KR 2010

Principles of Knowledge Representation and Reasoning
the Twelfth International Conference

The Sutton Place Hotel Toronto
Toronto, Ontario, Canada
May 9-13, 2010

Invited Talks

Ian Horrocks: *Scalable Ontology Systems*

Talk sponsored by European Coordinating Committee for Artificial Intelligence (ECCAI)
Monday, May 10, 08:30, Stop 33

Abstract: *Ontologies and ontology based systems are rapidly becoming mainstream technologies, with RDF and OWL now being deployed in diverse application domains, and with major technology vendors starting to augment their existing systems with ontological reasoning. For example, Oracle Inc. recently enhanced its well-known database management system with modules that use RDF/OWL ontologies to support "semantic data management," and their product brochure lists numerous application areas that can benefit from this technology, including Enterprise Information Integration, Knowledge Mining, Finance, Compliance Management and Life Science Research. While gratifying to the KR research community, this success also brings with it many challenges. In particular, ontology reasoning systems will need to exhibit robust scalability if deployments in large scale applications are to be successful. In this talk I will review the evolution of ontology systems to date, and show how KR theory developed into a mainstream technology. I will then go on to examine the challenges arising from deployment in large scale applications, and discuss recent research aimed at addressing them.*

Ian Horrocks is a Professor in the Oxford University Computing Laboratory where he jointly (with Georg Gottlob) leads the Information Systems Group. His research interests include knowledge representation, ontologies and ontology languages, modal and description logics, automated reasoning, implementation and optimisation of reasoning systems, and applications in areas such as e-Science and the Semantic Web. He was centrally involved in the development of the OIL, DAML+OIL and OWL ontology languages, and was co-chair of the W3C Working Group that recently developed OWL 2. He also developed algorithms and implementation techniques that are employed in many reasoning systems, and implemented the well known FaCT system in which many of these algorithms and implementations techniques were first deployed. He has published more than 150 articles in conferences, journals and books. He is a BCS Fellow, an ECCAI Fellow, an EPSRC Senior Research Fellow and a past winner of the BCS Roger Needham award.

Chitta Baral: *Reasoning about Actions and Change: From Single Agent Actions to Multi-agent Actions*

Tuesday, May 11, 08:30, Stop 33

Abstract: *We often deal with dynamic worlds where actions are executed by agents and events may happen. Examples of such worlds range from virtual worlds such as the world of a database to robots and humans in physical worlds. To understand the dynamics of such worlds as well as to be able to assert some control over such worlds one needs to reason about the actions and events and how they may change the world. In this invited talk we will present some of the important results in this field and present some future directions. In particular, we will discuss how theories and results from reasoning about actions and change can be combined with theories and results in dynamic epistemic logics to obtain a unified theory of multi-agent actions.*

Chitta Baral is a professor at the Arizona State University. He obtained his B.Tech (Hons) degree from the Indian Institute of Technology, Kharagpur in 1987 and his M.S and Ph.D degrees from the

University of Maryland at College Park in 1990 and 1991 respectively. Baral's research interests are in the areas of Artificial Intelligence, Knowledge Representation, Cognitive Robotics, Logic Programming, Natural Language processing and application of all that to Molecular Biology and Pharmacology. His research has been supported over the years by National Science Foundation, NASA, SFAz, United Space Alliance, ONR, and ARDA/DTO/IARPA. He received the NSF CAREER award in 1995. He authored the book "Knowledge Representation, Reasoning, and Declarative Problem Solving" about Answer Set Programming in 2003. He is an associate editor of the Journal of AI Research and area editor of the ACM Transactions on Computational Logic. His recent research focus is on temporal specification of goals, reasoning about actions and change in the multi-agent domain, combining probabilistic and logical representation and reasoning, knowledge acquisition via natural language semantics, and reasoning in the biology domain.

Ron Brachman and Hector Levesque: *Great moments in KR: The 1984 Complexity Convergence*

A joint session with AAMAS. This talk is sponsored by IBM.
Wednesday, May 12, 13:30, The Sheraton

Abstract: *The 1970's were a fertile and exciting time for Artificial Intelligence. This was especially true in the area of Knowledge Representation, where numerous novel languages and systems were created and debated, and a burgeoning set of AI applications were supported by frames, semantic networks, production rules, and other idiosyncratic KR schemes. But the issues under debate were often vague, and intuition and implementation-based arguments reigned, with little or no formal basis for discussion. Fortunately, in the late '70's and early '80's, out of this energetic but murky environment emerged several important lines of thought that promised to put elements of the field on a firmer foundation. By 1984 these threads had been developed enough that they could be knitted together, and out of this convergence a new kind of formal analysis of KR systems became possible. We look at the birth and evolution of several key ideas and how they came together to allow us to draw some interesting conclusions about the computational complexity of core inferences in a mainstream form of KR. We also make some observations about the aftermath, and how that moment in the history of the field seemed to mark a sea change in approaches to Knowledge Representation.*

Ron Brachman's technical background is in Artificial Intelligence – Knowledge Representation and Reasoning, in particular. Very early in his career at Bolt Beranek & Newman Inc., he developed a knowledge representation system called KL-One, based on his 1977 Harvard Ph.D. thesis. Ultimately this work became the basis for the field of Description Logics. In 1981 Brachman moved to the Fairchild Laboratory for Artificial Intelligence Research, in Palo Alto. There, with Hector Levesque and others, he helped develop the Krypton hybrid representation and reasoning system. In 1984, he became Program Chair of the National Conference on Artificial Intelligence, and with Levesque, published one of their more important papers, on the tradeoff between expressiveness and tractability in knowledge representation systems. This work inspired a rich subsequent literature exploring the complexity of reasoning in knowledge representation systems that continues to this day.

In 1985, Brachman joined AT&T Bell Laboratories and over the next few years built a world-class AI and machine learning research group. Amongst the more well-known work developed under his leadership at AT&T was the CLASSIC system, a well-founded description logic system with limited representational power in order to support tractable reasoning; CLASSIC was used in multiple deployed applications at AT&T and Lucent Technologies. Brachman was one of the founding Vice Presidents at AT&T Labs after AT&T split with Lucent. In 1989, with Levesque and Ray Reiter, he created the first International Conference on Principles of Knowledge Representation and Reasoning

(KR-89) and established the tradition of high-quality KR conferences that has continued since then.

In 2002, Brachman became the Director of the Information Processing Technology Office (IPTO) at DARPA, the Defense Advanced Research Projects Agency. In that capacity he led a revitalized IPTO in developing DARPA's Cognitive Systems initiative, and in his time there was responsible for roughly $1B of funding to the computer science research community. Brachman joined Yahoo! in 2005, where he was one of the founders of Yahoo! Research and Yahoo! Labs. He is currently Vice President of Yahoo! Labs and Research Operations, running all operations for Yahoo! Labs, and is also the head of Yahoo!'s Academic Relations organization, which he created.

Brachman served as President of AAAI from 2003 to 2005; earlier he spent nine years as Secretary-Treasurer of IJCAI. He is a Founding Fellow of AAAI, a Fellow of the ACM, and a Fellow of the IEEE. For his work at DARPA, Brachman was awarded The Office of the Secretary of Defense Medal for Exceptional Public Service. In 2007 he was awarded the IJCAI Donald E. Walker Distinguished Service Award and in 2008 he was awarded the AAAI Distinguished Service Award. He was recently elected to the Board of Directors of the Computing Research Association.

Hector Levesque received his BSc, MSc and PhD all from the University of Toronto in 1975, 1977, and 1981, respectively. After graduation, he accepted a position at the Fairchild Laboratory for Artificial Intelligence Research in Palo Alto, and then joined the faculty at the University of Toronto where he has remained since 1984.

His research is in the area of knowledge representation and reasoning in artificial intelligence. On the representation side, he has worked on the formalization of a number of concepts pertaining to artificial and natural agents including belief, goals, intentions, ability, and the interaction between knowledge, perception and action. On the reasoning side, his research mainly concerns how automated reasoning can be kept computationally tractable, including the use of greedy local search methods.

Hector Levesque was elected to the Executive Council of the AAAI, was a co-founder of the International Conference on Principles of Knowledge Representation and Reasoning, and is on the editorial board of five journals, including the journal Artificial Intelligence. In 2001, Hector Levesque was the Conference Chair of the International Joint Conference on Artificial Intelligence (IJCAI), and served as President of the Board of Trustees of IJCAI from 2001 to 2003.

In 1985, Hector Levesque became the first non-American to receive the Computers and Thought Award given by IJCAI. He was the recipient of an E.W.R. Steacie Memorial Fellowship from the Natural Sciences and Engineering Research Council of Canada for 1990-91. He is a founding Fellow of the AAAI and was a Fellow of the Canadian Institute for Advanced Research from 1984 to 1995. In 2006, Hector Levesque was elected to the Royal Society of Canada.

Yoav Shoham: *Logics of Intention and the Database Perspective*

Thursday, May 13, 08:30, Stop 33

Abstract: *The seminal paper by Cohen and Levesque, trying to capture in logic certain intuitions about intention and its relation with other mental constructs, has been followed up by a series of papers proposing various amendments to the original proposal. I will suggest a slight twist on the subject, one that is based on an unabashed computational perspective. I will discuss this so-called "database perspective", as well as some of its subtle logical implications.*

Yoav Shoham is Professor of Computer Science at Stanford University, where he has been since receiving his PhD in Computer Science from Yale University in 1987 and spending an abbreviated post-doctoral position at the Weizmann Institute of Science. Shoham started his career working in

logic-based knowledge representation, including temporal reasoning, nonmonotonic logics and logics of knowledge and belief. He later switched his attention to multiagent systems, and in particular to the interaction between computer science and game theory. Some of his areas of focus there have been auction theory, mechanism design in general, multiagent learning, computational social laws, and computational social choice. His current interests include formal theories of mental attitudes, with a recent focus on logics of intention.
In addition to numerous articles, Shoham has authored or edited five books, the last two of which - both with Kevin Leyton-Brown - are "Multiagent Systems: Algorithmic, Game Theoretic and Logical Foundations", and "Essentials of Game Theory".
Shoham is a Fellow of the Association for Advancement of Artificial Intelligence (AAAI), recipient of the ACM-SIGART Autonomous Agents award, and charter member of the Game Theory Society. He is also a founder of several successful software companies.

Tutorials

Leonardo de Moura: *Satisfiability with and without Theories*

Sunday, May 9, 09:00 – 12:30, London Suite

Abstract: *Constraint satisfaction problems arise in many diverse areas including software and hardware verification, type inference, extended static checking, test-case generation, scheduling, planning, graph problems, among others. The most well-known constraint satisfaction problem is propositional satisfiability SAT. Of particular recent interest is Satisfiability Modulo Theories (SMT), where the interpretation of some symbols is constrained by a background theory. For example, the theory of arithmetic restricts the interpretation of symbols such as: +, ≤, 0, and 1. SMT draws on the most prolific problems in the past century of symbolic logic: the decision problem, completeness and incompleteness of logical theories, and finally complexity theory. In this tutorial, we will describe a brief introduction to the theory behind SAT & SMT solvers, the main techniques, and their many applications. In particular, we will describe how these solvers are used at Microsoft.*

Leonardo de Moura is a senior researcher in the Software Reliability group at Microsoft Research, Redmond WA, USA. He is currently working on the Z3 theorem prover. From 2001-2006, he was a Computer Scientist at SRI International, Menlo Park CA, USA. He obtained his Ph.D. in Computer Science from PUC, Brazil in 2000. He is interested in theorem provers, decision procedures, optimization and software verification.

Carsten Lutz: *Reasoning in Description Logics: Expressive Power versus Computational Complexity*

Sunday, May 9, 09:00 – 12:30, Edinburgh Suite

Abstract: *Description logics (DLs) are a popular family of knowledge representation formalisms that play an important role as a logical foundation of ontology languages such as OWL and aim at providing a good compromise between representational capabilities (i.e., expressive power) and the computational complexity of reasoning. The fact that different applications require different such compromises has led to the development of a large toolbox of DLs that range from inexpressive but computationally efficient to very expressive but computationally challenging, thus catering for various needs and requirements. This tutorial provides a comprehensive tour of reasoning in modern description logics with an emphasis on computational complexity. It covers expressive DLs such as the*

SHIQ family, explaining which kind of expressive power tends to make reasoning more complex, and why. It also covers inexpressive DLs such as the EL and DL-Lite families, explaining their good computational behaviour and highlighting the limits of polytime reasoning. On top of the traditional reasoning problems such as subsumption and satisfiability, the tutorial also addresses query answering over instance data in the presence of DL ontologies, a more recent reasoning problem that rapidly gains importance in applications. In particular, we will explain how the complexity landscape differs for traditional reasoning and for query answering, and take a brief look at computational complexity issues raised by implementations of DL query answering based on standard relational database systems. Throughout the tutorial, connections to the W3C-standard OWL are drawn whenever possible.

Carsten Lutz is Professor of Computer Science at the University of Bremen. He has obtained his diploma from the University of Hamburg in 1998, his Ph.D. from RWTH Aachen in 2002, and his habilitation from Dresden University of Technology in 2006. His main research interest is in computational logic for knowledge representation and computer science, with an emphasis on description logic, modal logic, and ontology languages. He has published more than 80 articles in scientific journals and conferences and served on the program committee of more than 30 international conferences. In 2006, he received the "AI Ten to Watch" award from IEEE Intelligent Systems Magazine.

Bernhard Nebel: *Computational Complexity of Action Planning*

Sunday, May 9, 14:00 – 17:30, London Suite

Abstract: *After a brief introduction of different planning frameworks and a short introduction to computational complexity theory, we will examine computational complexity results for different planning frameworks and planning domains. In order to get an idea of how changes in expressiveness can affect the applicability of planning methods, we will also have a look at compilation techniques that allow us to assess the expressive power of a planning formalism.*

Bernhard Nebel received his first degree in Computer Science (Dipl.-Inform.) from the University of Hamburg in 1980 and his Ph.D. (Dr. rer. nat.) from the University of Saarland in 1989. Between 1982 and 1993 he worked on different AI projects at the University of Hamburg, the Technical University of Berlin, ISI/USC, IBM Germany, and the German Research Center for AI (DFKI). From 1993 to 1996 he held an Associate Professor position (C3) at the University of Ulm. Since 1996 he is Professor at Albert-Ludwigs-Universität Freiburg and head of the research group on Foundations of Artificial Intelligence.

Bernhard Nebel is a member of the the collaborative research center SFB TR/14 Automatic Verification and Analysis of Complex Systems (AVACS), and coordinator of the Freiburg site of the collaborative research center SFB TR/8 Spatial Cognition.

Among other professional services, he served as the Program Co-chair for the 3rd International Conference on Principles of Knowledge Representation and Reasoning (KR'92), as the Program Co-chair for the 18th German Annual Conference on AI (KI'94), as the General Chair of the 21st German Annual Conference on Artificial Intelligence (KI'97), as the Program Chair for the 17th International Joint Conference on Artificial Intelligence (IJCAI'01), and as Conference Co-Chair of the 18th International Conference on Automated Planning and Scheduling (ICAPS'08). In 2001, Bernhard Nebel was elected as an ECCAI fellow. In 2009, he was elected to be a member of the German Academy of Science Leopoldina.

Bernhard Nebel is (co-)author and (co-)editor of 10 books and conference proceedings, as well as author and co-author of more than 100 refereed papers in scientific journals, books, and conference proceedings.

mc schraefel: *What if you Wanted someone (else) to Use this? Usability Heuristics for KR tool & representation design*
Sunday, May 9, 14:00 – 17:30, Edinburgh Suite

Abstract: *The User Interface or User Experience of a tool in KR may be one of the last things on a researcher's mind when trying to find a path towards exploring a problem or automating components to build a solution. And that's fine if the author of the tool is the only person who will ever use the tool, but what if there's a desire to share the tool with someone else? There are some straight ahead heuristics about designing both the interaction with tool components and with the representations that a tool produces to help with usability for domain experts and potentially even legibility of what the tool produces for interested persons outside the domain. There are likewise some lightweight mechanisms to evaluate whether the proposed design will achieve either of these ends before the code is implemented. The purpose of this tutorial will be to walk through design heuristics for interaction and representation. At the end of the tutorial participants will be able to assess tool effectiveness against these criteria, propose approaches for revision, and work through approaches for lightweight usability assessment of their proposal.*

mc schraefel, phd, is a fellow of the British Computer Society and a Senior Research Fellow of the Royal Academy of Engineering. She is also a Reader in the Intelligence Agents Multimedia (IAM) Group, University of Southampton, UK where she runs the Information Interaction, Wellbeing & Social Awareness Computing Theme. Beyond academic degrees, schraefel holds a number of qualifications in strength, conditioning, movement and neural reeducation training. schraefel's work in information interaction focuses on information exploration to support a user's ability to leverage what they do know in a search to support building knowledge about what they'd like to know. More recently schraefel's work is also investigating new framings of information integration and interaction to support creativity, innovation and wellbeing.

Conference Schedule

Sunday, May 9, 2010:

London Suite, invited tutorials

09:00– 10:30	Leonardo de Moura	*Satisfiability with and without Theories, I*
10:30– 11:00		*Coffee break*
11:00 – 12:30	Leonardo de Moura	*Satisfiability with and without Theories, II*
12:30 – 14:00		*Lunch*
14:00– 15:30	Bernhard Nebel	*Computational Complexity of Action Planning, I*
15:30– 16:00		*Coffee break*
16:00 – 17:30	Bernhard Nebel	*Computational Complexity of Action Planning, II*

Edinburgh Suite, invited tutorials

09:00– 10:30	Carsten Lutz	*Reasoning in Description Logics: Expressive Power versus Computational Complexity, I*
10:30– 11:00		*Coffee break*
11:00 – 12:30	Carsten Lutz	*Reasoning in Description Logics: Expressive Power versus Computational Complexity, II*
12:30 – 14:00		*Lunch*
14:00– 15:30	mc schraefel	*What if you Wanted someone (else) to Use this? Usability Heuristics for KR tool & representation design, I*
15:30– 16:00		*Coffee break*
16:00 – 17:30	mc schraefel	*What if you Wanted someone (else) to Use this? Usability Heuristics for KR tool & representation design, II*

Conference Schedule

Monday, May 10, 2010; Stop 33

Session Chair: Uli Sattler		
08:30 – 09:30	**Invited talk:** Ian Horrocks	*Scalable Ontology Systems*
09:35 – 10:00	Roman Kontchakov, Carsten Lutz, David Toman, Frank Wolter and Michael Zakharyaschev	*The Combined Approach to Query Answering in DL-Lite*
10:00 – 10:30	**Coffee break**	
Description Logics and Ontologies; Session Chair: Peter Patel-Schneider		
10:30 – 10:55	Boris Konev, Carsten Lutz, Denis Ponomaryov and Frank Wolter	*Decomposing Description Logic Ontologies*
10:55 – 11:20	Magdalena Ortiz, Sebastian Rudolph and Mantas Simkus	*Worst-case Optimal Reasoning for the Horn-DL Fragments of OWL 1 and 2*
11:20 – 11:45	Cerami Marco, Francesc Esteva and Felix Bou	*Decidability of a Description Logic over Infinite-valued Product Logic*
11:45 – 12:10	Riccardo Rosati and Alessandro Almatelli	*Improving Query Answering over DL-Lite Ontologies*
12:10 – 13:30	**Lunch**	
Inconsistency Handling; Session Chair: Leon Van Der Torre		
13:30 – 13:55	Ofer Arieli	*On the Application of the Disjunctive Syllogism in Paraconsistent Logics Based on Four States of Belief*
13:55 – 14:20	Ofer Arieli, Arnon Avron and Anna Zamansky	*Maximally Paraconsistent Three-Valued Logics*
14:20 – 14:45	Thomas Eiter, Michael Fink, Peter Schüller and Antonius Weinzierl	*Finding Explanations of Inconsistency in Multi-Context Systems*
14:45 – 15:10	Guohui Xiao, Yue Ma, Guilin Qi and Zuoquan Lin	*Computing Inconsistency Measurements under Multi-Valued Semantics by Partial Max-SAT solvers*
15:10 – 15:40	**Coffee break**	
Answer Set Programming; Session Chair: Vladimir Lifschitz		
15:40 – 16:05	Thomas Eiter, Michael Fink and Joao Moura	*Paracoherent Answer Set Programming*
16:05 – 16:30	Martin Gebser, Carito Guziolowski, Mihail Ivanchev, Torsten Schaub, Anne Siegel, Philippe Veber and Sven Thiele	*Repair and Prediction (under Inconsistency) in Large Biological Networks with Answer Set Programming*
16:30 – 16:55	Reinhard Pichler, Stefan Rümmele, Stefan Szeider and Stefan Woltran	*Tractable Answer-Set Programming with Weight Constraints: Bounded Treewidth is not Enough*
16:55 – 17:20	Yan Zhang and Yi Zhou	*On the Progression Semantics and Boundedness of Answer Set Programs*
18:45 – 20:45	**Reception and Poster Session**	

Conference Posters

1. Marcello Balduccini and Sara Girotto. *Formalizing Psychological Knowledge in Answer Set Programming*
2. Grigoris Antoniou, Constantinos Papatheodorou and Antonis Bikakis. *Reasoning about Context in Ambient Intelligence Environments: A Report from the Field*
3. Michael Gruninger. *Ontologies for Dates and Duration*
4. Matthew Horridge and Bijan Parsia. *From Justifications Towards Proofs For Ontology Engineering*
5. Thomas Icard, Eric Pacuit and Yoav Shoham. *Joint Revision of Belief and Intention*
6. Samantha Kleinberg and Bud Mishra. *The Temporal Logic of Token Causes*
7. Minyi Li, Quoc Bao Vo and Ryszard Kowalczyk. *An Efficient Approach for Preference Aggregation with CP-nets*
8. Sanjiang Li. *A Layered Graph Representation for Complex Regions*
9. Bijan Parsia and Thomas Schneider. *The Modular Structure of an Ontology: an Empirical Study*
10. David Poole. *Towards a Logic of Feature-based Semantic Science Theories*
11. Antonino Rotolo, Guido Governatori, Guido Boella and Leendert van der Torre. *Lex Minus Dixit Quam Voluit, Lex Magis Dixit Quam Voluit: A Formal Study on Legal Interpretation*
12. Ganesh Ram Santhanam, Samik Basu and Vasant Honavar. *Efficient Dominance Testing for Unconditional Preferences*
13. Stuart Shapiro. *Set-Oriented Logical Connectives*
14. Visara Urovi, Stefano Bromuri, Kostas Stathis and Alexander Artikis. *Run-Time Services for Norm-Governed Systems*
15. Zhe Wang, Kewen Wang and Rodney Topor. *Revising General Knowledge Bases in Description Logics*
16. Yi Zhou and Yan Zhang. *Forgetting Revisited*

Doctoral Consortium Posters

1. Sajjad Hussain. *K-MORPH: Knowledge Morphing via Reconciliation of Contextualized Sub-ontologies*
2. Fabiana Lorenzi. *A Multiagent Recommender Approach for Distributed Source of Information*
3. Minyi Li. *On Efficient Mediation Approach to Multi-issue Negotiation with Optimal and Fair Outcomes*
4. Chris Schmidt and James Delgrande. *Specifying and Using Complex Qualitative Preferences*
5. Marco Cerami and Francesc Esteva. *Summary of M. Cerami's doctoral thesis project*
6. Peter Schuller. *Methods and Algorithms for Managing Inconsistency in Multi-Context Systems*
7. Stefan Rümmele. *Efficient Algorithms for Nonmonotonic Reasoning using Treewidth*
8. Ilaria Corda. *Discovering Connections in Historical Domains: an Approach Based on Semantic*
9. Jason Jingshi Li. *Structures and Complexities in Spatio-Temporal Reasoning*
10. Shasha Feng. *Analyse the Logical Difference of Lightweight Description Logics*

Conference Schedule

Tuesday, May 11, 2010: Stop 33

Session Chair: Mirek Truszczynski		
08:30 – 09:30	**Invited talk:** Chitta Baral	*Reasoning about Actions and Change - from Single Agent Actions to Multi-agent Actions*
09:35 – 10:00	Ringo Baumann, Gerhard Brewka, Hannes Strass, Michael Thielscher and Vadim Zaslawski	*State Defaults and Ramifications in the Unifying Action Calculus*
10:00 – 10:30	**Coffee break**	
Reasoning about Action and Action Programs, and Decision Theory; Session Chair: Michael Thielscher		
10:30 – 10:55	Giuseppe De Giacomo, Yves Lesperance and Adrian Pearce	*Situation Calculus-based Programs for Representing and Reasoning about Game Structures*
10:55 – 11:20	Hannaneh Hajishirzi and Eyal Amir	*Reasoning about Deterministic Actions with Probabilistic Prior and Application to Stochastic Filtering*
11:20 – 11:45	Joseph Halpern and Rafael Pass	*I Don't Want to Think About it Now: Decision Theory With Costly Computation*
11:45 – 12:10	Shirin Sohrabi, Jorge A. Baier and Sheila A. McIlraith	*Diagnosis as Planning Revisited*
12:10 – 13:30	**Lunch**	
Description Logics and Ontologies; Session Chair: Ian Horrocks		
13:30 – 13:55	Franz Baader, Meghyn Bienvenu, Carsten Lutz and Frank Wolter	*Query and Predicate Emptiness in Description Logics*
13:55 – 14:20	Birte Glimm and Sebastian Rudolph	*Status QIO: Conjunctive Query Entailment is Decidable*
14:20 – 14:45	Bernardo Cuenca Grau and Boris Motik	*Pushing the Limits of Reasoning over Ontologies with Hidden Content*
14:45 – 15:10	Rafael Peñaloza and Barış Sertkaya	*On the Complexity of Axiom Pinpointing*
15:10 – 15:40	**Coffee break**	
Belief Change, Counterfactuals, Diagnosis and Abduction; Session Chair: Jim Delgrande		
15:40 – 16:05	Guillaume Aucher	*Characterizing Updates in Dynamic Epistemic Logic*
16:05 – 16:30	Joseph Halpern	*From Causal Models To Counterfactual Structures*
16:30 – 16:55	Sébastien Konieczny, Mattia Medina Grespan and Ramon Pino Perez	*Taxonomy of Improvement Operators and the Problem of Minimal Change*
16:55 – 17:20	Sajjad Siddiqi and Jinbo Huang	*New Advances in Sequential Diagnosis*
17:20 – 17:45	Nadia Creignou, Johannes Schmidt and Michael Thomas	*Complexity of Propositional Abduction for Restricted Sets of Boolean Functions*
19:30 – 22:00	**Conference Dinner** - *Adega*	

Conference Schedule

Wednesday, May 12, 2010 – Morning

Stop 33

Rule-based Reasoning, Logic Programming, and Planning; Session Chair: Gerhard Lakemeyer		
08:30 – 08:55	Jean-François Baget, Michel Leclere and Marie-Laure Mugnier	*Walking the Decidability Line for Rules with Existential Variables*
08:55 – 09:20	Michael Bartholomew and Joohyung Lee	*A Decidable Class of Groundable Formulas in the General Theory of Stable Models*
09:20 – 09:45	Giuseppe De Giacomo, Fabio Patrizi and Sebastian Sardina	*Generalized Planning with Loops under Strong Fairness Constraints*
09:45 – 10:10	Yuxiao Hu and Hector Levesque	*A Completeness Result for Reasoning about One-Dimensional Planning Problems*
10:10 – 10:30	**Coffee break**	
Argumentation; Session Chair: Francesca Toni		
10:30 – 10:55	Gerhard Brewka and Stefan Woltran	*Abstract Dialectical Frameworks*
10:55 – 11:20	Wolfgang Dvorak, Reinhard Pichler and Stefan Woltran	*Towards Fixed-Parameter Tractable Algorithms for Argumentation*
11:20 – 11:45	Emilia Oikarinen and Stefan Woltran	*Characterizing Strong Equivalence for Argumentation Frameworks*
11:45 – 13:30	**Lunch**	

Conference Schedule

Wednesday, May 12, 2010 – Afternoon
Joint KR/AAMAS Invited Talk and Parallel Sessions 9 and 10
Sheraton Centre, 123 Queen Street West

Location: Osgoode Ballroom on the Lower Concourse; **Session Chair:** Chris Welty ;		
13:30 – 14:30	**Invited talk:** Ron Brachman and Hector Levesque	*Great moments in KR: The 1984 Complexity Convergence*

KR/AAMAS parallel session 1 (AAMAS session 9) ; Location: *Civic Ballroom North***; Session Chair:** Birna van Riemsdijk		
14:30 – 14:50	Amit Chopra, Fabiano Dalpiaz, Paolo Giorgini, John Mylopoulos	*Reasoning about Agents and Protocols via Goals and Commitments* (AAMAS Poster B97)
14:50 – 15:10	Ramzi Ben Larbi, Sébastien Konieczny and Pierre Marquis	*A Characterization of Optimality Criteria for Decision Making under Complete Ignorance* (KR)
15:10 – 15:30	Murat Sensoy, Wamberto Vasconcelos, Timothy Norman	*Flexible Task Resourcing for Intelligent Agents* (AAMAS Poster B-98)
15:30 – 15:50	Nicolas Troquard, Dirk Walther	*Alternating-time Dynamic Logic* (AAMAS Poster B-99)
15:50 – 16:10	Natasha Alechina, Brian Logan, Hoang Nga Nguyen, Abdur Rakib	*Resource-bounded alternating-time temporal logic* (AAMAS Poster B-100
16:10 – 16:30	Francesco Belardinelli and Alessio Lomuscio	*The Interaction of Time and Knowledge in a First-order Logic for Multi-Agent Systems* (KR)
16:30 – 17;00	**Coffee break**	
17:00 – 19:00	Poster session	

KR/AAMAS parallel session 2 (AAMAS session 10); Location: *Civic Ballroom South***; Session Chair:** Mirek Truszczynski		
14:30 – 14:50	Michael Thielscher	*Integrating Action Calculi and AgentSpeak: Closing the Gap* (KR)
14:50 – 15:10	Meghyn Bienvenu, Jérôme Lang and Nic Wilson	*From Preference Logics to Preference Languages, and Back* (KR)
15:10 – 15:30	Vaishak Belle and Gerhard Lakemeyer	*Multi-Agent Only-Knowing Revisited* (KR)
15:30 – 15:50	Guiseppe De Giacomo, Fabio Patrizi, Sebastian Sardina	*Agent Programming via Planning Programs* (AAMAS Poster B-101)
15:50 – 16:10	Guiseppe De Giacomo, Paolo Felli	*Agent Composition Synthesis based on ATL* (AAMAS Poster B-102)
16:10 – 16:30	James Delgrande and Renata Wassermann	*Horn Clause Contraction Functions: Belief Set and Belief Base Approaches* (KR)
16:30 – 17;00	**Coffee break**	
17:00 – 19:00	Poster session	

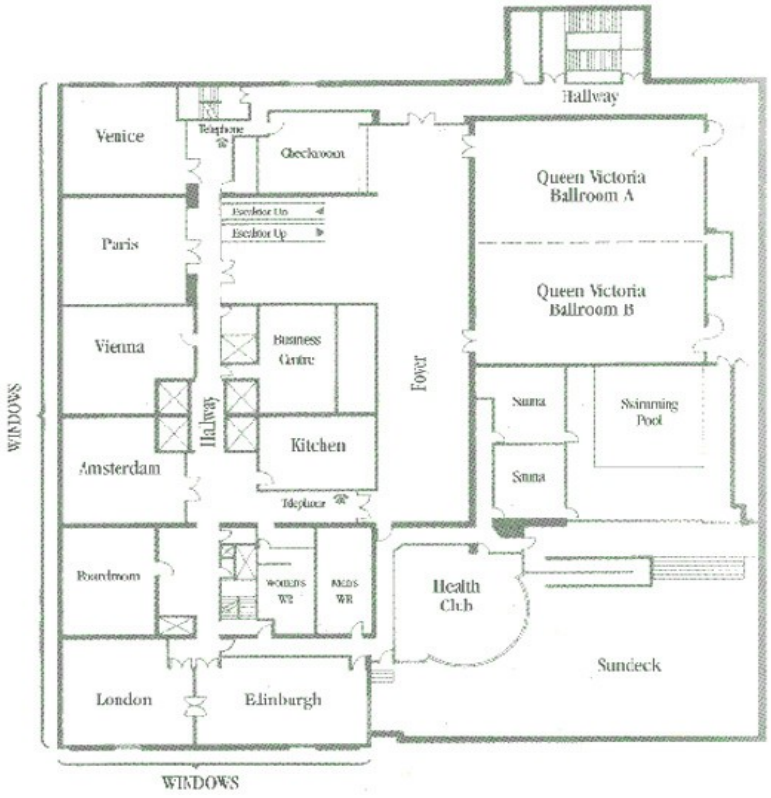
Conference Schedule

Thursday, May 13, 2010: Stop 33

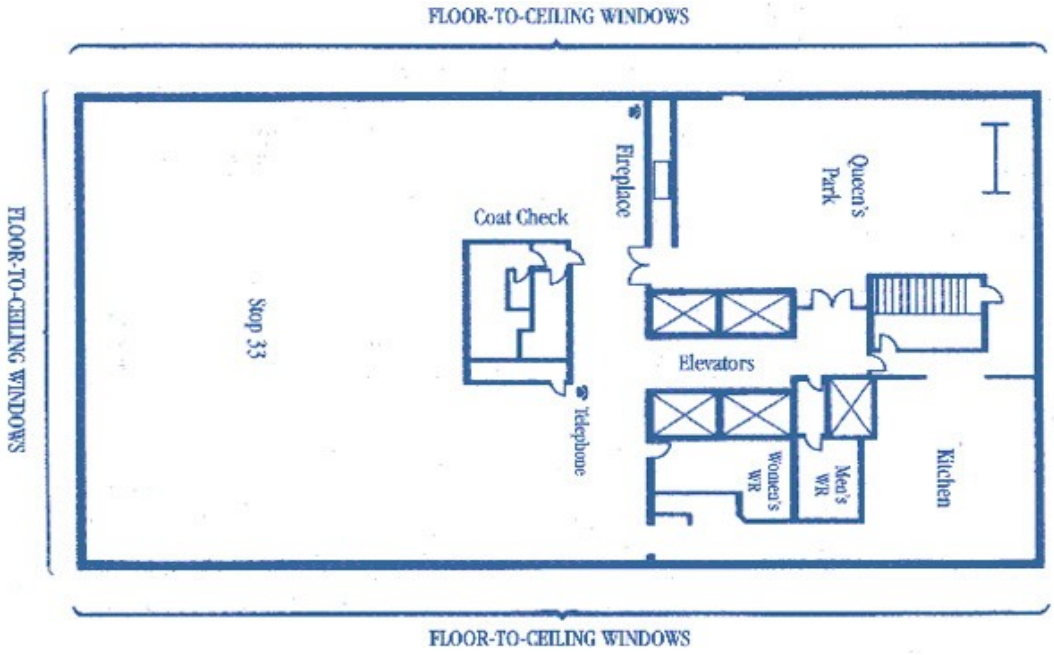
Session Chair: Fangzhen Lin		
08:30 – 09:30	**Invited talk:** Yoav Shoham	*Logics of Intention and the Database Perspective*
09:35 – 10:00	Hans van Ditmarsch, Jan van Eijck and William Wu	*One Hundred Prisoners and a Lightbulb - Logic and Computation*
10:00 – 10:30	**Coffee break**	
Multiagent Systems and Distributed Reasoning; Session Chair: Giuseppe De Giacomo		
10:30 – 10:55	Minh Dao-Tran, Thomas Eiter, Michael Fink and Thomas Krennwallner	*Distributed Nonmonotonic Multi-Context Systems*
10:55 – 11:20	Daniele Porello and Ulle Endriss	*Modelling Combinatorial Auctions in Linear Logic*
11:20 – 11:45	Claudio Masolo	*A Theory of Levels Based on Complete Foundation*
11:45 – 12:10	Robert Kelvey, Sara Miner More, Pavel Naumov and Benjamin Sapp	*Independence and Functional Dependence Relations on Secrets*
12:10 – 13:30	**Lunch**	
Possibility Theory and Uncertainty; Session Chair: David Poole		
13:30 – 13:55	Agata Ciabattoni and Pavel Rusnok	*On the Classical Content of Goedel Logic with Strong Negation and its Applications to a Fuzzy Medical Expert*
13:55 – 14:20	Gabriele Kern-Isberner and Matthias Thimm	*Novel Semantical Approaches to Relational Probabilistic Conditionals*
14:20 – 14:45	Carsten Lutz and Lutz Schröder	*Probabilistic Description Logics for Subjective Uncertainty*
14:45 – 15:10	Guilin Qi and Zhizheng Zhang	*Preferential Semantics for Plausible Subsumption in Possibility Theory*
15:10 – 15:40	**Coffee break**	
Constraints, Spatial Reasoning, and Analogical Reasoning; Session Chair: Gerhard Brewka		
15:40 – 16:05	Ronen Brafman, Francesca Rossi, Domenico Salvagnin, Kristen Brent Venable and Toby Walsh	*Finding the Next Solution in Constraint- and Preference-based Knowledge Representation Formalisms*
16:05 – 16:30	Roman Kontchakov, Ian Pratt-Hartmann and Michael Zakharyaschev	*Interpreting Topological Logics over Euclidean Spaces*
16:30 – 16:55	Henri Prade and Gilles Richard	*Reasoning with Logical Proportions*
16:55 – 17:20	Jean-François Condotta and Christophe Lecoutre	*A Class of df-consistencies for Qualitative Constraint Networks*

Event Locations in Sutton Place Hotel

London and Edinburgh Suites are located on the 2nd floor



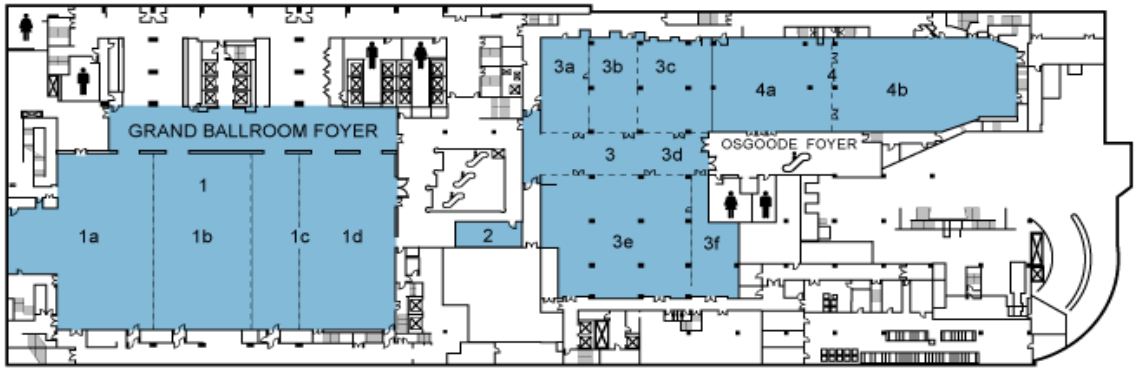
Stop 33 is located on the 33rd floor



Event locations in Sheraton Centre

Joint AAMAS/KR sessions on Wednesday, May 12

Great Moments in KR talk by Ron Brachman and Hector Levesque: 13:30pm, Osgoode Ballroom



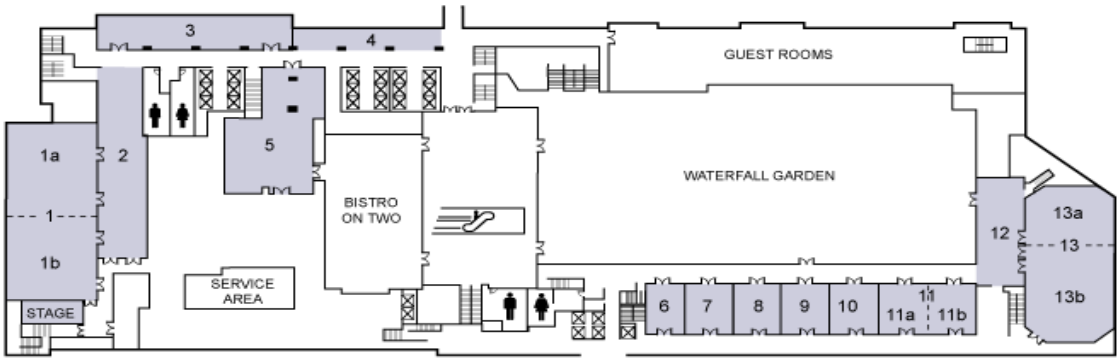
1. GRAND BALLROOM
   - 1a. GRAND BALLROOM WEST
   - 1b. GRAND BALLROOM CENTRE
   - 1c. GRAND BALLROOM EAST LARGE
   - 1d. GRAND BALLROOM EAST
2. VIDE OFFICE

3. SHERATON HALL
   - 3a. SHERATON HALL 1
   - 3b. SHERATON HALL 2
   - 3c. SHERATON HALL 3
   - 3d. SHERATON HALL 4
   - 3e. SHERATON HALL 5
   - 3f. SHERATON HALL 6

4. OSGOODE BALLROOM
   - 4a. OSGOODE BALLROOM WEST
   - 4b. OSGOODE BALLROOM EAST

LOWER CONCOURSE

Joint AAMAS/KR Technical sessions: 14:30pm, Civic Ballroom North and South



1. DOMINION BALLROOM
   - 1a. DOMINION BALLROOM NORTH
   - 1b. DOMINION BALLROOM SOUTH
2. DOMINION BALLROOM FOYER
3. CHURCHILL ROOM
4. CHURCHILL FOYER
5. CITY HALL ROOM

6. ELGIN ROOM
7. WENTWORTH ROOM
8. KENORA ROOM
9. HURON ROOM
10. KENT ROOM

11. SIMCOE ROOM & DUFFERIN ROOM
    - 11a. SIMCOE ROOM
    - 11b. DUFFERIN ROOM
12. CIVIC BALLROOM FOYER
13. CIVIC BALLROOM
    - 13a. CIVIC BALLROOM NORTH
    - 13b. CIVIC BALLROOM SOUTH

SECOND FLOOR

Directions

Directions to **Adega Restaurant,** the place of the Conference Dinner
(following Google Maps)

By foot (about 10 minutes)

1. *Start at Sutton Place*
2. *Head south on Bay St toward Wellesley St (about 0.8 km)*
3. *Turn east (or left, if coming from Sutton) at Elm St,*
4. *The restaurant will be on the right (about 84 m)*
5. *Arrive at Adega Restaurant, 33 Elm Street Toronto.*

Directions to **Sheraton Centre**, the place of the joint KR/AAMAS session, and all other AAMAS technical activities
(following Google Maps)

By foot (about 19 minutes)

1. *Start at Sutton Place*
2. *Head south on Bay St toward Wellesley St. (1.4 km)*
3. *Turn West (right) at Queen St W (0.2 km)*
4. *Reach Sheraton Centre at 123 Queen Street West.*

By bus

The most convenient public transportation service to Sheraton is provided by Bus 6 that travels along Bay St. about every 5 minutes
http://www3.ttc.ca/Routes/6/Southbound.jsp
http://www3.ttc.ca/Routes/6/Map.jsp

1. *Board Bus 6 at the stop "BAY at WELLESLEY" that is located across the Bay St. from the hotel entrance.*
2. *Exit on the third stop, "BAY at QUEEN"*
3. *Walk west (right, if coming from Sutton) for about 3 minutes or less towards University Avenue*

You should have exact change (a ticket costs CAD 3.00) or purchase tickets in advance (they are available in news stands, grocery stores and other small shops). In total, this trip should take about 10-15min.

By taxi

Since one-way bus ticket costs CAD 3.00, and there are plenty of taxi cars at the hotel entrance, sharing a taxi to Sheraton is an attractive alternative. It should cost about CAD 10 and so, is a viable alternative already when just three people want to share the ride. Moreover, the taxi will take you directly to Sheraton. Taxi ride should take about 5-10min, depending on the traffic.

By subway on the Yellow Line

Option 1:

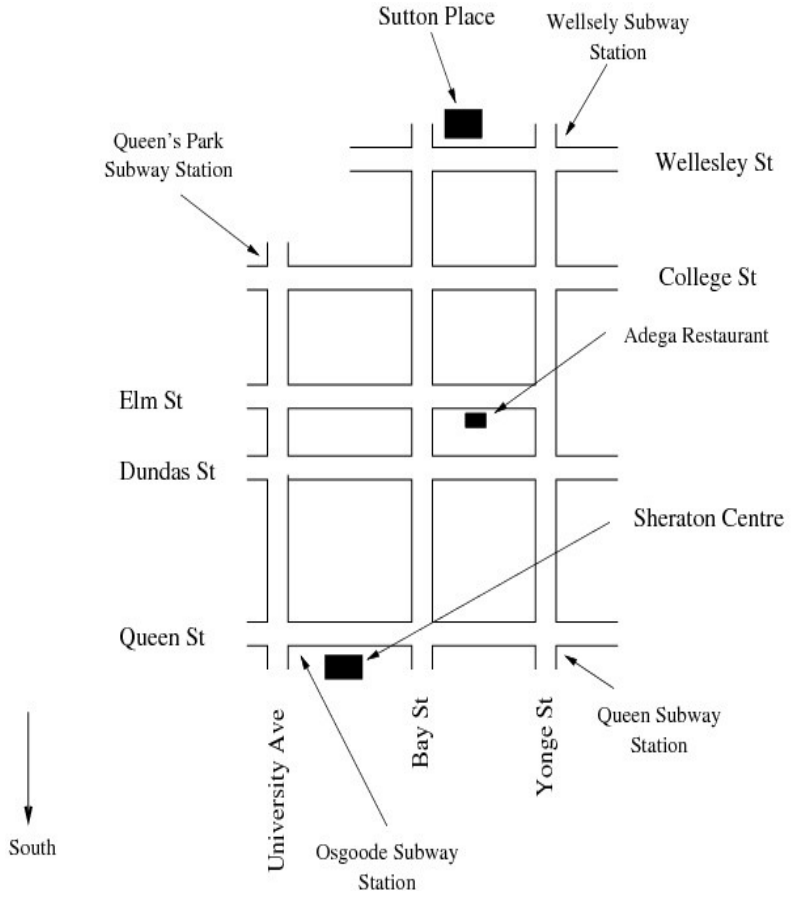
1. *Walk south on Bay, turn West (right) on College Street and walk to University Avenue*
2. *Board the subway at Queen's Park Station toward Union Station (direction Finch)*
3. *3. Exit at Osgoode Station (2nd stop). Walk upstairs to a South-East corner of Queen Street and University Avenue.*
4. *Walk east on Queen St.*
5. *The hotel will be on your right.*

Option 2:

1. *Go east on Wellesley St W and continue east on Wellesley St E.*
   Turn left into Wellesley Station.
2. *Board the train toward Union Station* (direction Downsview)
3. *Exit at Queen Station (3rd stop). Walk upstairs to the Queen Street south entrance: you can follow signs to a street-car. (Note: some of the stairs out of this station lead to large shopping malls that can be confusing to navigate.*
4. *Walk west on Queen St.*
5. *The hotel will be on your left.*

You can purchase tickets at a TTC booth at an entrance to a sub-way station.

A Rough Map of the Essential Places



Other Useful Information

Restaurants. At distance 1000m or less from Sutton, there are more than 100 restaurants, coffee shops, pubs and other places that serve all kinds of food. Check the website <http://www.scs.ryerson.ca/~kr2010/restaurants.html> for a more comprehensive list. Here we list only restaurants that are 500m or closer from Sutton. We make no claims of quality. The entire risk as to price, quality of food, service, etc is with you.

- 5th Element, Cuisine: fusion food with special emphasis on Italian and Indian food. Address: 1033 Bay Street, phone: 416 923 8159. 200m from Sutton.
- 7 West Cafe, Cuisine: Italian. Address: 7 Charles Street West Street, phone: 416 928 9041. 500m from Sutton.
- Bistro 990, Cuisine: French, Mediterranean. Address: 990 Bay Street (at Wellesley Street), phone: 416-921-9990. 150m from Sutton.
- Ethiopian House, Cuisine: Ethiopian. Address: 4 Irwin Avenue, (2 blocks North of Wellesley off Yonge Street), phone: (416) 923-5438. 300m from Sutton.
- Gallery Grill, Cuisine: Canadian. Address: University of Toronto campus, Hart House, 7 Hart House Circle (at Wellesley St.), phone: 416-978-2445. 500m from Sutton.
- Green Mango, Cuisine: Thai/Vietnamese. Address: 730 Yonge Street, phone 416 - 928 - 0021. 500m from Sutton.
- Kathmandu Restaurant, Cuisine: Indian-Nepalese. Address: 517 Yonge Street, phone: (416) 924-5787. 300m from Sutton.
- Manulife Centre Restaurants, Cuisine: various. Address: 55 Bloor Street West, 500m from Sutton.
- Matignon Restaurant Francais. Address: 51 Saint Nicholas Street, phone (416) 921-9226. 400m from Sutton.
- OJA Noodles House, Cuisine: Thai, Vietnamese, Chinese, Japanese. Address: 689 Yonge Street, phone 416-944-8371. 500m from Sutton.
- Okonomi House Restaurant, Cuisine: Japanese. Address: 23 Charles Street West, phone (416) 925-6176. 400m from Sutton.
- Panorama: cocktails, salads, sandwiches. Address: Manulife Centre - 51st Floor, 55 Bloor Street West, phone (416) 967 0000. 200m from Sutton.
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- Spring Rolls, Cuisine: Pan-Asian. Address1: 693 Yonge St. (at Charles St.) phone: 416-972-6623 (500m from Sutton).
- Sushi Club, Cuisine: Japanese, Sushi. Address: 41 Charles Street West, phone : 416-967-3388. 400m from Sutton.
- Wish, Cuisine: Eclectic/Int'l. Address: 3 Charles Street East, phone (416) 935-0240. 500m from Sutton.
- Yonge-Bloor Restaurants. 500m from Sutton.

Sight-seeing & Attractions in Toronto

Welcome to Toronto ! The following is a list of some major attractions to see in and around Toronto. And check out also http://www.scs.ryerson.ca/~kr2010/sightseeing.html for more information.

General Tourism. Ontario Tourism and Recreation, 180 Dundas Street West, Suite 502. This office is located inside the Atrium at Bay, on Dundas Street between Bay and Younge. Main phone: (416) 314-6044 , Toll free: 1-877-395-4105. You can pick up here maps and free guides to many locations in Ontario (including Niagara Escarpment, Georgean Bay, Lake Huron, Lake Erie).

Free Sights in Toronto

- Toronto Island Park; take ferry from the foot of Bay Street and Queens Quay, just West of the Westin Harbour Castle Hotel. Toronto Island Ferry information: 416-392-8193
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- Heritage Toronto Walks. Contact for more information Historic St. Lawrence Hall, 157 King Street East, 3rd Floor Toronto, Ontario, M5C 1G9. Tel: 416-338-0684
- Toronto Music Garden: Inspired by J.S. Bach; 475 Queen's Quay West, Toronto, ON
- Allan Gardens Conservatory; 19 Horticultural Ave, Toronto, ON
- Harbourfront Centre; 235 Queens Quay West , Toronto ON M5J2G8
- Nathan Phillips Square; 100 Queen Street West , Toronto ON M5H2N1
- Ontario Legislative Building (Queen's Park); Queen's Park , Toronto ON M7A1A2
- The Distillery Historic District; Information at toronto.com
- Toronto City Hall; 100 Queen St. W. , Toronto ON M5H 2N2
- Yonge-Dundas Square; 40 Dundas Street West , Toronto ON M5G2C2
- St. Michael's Cathedral; 65 Bond St , Toronto ON

Pay Sights

- Art Gallery of Ontario; 317 Dundas Street West , Toronto ON M5T 1G4
- CN Tower; 301 Front Street West , Toronto ON M5V 2T6
- Casa Loma; 1 Austin Terrace , Toronto ON M5R1X8
-
- Hockey Hall of Fame; 30 Yonge St. (Brookfield Place) , Toronto ON M5E 1X8
- Ontario Place; 955 Lake Shore Blvd. W. , Toronto ON M6K3B9
- Ontario Science Centre; 770 Don Mills Rd. , Toronto ON M3C1T3
- Royal Ontario Museum (ROM); 100 Queens Park , Toronto ON M5S2C6
- Centreville Amusement Park on the Centre Island; Toronto Island Bicycle Rental Toronto Island , Toronto ON
- Toronto Zoo; 361A Old Finch Avenue , Scarborough ON M1B5K7

Art, Music, Entertainment

- Toronto Symphony Orchestra; 212 King Street West, 6th Floor, Toronto, ON M5H 1K5
- Canadian Opera Company at the Four Seasons Centre for the Performing Arts is located at 145 Queen St. W., Toronto, Ontario. 416-363-8231 (long distance in Canada and U.S. 1-800-250-4653)
-
- Medieval Times; 10 Dufferin St. (Exhibition Place) , Toronto ON M6K3C3
-
- Jazz in Toronto: The Rex Hotel Jazz & Blues Bar 194 Queen Street West, Toronto, ON, M5V1Z1 (416-598-2475)
- Princess of Wales Theatre; 300 King Street West , Toronto ON M5V1J2
- The Second City; 51 Mercer Street , Toronto ON M5V 1H2

Collocated Events

23rd International Workshop on Description Logics (DL-2010)
University of Waterloo, Ontario, Canada. May 4-7, 2010

The 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2010)
The Sheraton Centre Toronto Hotel, Toronto, Canada. May 10-14, 2010

6th International Conference on Formal Ontology in Information Systems (FOIS-2010)
The Sutton Place Hotel, Toronto, Canada. May 11-14, 2010

20th International Conference on Automated Planning and Scheduling (ICAPS-2010)
The Sutton Place Hotel, Toronto, Canada. May 12-16, 2010

13th International Workshops on Non-monotonic Reasoning (NMR-2010)
The Sutton Place Hotel, Toronto, Canada. May 14-16, 2010

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