2

9:00 - 10:20 **Session 7: Planning**

Satisfiability planning with causal theories
McCain, N., Turner, H.

On measuring plan quality
Lin, F.

10:20 - 10:40 Coffee Break

10:40 - 12:40 **Session 9: Belief Revision and Contextual Reasoning**

The PMA and relativizing minimal change for action update
Doherty, P., Lukaszewicz, W., Madalinska-Bugaj, Ewa

Quantifiers and operations on modalities and contexts
Costello, T., Patterson, A.

Local Models Semantics, or Contextual Reasoning = Locality + Compatibility
Giunchiglia, F., Chidini, C.

12:40 - 14:00 Lunch Break

14:00 - 15:20 **Session 11: Formal Results in Spatial Reasoning**

A canonical model of the region connection calculus
Renz, J.

Undecidability of plane polygonal mereotopology
Dornheim, C.

16:00 - 16:30 Coffee Break

Teatro Sperimentale

16:30 - 18:30 **Plenary Session: Panel**
Themes at the colocated workshops
Chair: Lin Padgham

Wednesday, June 3

Sala 3

9:00 - 10:20	**Session 8: Efficient Modal Reasoning**
	More evaluation of decision procedures for modal logics *Giunchiglia, E., Giunchiglia, F., Sebastiani, R., Tacchella, A.*
	Using an expressive description logic: FaCT or fiction? *Horrocks, I.R.*
10:20 - 10:40	Coffee Break
10:40 - 12:40	**Session 10: Reasoning about Actions**
	Concurrent actions and interacting effects *Pinto, J.*
	Logic based modelling of goal-directed behavior *Sandewall, E.J.*
	AOL: a logic of acting, sensing, knowing, and only knowing *Lakemeyer, G., Levesque, h.J.*
12:40 - 14:00	Lunch Break
14:00 - 16:00	**Session 12: Complexity of Reasoning**
	Complexity results for independence and definability in propositional logic *Lang, J., Marquis, P.*
	The complexity of model checking in modal event calculi with quantifiers *Cervesato, I., Franceschet, M., Montanari, A.*
	Probabilistic deduction with conditional constraints over basic events *Lukasiewicz, T.L.*
16:00 - 16:30	Coffee Break

Teatro Sperimentale

16:30 - 18:30	**Plenary Session: Panel** Themes at the colocated workshops *Chair: Lin Padgham*

Thursday, June 4

Teatro Sperimentale

9:00 - 10:10 **Plenary Session: Invited Talk**
What robots can do
Hector Levesque

Sala 2

10:10 - 10:40 Coffee Break

10:40 - 12:40 **Session 13: Logic Programming based Representations**

Specifying transactions for extended abduction
Inoue, K., Sakama, C.

The knowledge representation system dlv: Progress report, comparisons and benchmarks
Eiter, T., Leone, N., Mateis, C., Pfeifer, G., Scarcello, F.

Disjunctive ordered logic: Semantics and expressiveness
Buccafurri, F., Leone, N., Rullo, P.

12:40 Lunch

Thursday, June 4

Teatro Sperimentale

9:00 - 10:10 **Plenary Session: Invited Talk**
What robots can do
Hector Levesque

Sala 3

10:10 - 10:40 Coffee Break

10:40 - 12:40 **Session 14: Planning and Execution**

Modeling an agent's incomplete knowledge during planning and during execution
Bacchus, F., Petrick, R.

Reformulating temporal plans for efficient execution
Muscettola, N., Morris, P., Tsamardinos, I.

Execution monitoring of high-level robot programs
De Giacomo, G., Reiter, R., Soutchanski, M.

12:40 Lunch

Friday, June 5

Teatro Sperimentale

9:00 - 10:10 **Plenary Session: Invited Talk**

Description Logics and their applications
Maurizio Lenzerini

Sala 2

10:10 - 10:40 Coffee Break

10:40 - 12:40 **Session 15: Diagnosis**

On the compilability of diagnosis, planning, reasoning about actions, belief revision, etc.
Liberatore, P.

Compiling devices: A structure-based approach
Darwiche, A.

Explanatory diagnosis: Conjecturing actions to explain observations
McIlraith, S.

12:40 - 14:00 Lunch Break

14:00 - 16:00 **Session 17: Reasoning about Actions**

Situation calculus and causal logic
Lifschitz, V.

Sequential, temporal GOLOG
Reiter, R.

Building models of prediction theories
White, G., Bell, J., Hodges, W.

16:00 - 16:30 Coffee Break

16:30 - 17:50 **Session 19: Planning**

Encoding planning constraints into partial order planners
Baioletti, M., Marcugini, S., Milani, A.

A planning algorithm not based on directional search
Rintanen, J.T.

Friday, June 5

Teatro Sperimentale

9:00 - 10:10 **Plenary Session: Invited Talk**

Description Logics and their applications
Maurizio Lenzerini

Sala 3

10:10 - 10:40 Coffee Break

10:40 - 12:40 **Session 16: Description Logics and Graph Based Languages**

Characterizing the semantics of terminological cycles in ALN using finite automata
Küsters, R.

On the decidability of description logics with modal operators
Wolter, F., Zakharyaschev, M.

Nested graphs: A graph-based knowledge representation model with FOL semantics
Chein, M., Mugnier, M.-L., Simonet, G.

12:40 - 14:00 Lunch Break

14:00 - 16:00 **Session 18: Probabilistic Reasoning**

Reasoning about infinite random structures with relational Bayesian networks
Jaeger, M.

Geometric foundations for interval-based probabilities
Ha, V., Haddawy, P.

Making decision in a qualitative setting: from decision under uncertainty to case-based decision
Dubois, D., Godo, L., Prade, H., Zapico, A.

16:00 - 16:30 Coffee Break

16:30 - 17:50 **Session 20: Representing Granularity and Vagueness**

Modal semantics for knowledge bases dealing with vague concepts
Bennett, B.

A theory of granularity and its application to problems of polysemy and underspecification of meaning
Mani, I.

Invited Talks

How to tailor representations to different requirements

Katharina Morik (University of Dortmund)

The dream of a general purpose knowledge representation language has long been abandoned. However, most work on tailoring representation formalisms to particular needs has investigated *deductive* inference. The focus has been on inferential services for problem solving, e.g. classification or planning. The needs of the end user, be it a system (e.g., a natural language system or a robot) or a human user, determine the requirements for efficiency and expressiveness. If we focus on the knowledge engineer, additional requirements come into play: inspectability and revisability are major concerns in the process of knowledge acquisition. However, the underlying inference is still deductive. But the requirements on a knowledge representation formalism change when inductive inference is considered. A representation formalism with less expressive power may be harder to learn than a one with a higher expressive power. This means that complexity results for deductive reasoning cannot easily be transferred to inductive reasoning. Moreover, we frequently we encounter conflicting requirements for learning and problem solving. In this situation, asking for a representation that fulfills the requirements for both deductive and inductive inference, is akin to asking for a general purpose language. Instead, we design families of representations, where each family member is well suited for a particular set of requirements, and implement transformations between the representations.

In this talk, I discuss the representation family of Horn logic. Several restrictions of Horn logic have been investigated that ease learning. Three case studies illustrate how to tailor admissible languages. The first case study from a robotics application shows how a representation that is well suited for learning is transformed into an efficient deductive reasoner. The second case study exploits learning in order to enhance the understandibility and inspectability of a knowledge base under construction by a knowledge engineer. The third case study presents a tool that generates mappings from a relational database scheme to a Horn logic signature. Such mappings allow learning to take place directly from a relational database.

What robots can do.

Hector Levesque (University of Toronto)

We propose a definition of goal achievability: given a basic action theory describing an initial state of the world and some primitive actions available to a robot, including some actions which return sensing information, what goals can be achieved by the robot? The main technical result is a proof that a simple robot programming language is universal, in that any effectively achievable goal can be achieved by getting the robot to execute one of these robot programs. Among other things, this justifies a previous specification of the planning problem in the presence of sensing. This is joint work with Fangzhen Lin.

Description Logics and their applications.

Maurizio Lenzerini (Univ. degli Studi di Roma *La Sapienza*)

Description Logics are logics for representing and reasoning about classes of objects and their relationships. They can be seen as successors of frame systems and semantic networks, and have been investigated for more than a decade under different points of view, in particular, expressive power and computational complexity of reasoning. In the talk, I first review the research done in the past years in Description Logics. Then I discuss the relationships with other formalisms, such as modal logics, database models, and object-oriented languages. Finally, I describe how Description Logics have been applied in several fields, including software engineering, configuration management, databases, and information systems.

Registration

Preregistration is recommended. The registration fee includes admittance to technical sessions, morning and afternoon coffee breaks, the opening reception on Monday evening, June 1, and a copy of the conference proceedings. Additional copies of the conference proceedings will be available at the conference reception desk, or from Morgan Kaufmann after the conference.

Please pick up your complete registration packet at the conference reception desk for admittance to programs.

On-site Conference Secretariat Schedule

On-site conference secretariat will be located at the *Centro Servizi Culturali S. Chiara* in front of the *Sala 2* and *Sala 3* (1st floor right) as follows:

Tuesday, June 2	8:00 AM-6:30 PM
Wednesday, June 3	8:00 AM-6:30 PM
Thursday, June 4	8:00 AM-3:00 PM
Friday, June 5	8:00 AM-6:00 PM

A conference reception desk will be available for on-site registrations at the opening reception on Monday evening, June 1, in *Palazzo Geremia*, from 6:30-8:00 PM.

Conference Registration Fees

A *Registration* Form is included in the center of this booklet.

Below are the conference fees for early, late, and on-site Registrants:

- Early (Postmarked or faxed by April 30, 1998)
  Regular: 550,000 Italian lire *Student*: 300,000 Italian lire.
- Late and on-site (Postmarked or faxed after April 30, 1998)
  Regular: 800,000 Italian lire *Student*: 400,000 Italian lire.

Students must send legible proof of full-time student status.

Payment of the Registration Fees

Registration Fees should be made payable to the ITC - KR'98 and must be in Italian lire only. Each registrant is responsible for the cost of remittance. Payments are to be made as follows:

- Bank transfer without charges for the beneficiary to: CARITRO, Cassa di Risparmio di Trento e Rovereto, Sede di Trento, Via Galilei no. 1, 38100 Trento.
  Account No. 6190/TES (ITC) - ABI 6330 - CAB 1800
  Caritro Bank swift code CRTNIT2T
- International Check payable to the order of *ITC - Istituto Trentino di Cultura*. Personal Checks are not acceptable.
- Credit Card: VISA, MasterCard, and American Express are accepted. For Credit Card payments, don't forget to add 6% to the grand total for handling charges. The total amount to be paid refers to the fees applicable when the *Registration* Form, signed and filled with the credit card data, is received by the KR'98 Secretariat.
- Besides the abovementioned methods of payments, cash payments are allowed for on-site registrations.

Please send or fax the *Registration* form to KR'98 conference secretariat:

KR'98 Secretariat, c/o ITC-IRST
Via S. Croce 77
38100 Trento, Italy
Fax: +39 (461) 980-436
Telephone: +39 (461) 210-216

Cancellation and Refunds

Due to advanced financial commitments, refunds of registration fees requested after May 15, 1998 can not be guaranteed. A 60,000 Italian lire processing fee will be withheld from all refunds. Request for refunds of registrations canceled after May 15, 1998 will be considered after the conference.

Accommodation and Social Programs

Hotel Accommodation

KR'98 has reserved a block of rooms in Trento and surroundings at reduced conference rates. To qualify for these rates, reservations must be made by *Trentino holidays*, Via Solteri 78, 38100 Trento Italy, phone +39 (461) 822-000, using the *Hotel-Banquet-Excursion* form included as a removable center-fold in the middle of this booklet.

A deposit of 100,000 Italian lire for each person is due to confirm the reservation request; only written and signed requests, via fax or mail, will be considered. Requests will be processed with a first-in/first-out time approach depending on availability. A confirmation will be communicated to your address in a few weeks. Full settlement will be due while checking in your hotel. Hotel cut-off date for reservations is April 30th, 1998. After cut-off, accommodations will be available on a "space available" basis only.

		town/surr.	A/C	single	double/twin	double w. single occ.
*****	Grand Hotel	T	Y	175,000	120,000	185,000
*****	Buonconsiglio	T	Y	150,000	105,000	170,000
****	Accademia	T	Y	120,000	100,000	140,000
****	Adige	S	Y	120,000	90,000	140,000
***	America	T	Y	110,000	80,000	120,000
***	Everest	T	Y	100,000	80,000	110,000
***	Monaco	T	Y	105,000	80,000	125,000
***	Villa Fontana	T	Y	105,000	80,000	125,000
***	Aerhotel	S	Y	100,000	75,000	
***	Capitol	S	Y	100,000	70,000	105,000
***	Villa Madruzzo	S	Y	105,000	85,000	135,000
**	Venezia (room only)	T	N	70,000	55,000	
	Y. Hostel (room only, enrollment document mandatory)	T	N	40,000	(*) 35,000	

(*) Multi-bedroom with bathroom in common.

All quotations are in Italian lire per person per night with bed and breakfast accommodation, unless otherwise specified, and include bus transportation from hotels to conferences sites and vice-versa. Above listed special rates will be assumed only for requests received by April 30, 1998. At the KR'98 web site `http://www.kr.org/kr/kr98/` you will find a map of the city with the locations of hotels.

Banquets

- **KR'98** special dinner on June 4 at Italian Lit. 80,000 per person: dinner in the de-luxe restaurant located in Trento Grand Hotel.
- **NM'98** special dinner on May 31 at Italian Lit. 65,000 per person: dinner in a fashionable villa in the Trento surroundings, including drinks.
- **KBS V&V'98** special dinner on June 1, to be paid on-site; ask details to the organizers.
- **DL'98** special dinner on June 7 at Italian Lit. 65,000 per person: dinner in a fashionable villa in the Trento surroundings, including drinks.
- **FOIS'98** special dinner on June 7 at Italian Lit. 70,000 per person: dinner in a fashionable villa in the Trento surroundings, including drinks.

Pre-booking and pre-payment are requested using the *Hotel-Banquet-Excursion* form.

Excursions and Sightseeing

- *Half day guided tour of Trento and city Castle* on June 1 afternoon from 2:30-6:00 PM at Italian lire 25,000 per person: half day city of Trento tour including visit of Buonconsiglio Castle and to a local canteen with wine tasting. Required a minimum of 12 persons.
- *Half day guided tour by bike* on June 4 afternoon from 2:00-6:00 PM at Italian lire 50,000 per person: bike trip along Adige river to Mezzocorona for a visit to a local sparkling wine factory, where a light snack will be served together with Italian sparkling wine tasting. Required a minimum of 12 persons.

- *Half day guided tour of Brenta dolomites and Nardis falls* on June 4 afternoon from 2:00-7:30 PM at Italian lire 50,000 per person: bus trip to visit Brenta Dolomites area and Nardis falls in Val Genova, a dramatic short view of one of the most beautiful mountain place within Trentino's territory. Required a minimum of 12 persons.
- *Full day guided trips to Venice* on June 6 or June 9 at Italian lire 160,000 per person: return bus + boat trip to Venice, 6 hours comprehensive tour of the town, lunch at restaurant including drinks. Required a minimum of 30 persons for each date.

Pre-booking and pre-payment are requested using the *Hotel-Banquet-Excursion* form; correspondent amount to be added based on how many places required. Money is fully returned in case service will be canceled because minimum quantities are not reached.

Airport Transfer

A mini-bus transfer service from main airports to Trento will be arranged for groups of at least 12 people:

- From *Verona* airport at Italian lire 30,000 per person one way.
- From *Venice* airport at Italian lire 50,000 per person one way.
- From *Milano Linate* airport at Italian lire 65,000 per person one way.

Payment of the Fees

Fees should be made payable to *Trentino holidays* and must be in Italian lire only. Each registrant is responsible for the cost of remittance. Payments are to be made as follows:

- Bank transfer without charges for the beneficiary to:
  Trentino holidays - Via Solteri 78 - 38100 Trento- Italy, on bank account no. 10/20883 c/o Banca Popolare del Trentino - sede di Trento (please refer to bank identification code: ABI 05290/2 - CAB 01800/2). A copy of the money order should be postmarked or faxed together with the reservation form.
- International Check payable to the order of *Trentino holidays* - Via Solteri 78 - 38100 Trento- Italy. Personal Checks are not acceptable.
- Credit Card: VISA and MasterCard are accepted.
  For Credit Card payments, don't forget to add 6% to the grand total for handling charges.

Please send or fax the *Hotel-Banquet-Excursion* form to:

Trentino holidays
Via Solteri 78
38100 Trento, Italy
Fax: +39 (461) 825-657
Telephone: +39 (461) 822-000 or 829-200

Cancellation and Refunds

Due to advanced financial commitments, refunds of registration fees requested after April 30, 1998 can not be guaranteed. A 50,000 Italian lire processing fee will be withheld from all refunds.

Disclaimer

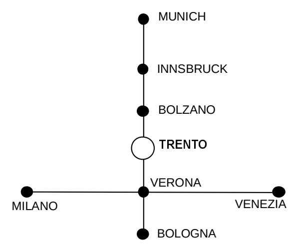
In offering the *Trentino holidays* and all other service providers (hereinafter referred to as "Suppliers") for the KR'98 Conference, KR'98 acts only in the capacity of agent for the Supplier which is the provider of hotel rooms, transportation, excursions, and banquets. Because KR'98 has no control over the personnel, equipment or operations of providers of accommodations or other services included as part of the conference program, KR'98 assumes no responsibility for and will not be liable for any personal delay, inconveniences or other damage suffered by conference participants which may arise by reason of (1) any wrongful or negligent acts or omissions on the part of any Supplier or its employees, (2) any defect in or failure of any vehicle, equipment or instrumentality owned, operated or otherwise used by any Supplier, or (3) any wrongful or negligent acts or omissions on the part of any other party not under the control, direct or otherwise, of KR'98.

Information about Trento and Travel

Trento (100.000 inhabitants) is situated 190 m. above the sea level on the flat ground of the Adige river Valley on the Verona-Brennero-Münich motorway and railway. It is dominated by the nearby Mounts Bondone (2.170 m.) and Paganella (2.125 m.). It was a roman town of some importance (Tridentum) and after Goth, Lombard and Carolingian rule it passed in year 1027 from Emperor Conrad the Salic to the Bishop Princes. Though established as a satellite state of the Germanic Empire, it always had a certain independence. the "Council of Trento" was held here from the year 1545 to year 1563 by the Catholic Church in an attempt to curb the rapid progress of Martin Luther's Reformation. The Bishop Princes rule lasted until year 1801. Monuments include the Duomo, built in 12th-13th Century and seat of the "Council of Trento", and the Castello del Buon Consiglio, an imposing building dating to various periods (original nucleus 9th Century) seat of the Bishop Princes.

Traveling

Trento is located in the North Italian Alpine Region, on the freeway/railway that connects Verona to Innsbrück and Munich.



There is no airport in Trento, so if you are planning to travel by plane, you should try to arrive either in Verona (90 km), Venice (153 km), or Milan (213 km); in order of importance, Milan, Venice, Verona. Verona is sensibly closer to Trento than Milan but there are many more flights into Milan. Overseas travelers should consider the opportunity of flying to Verona via London.

- **Milan.** Two international airports: "*Linate*" (LIN) mainly for European flights, "*La Malpensa*" (MPX) overseas. Bus service to *Milano Centrale* railway station takes about 25 minutes from *Linate* and 1 hour 15 minutes from *La Malpensa*. From *Milano Centrale* railway station trains to Trento via Verona take 2 hours and a half. Some trains are direct; if not, change in Verona. We strongly recommend that, in order to avoid lines at the railway station, visitors continuing to Trento by rail purchase their tickets at the railway ticket offices in the airport upon arrival.
- **Venice.** Has international flights. Bus service to railway station in *Venezia-Mestre* leaves every 20/60 minutes, and it takes 20 minutes. Trains from *Venezia-Mestre* railway station to Trento via Verona take 2 hours.
- **Verona.** There are daily flights to and from Paris, London, and Frankfurt, as well as Rome and other major Italian cities. The airbus service to *Verona Porta Nuova* railway station leaves every 20 minutes, and it takes 20 minutes; a taxi costs about 25,000 Italian lire. From there direct trains to Trento take 50 minutes. There is also a direct airbus service Verona airport / Trento: the return ticket costs Lit. 30,000.

Please note that train tickets must be stamped with the yellow machines available at the platform (*binario*) entrance before getting on the train. In buying your ticket you should specify the arrival station (Trento), the train you are planning to take (some *InterCity* trains require a supplement that is more expensive if purchased on the train) and the class: 1st (*prima*) or 2nd (*seconda*). First class is more comfortable and about 60% more expensive. An alternative possibility is to fly to Munich International Airport and to proceed to Trento by train.

Detailed information for traveling to Trento will be published at the KR'98 web site `http://www.kr.org/kr/kr98/`. For any further information please refer to your Travel Agent or to KR'98 Secretariat.