Twenty-Fourth AAAI Conference on Artificial Intelligence (AAAI-10) Workshop Program

July 11–12, 2010

Atlanta, Georgia

Sponsored by

Association for the
Advancement of Artificial Intelligence
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Deadlines

- *March 29: Submissions due*
- *April 15: Notification of acceptance*
- *May 4: Camera-ready copy due to organizers and AAAI*
- *July 11–12: AAAI-10 Workshop Program*

AAAI Formatting Guidelines

- *www.aaai.org/Publications/Author/author.php*

www.aaai.org

AAAI is pleased to present the AAAI-10 Workshop program. Workshops will be held Sunday and Monday, July 11–12, 2010 at the Westin Peachtree Plaza in Atlanta, Georgia. Exact locations and dates for the workshops will be determined in early spring.

The AAAI-10 workshop program includes 13 workshops covering a wide range of topics in artificial intelligence. Workshops are one day unless noted otherwise in the individual description. Each workshop is limited to approximately 25 to 65 participants, and participation is usually by invitation from the workshop organizers. However, most workshops also allow general registration by other interested individuals.

There is a separate fee for attendance at a workshop, and is discounted for AAAI-10 technical registrants. Registration information will be mailed directly to all invited participants. (For information about AAAI-10, including registration, travel and accommodations, see the AAAI-10 web page). All workshop participants must preregister, and must indicate which workshop(s) they will be attending. Workshop reports are included in the workshop registration fee, and will be distributed onsite during the workshop. In most cases, reports will also be available after the conference as part of the AAAI Press technical report series.

Submission Requirements

Submission requirements vary for each workshop, but most key deadlines are uniform, unless otherwise noted. Submissions are due to the organizers on March 29, 2010, except where noted. Workshop organizers will notify submitters of acceptance by April 15, 2010. Accepted camera-ready copy is due on May 4, 2010. Please mail your submissions directly to the chair of the individual workshop according to their directions. Do not mail submissions to AAAI. For further information about a workshop, please contact the chair of that workshop.

Format

AAAI two-column format is often required for workshop submissions, and is always required for all final accepted submissions. Links to styles, macros, and guidelines for this format are located in the publications area of the AAAI website

AAAI Workshop Chairs

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- W10: PAIR: Plan, Activity, and Intent Recognition 2010
- W11: StarAI — Statistical Relational AI
- W12: Visual Representations and Reasoning
- W13: Workshop on Abstraction, Reformulation, and Approximation

Artificial Intelligence and Fun

Interactive entertainment (aka computer games) has become a dominant force in the entertainment sector of the global economy. The question that needs to be explored in depth: what is the role of artificial intelligence in the entertainment sector? If we accept the premise that artificial intelligence has a role in facilitating the entertainment and engagement of humans, then we are left with new questions:

- What are the research challenges and future directions that should drive the community as a whole?
- What are the long-term societal impacts of game AI and entertainment research?
- What should the long-term goals of AI related to entertainment be?
- How do we measure and/or model engagement, drama, aesthetics or "fun?"
- What are the ways in which an intelligent system can effect change in the human user with respect to engagement and "fun?"
- What are the applications and what are the promising theoretical and applied techniques?
- How will the ways in which we use computers or develop computer games change if we achieve our goals?
- To what extent must an intelligent system be creative?
- What is the role of AI for the designer and for end-user generated content?
- What are the linkages between entertainment and education and how can AI support them?

The workshop aims to bring together a wide spectrum of researchers working on and thinking about the role of AI in creating engaging, entertaining, "fun" experiences. Additionally, the workshop will provide for discussions between participants on significant challenges of the emerging field. The workshop format will consist of presentations of position papers and technical research contribution, discussion sessions, and invited talks. A technology demonstration session will provide a venue to show off existing and emerging AI for fun systems.

Submissions

We invite submission of position papers exploring (4–8 pages) the topics and issues surrounding the role, challenges, and opportunities of AI in creating fun, engaging, and entertaining experiences. Position papers will be eligible for long or short presentation. We also invite technical research contributions (4–8 pages) for short presentation and technology demonstrations (2 pages) that report or show recent advances in AI techniques that support fun. See supplementary workshop website for submission instructions.

Organizing Committee

Mark Riedl, chair (riedl@cc.gatech.edu, Georgia Tech), Vadim Bulitko (bulitko@gmail.com, University of Alberta), Charles Isbell (isbell@cc.gatech.edu, Georgia Tech), Ashwin Ram (ashwin@cc.gatech.edu, Georgia Tech)

Additional Information

For additional information, please visit the supplemental workshop site (research.cc.gatech.edu/aifun).

Bridging the Gap between Task and Motion Planning

It has been a longstanding goal of AI and robotics to build autonomous vehicles that can move around on land, in the sea, and in the air interacting with the physical world to achieve their goals. In recent years, the increasing availability of capable mobile platforms, manipulators, and high-precision sensors, coupled with advances in perception, localization and planning algorithms have brought us much closer to achieving this goal.

Robotic platforms have demonstrated autonomous navigation in large complex spaces for prolonged periods of time while robotic manipulators have demonstrated autonomous manipulation of objects in cluttered spaces. However, effective, task-oriented motion inevitably requires a principled approach to integrating task planning and motion planning that is capable of operating in real-time in dynamic and complex environments. Historically, general but discrete task planning has been considered extensively in the AI community while specialized continuous motion planning has been the focus in robotics.

The goal of this workshop is to investigate principled approaches to bridging the gap between these two levels of planning, to foster the exchange of ideas between the two communities of researchers, and to work towards developing common benchmarks and an infrastructure for evaluating the approaches to this problem.

With this goal in mind, we solicit contributions on the topics that include (but are not limited to) the following:

- Combining kinematic and dynamic constraints with reasoning about tasks, time, and resources.
- Integration of discrete and continuous problem representations.
- Hierarchical/multi-level planning architectures.
- Incremental techniques for online planning.
- Techniques for integrating task and manipulation planning.
- Planning for compliant motion and motion primitives.
- Planning for cooperative manipulation with multiple effectors.
- Whole body control.
- Interfaces between motion and task planners
- Discussion of good benchmark problems and an infrastructure for evaluating approaches.

Submissions

The submissions may be up to eight pages in length, and should follow AAAI formatting guidelines. We also welcome shorter (as short as two-page) submissions such as position papers and papers discussing/proposing common benchmarks and an infrastructure for evaluating the approaches to solving the problems that combine task and motion planning. In particular, we encourage relevant submissions from the AAAI challenge track.

Organizing Committee

Maxim Likhachev (University of Pennsylvania), Bhaskara Marthi (Willow Garage), Conor McGann (Willow Garage), David Smith (NASA)

Collaboratively-Built Knowledge Sources and AI

In recent years, collaborative endeavors facilitated by the Internet seem to have the answer for the knowledge acquisition bottleneck. More and more resources and collaborative endeavors have started to be incorporated and exploited as knowledge repositories for various tasks. Wikipedia with its many facets and knowledge bearing structuring, the Tags associated with images in Flickr, and question-answer collections in Yahoo! Answers are a few examples of such information sources. Amazon"s Mechanical Turk gives researchers access to "human computation" power, and is being used more and more as a solution to the difficult problems of large scale evaluations and data annotation, both crucial for the continuous development of the AI and NLP fields.

AI and NLP have the potential to both exploit and dig deeper in the mines of collective knowledge, and to help build them, by providing tools for helping generate more, better and consistent content. As with the previous events, we believe work in this area should be encouraged, followed and popularized, to promote the synergy between repositories of user-contributed knowledge and research in artificial intelligence.

The workshop is intended to be highly interdisciplinary. We encourage participation of researchers from different perspectives, including (but not limited to) machine learning, computational linguistics, information retrieval, information extraction, question answering, knowledge representation, human computer interaction and others. We also encourage participation of researchers from other areas who might benefit from the use of large bodies of machine-readable knowledge.

Topics

Topics covered by this workshop include, but are not limited to the following:

- Using user-contributed knowledge as a source of training data for AI tasks (both supervised and unsupervised)
- Automatic methods for improving the quality of user contributions
- Modeling tasks for human computation
- Integrating different resources (for example Wikipedia and WN/Cyc/other ontologies)
- Extracting annotated data from user contributions
- Enriching user contributions with new types of structural information
- User-contributed knowledge and the Semantic Web/Web 2.0
- Automatic extraction and use of cross-lingual information
- Computerized use of satellite Wiki projects such as Wiktionary, Wikibooks or Wikispecies
- Human computation like Amazon Mechanical Turk to help AI tasks
- Data mining on collaboratively-contributed resources
- Innovative graph algorithms exploiting collaborative resources
- Word Sense Disambiguation with Wikipedia, Wiktionary, and so on.

Submissions

The review process is not double-blinded. Submissions should be regular full papers (up to 6 pages), short papers reporting on late-breaking results (up to 3 pages), and descriptions of system demonstrations (up to 1 page). Please refer to the AAAI author instruction page for the templates.

Organizing Committee

Vivi Nastase (EML Research), Roberto Navigli (University of Rome "La Sapienza"), Fei Wu (University of Washington)

Additional Information

For additional information, please visit the supplemental workshop site (hal.di.uniroma1.it/WikiAI-10).

Goal-Directed Autonomy

How should an agent or group of collaborating agents, designed to exhibit intelligent behavior, respond to unanticipated failures and opportunities during plan execution in a complex (for example, partially observable, stochastic, dynamic, continuous, multiagent) environment? We argue that they should reason about their goals. In particular, they should (1) detect situations that may trigger goal reasoning, (2) explain why the situation demands attention, (3) decide how to respond (for example, via goal(s) formulation), and (4) manage the current set goals, which may involve tasks such as goal interruption, transformation, resumption, and/or deletion. This workshop will assess the benefits and limitations of alternative GDA conceptual models, representations, and reasoning methods, along with their evaluation and (potential) applications.

Agents are typically told what goals to pursue and cannot modify them. Some methods (for example, for contingency planning, dynamic replanning) can respond to execution failures, but usually ignore opportunities and do not reason about the goals themselves. GDA relaxes some common assumptions of classical planning (for example, static environments, fixed goals, no unpredictable exogenous events), and requires attention to new issues (for example, when, how, and what new goals should be formulated?). Many application contexts exist (for example, analysis of social/cultural behaviors, workflow processing, real-time video games, military missions, disaster management).

Topics

- Theoretical models
- Representation and (meta-)reasoning methods
- Roles for machine learning and/or other capabilities
- GDA enhanced planning models
- Demonstrations of utility
- Evaluation/analyses
- Comparing and contrasting GDA with other approaches
- Applications (and potential applications)

Format

This one-day workshop will include a comprehensive introductory presentation, example GDA scenarios, paper presentations, and breakout sessions for groups to identify potential GDA models and applicable methods, and their summary presentations. We will also include a panel on challenges for designing, implementing, and evaluating GDA systems. Additional time will be reserved for demos, Q/A, and discussion of workshop topics/presentations. Interested and curious researchers are most welcome!

Attendance

This workshop is limited to 75 invited attendees. Please notify coorganizer David Aha (david.aha@nrl.navy.mil) if you wish to attend.

Submission Requirements

Please e-mail AAAI-styled PDF submissions (max 6 pages), GDA system demos (4), or letters of interest (1-2) to David Aha.

Organizing Committee

David Aha (NRL), Matthew Klenk (NRC/NRL), Hector Munoz-Avila (Lehigh University), Ashwin Ram (Georgia Institute of Technology), Daniel Shapiro (ISLE)

Additional Information

For additional information, please visit the supplemental workshop site (home.earthlink.net/~dwaha/research/meetings/aaai10-gda).

Intelligent Security

Our increasingly networked world continues to provide new opportunities for security breaches that have severe consequences at the personal level (identity theft, and resulting financial losses), for businesses (theft of intellectual property, or business plans, or costly responses to the theft of customer data), and for governments. Computing and the Internet have become crucial parts of the infrastructure of almost every significant commercial or governmental enterprise. Turning off the computers or disconnecting from the network has become tantamount to turning off the power.

The use of techniques drawn from AI is increasingly relevant as the scale of the problem increases, in terms of the size and complexity of the networks being protected, the variety of applications and services provided using that infrastructure, and the sophistication of the attacks being made. With this workshop, we hope to encourage dialogue and collaboration between the AI and Security communities. Further, we hope that this will foster a continuing interaction. Previous workshops in this area include the ICAPS-09 workshop on Intelligent Security, as well as two workshops held in conjunction with the ACM Conference on Computer and Communications Security (CCS), in 2008 and 2009.

Topics

Topics of interest for this workshop include, but are not limited to, the following:

- Knowledge representation and engineering for cyber security
- Secure web services
- Development of trusted software
- Data mining and forensics
- Automated vulnerability analysis
- Automated exploit and attack generation
- Automated alerting and response
- Diagnosis and plan recognition
- Automating security analyses and audits
- Artificial immune systems
- Privacy and confidentiality
- Intelligent user interfaces for security applications
- Security and organizational structure

Format

The emphasis for this one-day workshop will be on discussion and interaction among the workshop participants, grounded in and motivated by a limited number of presentations drawn from full paper submissions, as well as an invited speaker.

Submissions

We will accept either full papers for presentation, formatted in AAAI style, or position papers with a maximum length of 2 pages, outlining the author"s background, interests, and suggested topics for or contributions to the workshop. All submissions should be e-mailed to Mark Boddy, at the e-mail address given below, preferably in PDF or PostScript format.

Organizing Committee

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Additional Information

For additional information, please visit the supplemental workshop site (www.tzi.de/~edelkamp/secart).

Interactive Decision Theory and Game Theory

Decision and game theories are powerful tools with which to design autonomous agents, and to understand interactions in systems composed of many such agents. Decision theory provides a general paradigm for designing agents that can operate in uncertain environments. Decision-theoretic models use mathematical formalism to define the properties of the agent"s environment, the agent"s sensory capabilities, the ways the agent"s actions change the state of the environment, and the agent"s goals and preferences.

Game theory adds to the decision-theoretic framework the idea of multiple agents interacting within a common environment. It provides ways to specify how agents can change the environment and how the resulting changes impact their individual preferences. Building on the assumption that agents are rational and self-interested, game theory uses the notion of Nash equilibrium to design mechanisms for various forms of interaction and communication that result in the overall system behaving in a stable, efficient, and fair manner.

Recent research has sought to merge advances in decision and game theories to build agents that may operate in uncertain environments shared with other agents. This research has investigated the adequacy of Nash equilibrium as a solution concept, focused on epistemological advances in game theory and expressive ways to model agents, and looked into new solution concepts all with the aim of designing autonomous agents that may robustly interact with other, sophisticated agents in both cooperative and noncooperative settings.

Topics

Topics include theoretical developments in decision theory or game theory applied to interactive settings, theoretical developments in interactive epistemology, representation and revision of interactive beliefs, integrating decision theory and game theory, modeling strategic agent behavior, behavioral game theory and evolutionary game theory, learning in multiagent settings, rational communication among agents, descriptions of multiagent systems employing decision theory or game theory, empirical evaluations of multiagent systems employing decision theory or game theory, nonstandard variants of decision theory, position statements, and descriptions of deployed systems.

Submissions

Submit papers electronically in postscript or in PDF to piotr@cs.uic.edu, by Monday, March 29, 2010.

Workshop Chair

Piotr Gmytrasiewicz (University of Illinois at Chicago)

Organizing Committee

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Additional Information

For additional information, please visit the supplemental workshop site (www.cs.uga.edu/~sonu/IDTGT/organization.html).

Metacognition for Robust Social Systems

The focus of this workshop is on the design considerations, issues and challenges in using metacognition to improve the robustness of social systems that include purely artificial entities or both humans and software agents. Metacognition is the process of thinking about thinking itself. It is composed of both metalevel control of cognitive activities and the introspective monitoring of such activities to evaluate and to explain them.

The significance of this workshop is to continue to bring together researchers from different areas such as multiagent systems, planning/scheduling, case-based reasoning and cognitive science. It will foster discussions about ongoing research in metacognition, identify best practices and establish directions for future research and collaborations.

Topics

Specific topics of interest include the following:

- Bounded rationality in social systems
- Centralized versus distributed metalevel control
- Computational models of self and consciousness
- Conflict resolution in social systems
- Emotional models for social systems
- Evaluation of metareasoning systems
- Human metacognition and metamemory
- Integration of metalevel control and monitoring
- Learning agents and metareasoning
- Logical introspection and reflective logic programming
- Metacognitive architectures for social systems
- Metaexplanation and self-explanation
- Metalevel control in social systems
- Metalevel monitoring in social systems
- Multiagent coordinated metareasoning
- Representing metacognitive social laws
- Role of state abstraction in metareasoning
- Self-adaptive systems and autonomic computing
- Theoretical models of metareasoning

Format

This two-day workshop will include a number of short paper presentations, thematically organized discussion sessions, a breakout problem-solving session with discussion, and two speakers. We will also include panel discussions after each group of paper presentations so that the audience can ask follow up questions that compare and contrast the related positions.

Submissions

The submissions should not exceed 8 pages in the AAAI style, either in PostScript or PDF format. Submissions must be e-mailed to both chairs (anraja@uncc.edu and darsana@cs.umd.edu) by the deadline period. Short position statements are also accepted.

Organizing Committee

Anita Raja, cochair (University of North Carolina at Charlotte) and Darsana Josyula, cochair (Bowie State University)

Program Committee

Michael L. Anderson (Franklin and Marshall College), Guido Boella (University of Torino), Michael Cox (DARPA), Ashok Goel (Georgia Tech), Sarit Kraus (Bar-Ilan University), Bob Laddaga (BBN), Victor Lesser (University of Massachusetts), Tim Oates (University of Maryland, Baltimore County), Don Perlis (University of Maryland, College Park), Matthew Schmill (University of Maryland, Baltimore County), Shlomo Zilberstein (University of Massachusetts)

Additional Information

For additional information, please visit the supplemental workshop site (www.cs.umd.edu/~darsana/AAAI10MRSS).

Model Checking and Artificial Intelligence

Model checking is the process of determining whether a logic formula is satisfied by a model. For many logics of interest, model checking can be efficiently automated. This has led to widespread interest in model checking as a technique for verifying properties of systems, and the development of model checking tools (for example, SMV, Uppaal, PHAVer, and SPIN).

The success of model checking in the computer aided verification community has led to a growth of interest in the use of model checking in artificial intelligence. Automated verification technologies are increasingly relevant for safety and reliability of autonomous systems. There has been a strong interest in this area from, for example NASA, which has applied it in the context of the Mars rovers and other autonomous robotics systems. On the other hand, model checking, in particular if viewed in the wider context of system verification, falsification and development, has recently benefited from the use of AI techniques, for example search heuristics, abstraction techniques, and constraint satisfaction (particularly SAT solving, which underlies "bounded model checking"). One of the principal benefits of model checkers in verification is their ability to return error traces when the specification is false. Dually, such traces can be viewed as plans for falsifying the specification: this duality means that there is a close relationship with planning. In directed model checking, AI planning techniques are applied in the search for error traces.

The MoChArt workshop brings together researchers from AI and model checking. Apart from presentations of accepted papers, the program will include an invited talk. We expect around 25 participants. Previous editions of the workshop were held in Patras in 2008 (as a satellite workshop of ECAI), Riva del Garda in 2006 (ECAI), San Francisco in 2005 (CONCUR), Acapulco in 2003 (IJCAI), and Lyon in 2002 (ECAI).

Topics

Topics of interest include (a more detailed list can be found on the workshop webpage):

- Application of model checking techniques to AI problems.
- Model checking and AI logics.
- Relations between different techniques used in the two fields for similar purposes (for example, reducing state explosion).
- New model checking techniques specifically for AI problems.
- Exploitation of AI techniques in model checking.
- Software tools for model checking in AI.
- Model checking for verification of AI systems.

Submissions

Preliminary papers and papers on applications are strongly encouraged. Note that this workshop will accept submissions until March 31, and will issue notifications to authors by April 23, 1010. All other deadlines are the same. Submissions must be no more than 15 pages in length. Papers must be submitted through the EasyChair web-based conference management system: follow the link from the workshop web page. All papers will be peer reviewed.

Chairs

Ron van der Meyden
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Jan-Georg Smaus
Institut für Informatik
Albert-Ludwigs-Universität Freiburg
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Program Committee

Rajeev Alur (University of Pennsylvania), Massimo Benerecetti (Universitá Napoli "Federico II"), Alessandro Cimatti (IRST, Trento), Stefan Edelkamp (Universität Bremen), Enrico Giunchiglia (Universitá Genova), Patrice Godefroid (Microsoft Research, Redmond), Aarti Gupta (NEC Laboratories America, Princeton), Klaus Havelund (NASA Jet Propulsion Laboratory and Caltech), Orna Kupferman (Hebrew University), Marta Kwiatkowska (University of Oxford), Alessio Lomuscio (Imperial College London), Charles Pecheur (Université Catholique de Louvain), Doron Peled (Bar Ilan University), Jussi Rintanen (NICTA and Australian National University), Michael Wooldridge (University of Liverpool)

Additional Information

For additional information, please visit the supplemental workshop website (mochart.informatik.uni-freiburg.de).

Neural-Symbolic Learning and Reasoning

Artificial intelligence researchers continue to face huge challenges in their quest to develop truly intelligent systems. The recent developments in the field of neural-symbolic computation bring an opportunity to integrate well-founded symbolic artificial intelligence with robust neural computing machinery to help tackle some of these challenges.

Neural-symbolic systems combine the statistical nature of learning and the logical nature of reasoning. The Workshop on Neural-Symbolic Learning and Reasoning is intended to create an atmosphere of exchange of ideas, providing a forum for the presentation and discussion of the key topics related to neural-symbolic integration.

Topics

- The representation of symbolic knowledge by connectionist systems
- Learning in neural-symbolic systems
- Extraction of symbolic knowledge from trained neural networks
- Reasoning in neural-symbolic systems
- Biological inspiration for neural-symbolic integration
- Integration of logic and probabilities in neural networks
- Structured learning and relational learning in neural networks
- Applications in robotics, simulation, fraud prevention, semantic web, fault diagnosis, bioinformatics, and so on.

Submission

Researchers and practitioners are invited to submit original papers that have not been submitted for review or published elsewhere. Submitted papers must be written in English and should not exceed 6 pages in the case of research and experience papers, and 3 pages in the case of position papers (including figures, bibliography and appendices) in AAAI-10 format as described in the AAAI-10 author instructions. Submissions are not anonymous. All submitted papers will be judged based on their quality, relevance, originality, significance, and soundness. Papers must be submitted via easychair in PDF format at www.easychair.org/conferences/?conf=nesy10.

Presentation

Accepted papers will have to be presented during the workshop. The workshop will include extra time for audience discussion of the presentation allowing the group to have a better understanding of the issues, challenges and ideas being presented.

Organizing Committee

Artur d'Avila Garcez (City University London, UK), Pascal Hitzler (Wright State University, USA), Luis Lamb (Universidade Federal do Rio Grande do Sul, Brazil)

Additional Information

For additional information, please visit the supplemental workshop site (www.neural-symbolic.org/NeSy10).

PAIR: Plan, Activity, and Intent Recognition

Plan recognition, activity recognition, and intent recognition all involve making inferences about other actors from observations of their behavior, that is, their interaction with the environment and with each other. The observed actors may be software agents, robots, or humans. This synergistic area of research combines and unifies techniques from user modeling, machine vision, intelligent user interfaces, human/computer interaction, autonomous and multiagent systems, natural language understanding, and machine learning. It plays a crucial role in a wide variety of applications including assistive technology, software assistants, computer and network security, behavior recognition, coordination in robots and software agents, and e-commerce and collaborative filtering.

This diversity of applications and disciplines, while producing a wealth of ideas and results, has contributed to fragmentation in the field, as researchers publish relevant results in a wide spectrum of journals and conferences.

This workshop seeks to bring together researchers and practitioners from diverse backgrounds, to share in ideas and recent results. It aims to identify important research directions and opportunities for synthesis and unification. Contributions are sought in the following areas of research:

- Plan, activity, intent, or behavior recognition
- Adversarial planning, opponent modeling
- Modeling multiple agents, modeling teams
- User modeling on the web and in intelligent user interfaces
- Acquaintance models
- Plan recognition and user modeling in marketplaces and e-commerce
- Intelligent tutoring systems (ITS)
- Machine learning for plan recognition and user modeling
- Personal software assistants
- Social network learning and analysis
- Monitoring agent conversations (overhearing)
- Observation-based coordination and collaboration (teamwork)
- Multiagent plan recognition
- Observation-based failure detection
- Monitoring multiagent interactions
- Uncertainty reasoning for plan recognition
- Commercial applications of user modeling and plan recognition
- Representations for agent modeling
- Modeling social interactions
- Inferring emotional states
- Reverse engineering and program recognition
- Programming by demonstration
- Imitation

Due to the diversity of disciplines engaging in this area, related contributions in other fields are also welcome.

Submissions

We welcome submissions describing either relevant work or proposals for discussion topics that will be of interest to the workshop. Submissions are accepted in PDF format only, using the AAAI formatting guidelines. Submissions must be no longer than eight pages in length, including references and figures. Please e-mail submissions to gitars@eecs.ucf.edu.

Organizing Committee

Christopher Geib (primary contact) (University of Edinburgh, cgeib@inf.ed.ac.uk), David Pynadath (USC/ISI, pynadath@isi.edu), Hung Bui (SRI, bui@ai.sri.com), Gita Sukthankar (University of Central Florida, gitars@eecs.ucf.edu)

Additional Information

For additional information, please visit the supplemental workshop site (people.ict.usc.edu/~pynadath/PAIR-2010).

Statistical Relational Artificial Intelligence (StarAI)

Much has been achieved in the field of AI, yet much remains to be done if we are to reach the goals we all imagine. One of the key challenges with moving ahead is closing the gap between logical and statistical AI. Logical AI has mainly focused on complex representations, and statistical AI on uncertainty. Intelligent agents, however, must be able to handle both the complexity and the uncertainty of the real world.

Recent years have seen an explosion of successes in combining probability and (subsets of) first-order logic respectively programming languages and databases in several subfields of AI: reasoning, learning, knowledge representation, planning, databases, NLP, robotics, vision, and so on. Nowadays, we can learn probabilistic relational models automatically from millions of inter-related objects. We can generate optimal plans and learn to act optimally in uncertain environments involving millions of objects and relations among them. Exploiting shared factors can speed up message-passing algorithms for relational inference but also for classical propositional inference such as solving SAT problems. We can even perform lifted probabilistic inference avoiding explicit state enumeration by manipulating first-order state representations directly.

So far, however, the researchers combining logic and probability in each of these subfields have been working mostly independently. We believe the current situation actually provides us with an opportunity for attempts at synthesis, forming a common core of problems and ideas, and cross-pollinating across subareas. We would like to explore the minimal perturbations required for each of the AI subfields to start using statistical relational (SR) techniques.

Thus, the goal of the StarAI workshop is to reach out to the general field of AI and to explore what might be called statistical relational AI. We seek to invite researchers in all subfields of AI to attend the workshop and to explore together how to reach the goals imagined by the early AI pioneers.

Submissions

We anticipate a one-day workshop with about 40 participants, position statements and technical papers, two invited speakers, and a panel discussion. Those interested in attending should submit either a technical paper (AAAI style, 6 pages maximum) or a position statement (AAAI style, 2 pages maximum) in PDF format via the CMT site linked from the supplemental workshop homepage. All submitted papers will be carefully peer-reviewed by multiple reviewers and low-quality or off-topic papers will not be accepted.

Organizing Committee

Kristian Kersting (University of Bonn, Fraunhofer IAIS, Germany, kristian.kersting@iais.fraunhofer.de), Stuart Russell (University of California Berkeley, USA, russell@cs.berkeley.edu), Leslie Pack Kaelbling (MIT, USA, lpk@csail.mit.edu), Alon Halevy (Google, USA, halevy@google.com), Sriraam Natarajan (University of Wisconsin at Madison, USA, natarasr@biostat.wisc.edu), Lilyana Mihalkova (University of Maryland at College Park, USA, lily@cs.umd.edu)

The program committee consists of over 40 illustrious researchers from different subfields of AI including but not limited to machine learning, natural language programming, planning, ILP, SRL, knowledge representation, vision, robotics, databases, and bioinformatics.

Additional Information

For additional information, please visit the supplemental workshop site (www.biostat.wisc.edu/~natarasr/starai.html).

Visual Representations and Reasoning

Visual representations and reasoning play an important role in human problem solving, modeling, and design. Although the ability to think like a human long has been a goal of AI, today's AI agents nonetheless are limited in their visual reasoning. Advances in this area may (1) enable more extensive autonomous reasoning in visual domains, (2) foster deeper computational support for and understanding of human problem solving, modeling, and design, and (3) promote more intense use of visual representations in human-machine interaction. These technological goals raise basic theoretical issues such as the precise role of visual reasoning in intelligence and the relationship between visual reasoning and perceptual processes. Drawing participants from diverse research communities such as AI, HCI, cognitive science, learning science and design science, this interdisciplinary workshop aims to describe and discuss the latest scientific research that may inform and influence progress towards these goals.

Topics

Topics of interest to this workshop include, but are not limited to the following:

- Cognitive architectures
- Comparisons of visual versus propositional approaches
- Diagrammatic reasoning
- Educational applications
- Formal theories of visual representation
- Mental imagery in cognition
- Nultimodal representations and reasoning
- High-level perception
- Sketch understanding
- Spatial representations and reasoning
- Visual media
- Visual representations and mental models
- Visual representations in creativity and design
- Visual representations in human culture
- Visual similarity and analogy

Format

This workshop will be a one-day meeting with a combination of full and short paper presentations, along with one or two keynote speakers. Each session will be followed by a panel discussion.

Attendance

Attendance at the workshop will be limited to about 40 participants, to encourage active discussion.

Submissions

We welcome two types of submissions: full papers (6-8 pages) and shorter extended abstracts or position papers (2-3 pages). Submissions must follow the standard AAAI two-column format, and PDF versions should be submitted via EasyChair. Please direct all other inquiries to aaai10vrr@easychair.org

Organizing Committee

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Program Committee

Thomas Barkowsky (University of Bremen), Randall Davis (Massachusetts Institute of Technology), Ronald Ferguson (SAIC), Gabriela Goldschmidt (Technion – Israel Institute of Technology), Mateja Jamnik (University of Cambridge), N. Hari Narayanan (Auburn University), Nancy Nersessian (Georgia Institute of Technology), Patrick Olivier (Newcastle University), Steven Tanimoto (University of Washington), Paul Thagard (University of Waterloo), Barbara Tversky (Stanford University)

Additional Information

For additional information, please visit the supplemental workshop site (dilab.gatech.edu/AAAI-10-VRR-Workshop).

Workshop on Abstraction, Reformulation, and Approximation

The 2010 Workshop on Abstraction, Reformulation, and Approximation (WARA-2010) will be held in conjunction with AAAI-10 with the goal of providing a forum for intensive interaction among researchers in all areas of Artificial Intelligence and Computer Science with an interest in the different aspects of abstraction, reformulation, and approximation techniques. The aim and scope of this workshop are similar to an independent symposium called SARA. The diverse backgrounds of participants of previous SARA symposia has led to a rich and lively exchange of ideas, allowed the comparison of goals, techniques, and paradigms, and helped identify important research issues and engineering hurdles. This workshop will continue to do the same.

It has been recognized since the inception of AI that abstractions, problem reformulations, and approximations (ARA) are central to human common-sense reasoning and problem solving and to the ability of systems to reason effectively in complex domains. ARA techniques have been used in a variety of problem-solving settings and application domains, primarily to overcome computational intractability by decreasing the combinatorial costs associated with searching large spaces. In addition, ARA techniques are also useful for knowledge acquisition and explanation generation.

Topics

Topics of interest include all aspects of abstraction, reformulation and approximation, including (but not limited to) the following:

- New techniques for automatically constructing and selecting appropriate ARA methods
- Frameworks that unify and classify ARA techniques
- Empirical and theoretical studies of the costs and benefits of ARA
- Applications of ARA to search, constraint satisfaction, deterministic and probabilistic planning, theorem proving, logic programming, game playing, parallel and distributed search, distributed data and knowledge bases, internet search and navigation, knowledge compilation, knowledge acquisition, knowledge reformulation, simulation, design, diagnosis and control of physical systems (including mobile robots), automatic programming, analogical reasoning, case-based reasoning, reasoning under uncertainty, reinforcement learning, machine learning, and speed-up learning
- Fielded applications demonstrating the benefits of ARA to a variety of real-world domains.

Submissions

The workshop will consist of an invited talk, oral presentations, a poster session, and discussion/brainstorming sessions. Submissions are sought both for new work in the area of ARA as well as for work recently published or soon to be published in another conference or journal; for submissions of the latter kind, the authors must clearly state the venue of publication. The workshop proceedings will appear as an AAAI Technical Report, which are citable archival proceedings. Submissions must be in AAAI format and be 2–6 pages in length. Please submit as PDF via email to sabhar@cs.cornell.edu.

Organizing Committee

Gregory Provan (g.provan@cs.ucc.ie, University College Cork, Ireland) Ashish Sabharwal (sabhar@cs.cornell.edu, Cornell University, USA)

Program Committee

Chris Beck (University of Toronto, Canada), Vadim Bulitko (University of Alberta, Canada), Berthe Choueiry (University of Nebraska-Lincoln, USA), Fausto Giunchiglia (University of Trento, Italy), Mike Genesereth (Stanford University, USA), Robert Holte (University of Alberta, Canada), Ian Miguel (University of St Andrews, UK), Michael Lowry (NASA, USA), Gregory Provan (University College Cork, Ireland), Wheeler Ruml (Palo Alto Research Center, USA), Ashish Sabharwal (Cornell University, USA), Lorenza Saitta (Universita del Piemonte Orientale, Italy), Sven Koenig (University of Southern California, USA), Toby Walsh (University of New South Wales, Australia), Jean-Daniel Zucker (Universite Paris 13 / UR 079 Geodes, France)

Additional Information

For additional information, please or visit the supplemental workshop site (www.cs.cornell.edu/~sabhar/workshops/wara-2010) or send an e-mail to the organizers.