Twenty-Fifth AAAI Conference on Artificial Intelligence
(AAAI-11)
Workshop Program

August 7–8, 2011
San Francisco, California
USA

AAAI Workshop Chairs

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AAAI is pleased to present the AAAI-11 Workshop program. Workshops will be held Sunday and Monday, August 7–8, 2011 at the at the Hyatt Regency San Francisco. The AAAI-11 workshop program includes 15 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 it is discounted for AAAI-11 technical registrants. Registration information will be mailed directly to all invited participants. 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 in CD format 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 April 22, 2011, except where noted. Workshop organizers will notify submitters of acceptance by May 13, 2011. Accepted camera-ready copy is due on May 27, 2011. 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

Contents

Pervasive context-aware computing technologies are essential enablers for next-generation applications for the digital workplace, consumer electronics, research, education, government, and health-care. Context-aware cognitive support requires activity and context information to be captured and, ever more often, moved across devices — securely, efficiently, and with multidevice interoperability.

This workshop intends to lay the groundwork for techniques to represent context within activity models using a synthesis of HCI/CSCW and AI approaches to reduce demands on people, such as the cognitive load inherent in activity/context switching, and enhancing human and device performance.

Main Objectives

There are three intended end results of the workshop: (1) Develop two-three key themes for research with specific opportunities for collaborative work. (2) Create a core research group forming an international academic and industrial consortium to significantly augment existing standards/drafts/proposals and create fresh initiatives to enable capture, transfer, and recall of activity context across multiple devices and platforms used by people individually and collectively. (3) Review/revise an initial draft of structure of an activity context exchange language (ACEL) including identification of use cases, domain-specific instantiations needed, and drafts of initial reasoning schemes and algorithms.

Topics and Research Questions to be Explored

This workshop will explore activity and context modeling issues of capture, representation, standardization and interoperability for creating context-aware and activity-based assistive cognition tools with topics including, but not limited to the following:

- ☙ Activity modeling, representation, detection
- ☙ Context representation within activities
- ☙ Semantic activity reasoning, search
- ☙ Security and privacy
- ☙ Information integration from multiple sources, ontologies
- ☙ Context capture

Format

This two-day workshop will include keynotes to set the tone, comprehensive reviews of the field, new proposals, panel focusing on key research issues and directions, presentations on new frameworks for synthesis of multiple/new approaches, poster presentations, and working groups to investigate subareas. The workshop will conclude with the formation of an international consortium.

Participation

The size of the workshop will be 25–35 researchers with about 15 invited participants and about 15 participants selected from the respondents to the call for participation.

Submissions

Researchers should submit 6–8 page papers or 3–4 page position statements in the standard AAAI format or provide a 1–2 page statement of interest along with a description of their related work and publications. All the selected papers will be published in an AAAI technical report. All submissions, statements, or requests to be on this workshop's (moderated) mailing list should be addressed to Vikas Agrawal (activity-context@infosys.com)

Organizing Committee

Lokendra Shastri, Chair (Infosys), James "Bo" Begole (PARC–Palo Alto Research Center), Tim Finin (University of Maryland, Baltimore), Henry Kautz (University of Rochester), Matthai Philipose (Intel Research Labs).

Program Committee

Jakob E. Bardram (IT University of Copenhagen), Oliver Brdiczka (PARC), Dan Diaper (DDD SYSTEMS), Arijit Laha (Infosys), Ora Lassila (Nokia), Sanjiv Nanda (QualComm), Philippe Palanque (IRIT), Kurt Partridge (PARC), Munindar P. Singh (North Carolina State University), Desney Tan (Microsoft Research), Gerrit van der Veer (Open University Netherlands), Evelyne Viegas (Microsoft Research), Yingxu Wang (University of Calgary).

Additional Information

For additional information and fuller descriptions of the topics to be explored, please visit the supplemental workshop site (activitycontext.org/call-for-participation)

Activity Context Representation: Techniques and Languages

Analyzing Microtext

Text and dialogue analysis are important areas of AI research, and there have been many advances for several types of communications (such as news feeds, e-mails, technical support forums, and blogs). However, fewer efforts have focused on studying microtext (Ellen, ICAART-11) (for example, instant messages, chat rooms, and microblog services such as Twitter, Buzz, and the DoD's Chirp service), which are semi-structured and are also distinguished by their short length, informality, lexicon, and (in the case of group chat) multiple interwoven conversations. Along with their typically poor grammar, misspellings, and frequent use of icons, these characteristics make microtext content challenging to analyze.

The goal of this workshop is to provide a research forum for cross-fertilization of ideas pertaining to analysis of microtext, including discussion on tasks of interest, investigations of analysis techniques, surveys on related work, presentation of recent accomplishments, reports on relevant applications (for example, marketing, alerting, expertise finding, crime prevention, antiterrorism, collaborative learning, and communication patterns in teams for training and performance assessment), and recommendations for future research foci.

Topics

- Thread and topic detection/extraction
- Identifying individual message and user characteristics (for example, urgency, gender, expertise, age)
- Summarization (for example, of a chat room's threads)
- Author attribution
- NLP issues specifically pertaining to microtext analysis
- Message analysis databases and applications (for example, educational, law enforcement)

Format

This one-day workshop will include a comprehensive introductory presentation, invited talks from active researchers, paper and poster presentations, and a panel focusing on key research issues and directions. Additional time will be reserved for a question and answer session and discussion of workshop topics and presentations. Interested and curious researchers are most welcome!

Attendance

This workshop is limited to 75 invited attendees. Please notify cochair David Uthus (david.uthus.ctr @nrl.navy.mil) if you wish to attend.

Submissions

Please e-mail AAAI style PDF submissions (maximum of 6 pages) or letters of interest (1– 2 pages) to:
David Uthus, cochair
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4555 Overlook Ave., SW
Washington, DC 20375
david.uthus.ctr@nrl.navy.mil
Telephone:202 767-0018
Fax: 202 767-2166).

Organizing Committee

David W. Aha (Naval Research Laboratory, david.aha @nrl.navy.mil), Douglas W. Oard (University of Maryland, oard@umd.edu), Sowyma Ramachandran (Stottler-Henke Associates, Inc., sowmya@stottlerhenke. com), David Uthus (National Research Council and Naval Research Laboratory; david.uthus.ctr@nrl.navy. mil)

Additional Information

For additional information, please visit the supplemental workshop site (home.earthlink.net/~dwaha/research/meetings/aaai11-amw)

Recent advances in adversarial reasoning are now being used in many exciting domains, including deployed software tools for homeland security, poker bots capable of beating expert human players, RoboCup teams with sophisticated adaptive strategies, and tools for managing network and information security. All of these examples share the fundamental challenge of developing agent strategies and decision-making tools that take into account the likely behavior of one or more adversaries. Addressing this challenge in complex real-world domains has inspired many novel tools for adversarial reasoning spanning computational game theory, robust decision making under uncertainty, risk analysis, and opponent modeling.

The main goal of this workshop is to facilitate discussion between researchers working on different applied problems in adversarial reasoning and risk modeling. These applications share many of the same core research challenges, but often the work is presented to a limited audience specializing in a particular type of application. Here, we aim to provide a venue for crossfertilization that will give researchers working in different domains the opportunity to share their knowledge and techniques for adversarial modeling under risk and uncertainty, potentially leading to new ways to leverage domain specific methods into a coherent global framework for applied strategic reasoning.

Topics

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

- ❦ Applications of adversarial reasoning
- ❦ Noncooperative game theory
- ❦ Robust planning and optimization
- ❦ Opponent modeling
- ❦ Modeling human behavior in adversarial settings
- ❦ Risk and uncertainty in multiagent systems
- ❦ Evaluation and benchmarking for real-world applications
- ❦ Expert elicitation and domain modeling
- ❦ Scalable algorithms and structured representations
- ❦ Learning and adaptation in adversarial domains
- ❦ Position papers and surveys

The workshop will include presentations of paper submissions, invited talks and a discussion panel. Authors of accepted papers will make a presentation of roughly 20 minutes, followed by a discussion period for questions. All presenters of accepted full papers and short papers will be expected to present their work at a poster session during the breaks.

Attendance

Authors of accepted papers and invited speakers will automatically be invited. Registration is also open to interested members of the broader AAAI community; please contact the organizers if you are interested in attending.

Submissions

The review process is not double-blind. Submissions should be regular full papers (up to 8 pages) or short papers reporting on late-breaking results (up to 2 pages). Please refer to the AAAI author instruction page for the templates. Submit electronically to agmon@cs.utexas.edu. Please write on the e-mail subject AAAI AARM Submission, write the abstract in the content, and attach the PDF file to it.

Workshop Chairs

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Organizing Committee

Christopher Kiekintveld, Noa Agmon, Michael Bowling (Department of Computing Science, University of Alberta. bowling@cs.ualberta.ca), Janusz Marecki (IBM T. J. Watson Research Center. janusz.marecki@gmail.com)

Additional Information

For additional information, please visit the supplemental workshop site (www.cs.utep.edu/kiekintveld/Workshops/AARM11.html)

Applied Adversarial Reasoning and Risk Modeling

Artificial Intelligence and Smarter Living: The Conquest of Complexity

Intelligent technologies are transforming our common, everyday experience at home, in the office and at play as our world becomes increasingly instrumented and interconnected. Consider, for example, growing interest in conferences and specializations such as RoboCup@Home, Intelligent User Interfaces, Commonsense Reasoning, the Internet of Things, Human-Robot Interaction, Pervasive and Ambient Computing, Social Robotics, Analytics and Game AI. While these disparate research efforts have distinct methods and objectives, they each consider the relationship between intelligent systems design and the lives and lifestyles of their users.

The purpose of this workshop is to explore the role of Artificial Intelligence in the context of smarter living. This workshop will focus on the application of artificial intelligence to allow people to live effective, efficient and sustainable lives within their home, office, city and broader ecosystems. The challenge of creating technologies for smarter living is in the creation of new ideas for designing and developing systems that can enact decisions autonomously, pay attention, adapt to change, and anticipate stakeholder actions and intentions.

Homes, workplaces, cars, public spaces and human bodies are increasingly wired with sensors and actuators. Robots are dropping in price and entering the home. Mobile telephones and other computing devices are becoming ubiquitous and pervasive. How do we represent the data and knowledge from these devices? How do we reason with this knowledge effectively? How do we apply this knowledge through feedback and actuation to improve lives? What is the relationship between the user, the device and the artificial intelligence?

This workshop is intentionally transdisciplinary. We seek to bring together research interests that are not traditionally close. In particular, the workshop will provide a venue for fruitful discussion between artificial intelligence researchers exploring pervasive computing, social robotics, cognitive science, software engineering, law, planning and knowledge representation.

Submissions

Please submit (1) scientific papers of up to 6 pages, (2) position/challenge papers discussing preliminary work or controversial ideas of up to 4 pages or (3) system demonstrations (submitted as a 2 page system description). Submit to www.easychair.org/conferences/?conf=smarterliving2011

Workshop Chairs

Benjamin Johnston (Benjamin.Johnston@uts.edu.au) and Mary-Anne Williams (Mary-Anne.Williams@uts.edu.au), Smarter Living Studio, University of Technology, Sydney

Organizing Committee

Ryan Calo (Center for Internet and Society Law School, Stanford University, USA), Xiaoping Chen (Director, AI Lab, University of Science and Technology of China), Michael Genesereth (Center for Computers and Law, Stanford University, USA), Sajjad Haider (Institute of Business Administration, Pakistan), Benjamin Johnston, cochair (University of Technology, Sydney), Xun Wang (University of Technology, Sydney), Glenn Wightwick (IBM Distinguished Engineer, Chief Technologist, IBM Australia), Roland Vogl (Center for Computers and Law, Stanford University, USA), Mary-Anne Williams, cochair (University of Technology, Sydney)

Additional Information

For additional information, please visit the supplemental workshop site (www.innovation.it.uts.edu.au/smarterliving)

Cloud computing is an emerging paradigm that aims at delivering on-demand computing to any consumer who has access to the internet. Cloud systems can run software on virtual machines that can be created on-demand in large data centres. These services will be provided through large-scale networks of new data centers, which in turn will connect to the data centers already established by organizations. As a user's demand for computing power increases, new virtual computers can be created and configured; as demand decreases, unused hardware resources can be made available again.

The objective of this workshop is to bring together researchers and technologists from academia and industry to explore the applications of artificial intelligence to the most pertinent technical challenges in data center management and cloud computing. This workshop takes advantage of AAAI-11's proximity to Silicon Valley by hoping to attract participants from Cisco, EMC, Google, HP, IBM, Intel, Network Appliance, Oracle, SAP, VMware, and so on. Workshop participation will be by invitation only. If you would like to participate, submit either a full paper of no more than 6 pages (6,000 words); a short paper, or problem instance (at most 3 pages or 3,000 words); or a position statement (1 page). Short papers may address an important problem for further research or describe a practical problem or an interesting lesson learned. In addition, we solicit proposals for short demonstrations (at most 3 pages with demonstrations taking at most 15 minutes). All submissions should conform to AAAI's formatting guidelines.

Topics

Topics of interest related to data centre management and cloud computing include but are not limited to the following applications of AI methods to problems in the domain: online stochastic optimisation; machine learning and data mining; parameterised complexity and graph theory; optimal stopping theory for online decision-making; game theory and incentive compatible mechanism design; virtualisation; data governance, trust and security; energy and performance profiling, accounting; metrics, benchmarks, interfaces; principles of power management; performance, energy and other resource trade-offs, energy complexity; compiler optimization, application design; system-level optimization, cross-layer coordination; load and resource modeling, management; scheduling, run-time adaptation, feedback control; processor, network, storage, hardware components and architecture; reliability and power management; adaptive configuration and data placement strategies in storage arrays; protocol management and conversion in an SOA environment.

Workshop Cochairs

Barry O'Sullivan (4C, UCC, Ireland), Donagh Buckley (EMC, Ireland), Burt Kaliski (EMC, USA)

Submissions

www.easychair.org/conferences/?conf=aidc2011 Contact aidc2011@easychair.org

Additional Information

For additional information, please visit the supplemental workshop site (osullivan.ucc.ie/aaai-2011-aidc)

AI for Data Center Management and Cloud Computing

Automated Action Planning for Autonomous Mobile Robots

The purpose of this workshop is to bring researchers from the automated planning and mobile robotics communities together to investigate the research issues on the use of automated high-level action planning techniques for mobile robots. Recently, there have been significant advances in both fields. Path or trajectory planning has dealt with realistic issues such as localization, mapping and efficient navigation techniques for mobile robots. Automated planning research has focused on devising efficient action planners that scale up to large planning problems. International Planning Competitions (IPC) have emerged as standard platforms to test and validate the success of novel planners and to determine the limits imposed by enhanced domain representations with realistic constraints.

However, path or trajectory planning algorithms operate at a low level, thus they are not able to deal with complex missions involving interrelated actions. Similarly, action planning algorithms operate at a high level and thus are not able to deal with the hardware and physical environment limitations. In addition to simple navigation tasks, high-level automated planning techniques are essential for robots to perform complex missions involving interrelated actions. Considerable progress has been made in both fields and it is the right time for fostering interaction.

Robots as embodied agents provide convenient tools to test and validate high-level planners on real planning problems. This workshop aims to foster the exchange of ideas and to promote research on automated planning representations, models and algorithms for mobile robots to achieve complex planning tasks. The emphasis will be placed on the formal aspects of action planning for mobile robots. The use of the latest promising action planners on mobile robots, their applicability and action/domain representation issues will be analyzed.

Topics

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

- Formal action/domain representations for automated planning in mobile robotics
- Automated planners for autonomous mobile robots (dynamic action planning, continual action planning, contingent action planning, distributed action planning, generating concurrent plans, adversarial action planning in competitive robotic domains)
- Integrating action planning and scheduling on autonomous mobile robots
- Analysis of current action planners for autonomous mobile robots
- Benchmark planning domains for mobile robots
- Real-world planning applications for autonomous mobile robots

Format

The emphasis for this one-day meeting will be on discussion and interaction among the participants by the presentations of research papers. Invited talks and a panel discussion by experts from both the planning and robotics communities are planned. Since the topic is on real robots, the participants are welcome to present their video or live demonstrations.

Submissions

The submissions should not exceed 6 pages in the AAAI style, either in PostScript or PDF format. Demonstration description and position papers with a maximum length of 2 pages are also welcome. Further details and submission instructions can be found on the workshop webpage.

Workshop Chairs

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Rachid Alami (LAAS–CNRS), Tucker Balch (Georgia Institute of Technology), Michael Beetz (Technische Universitaet Muenchen), Jörg Hoffmann (INRIA), Subbarao Kambhampati (Arizona State University), Sven Koenig (University of Southern California), Manuela Veloso (Carnegie Mellon University)

Additional Information

For additional information, please visit the supplemental workshop site (air.cs.itu.edu.tr/PAMR2011)

The series of workshops on computational models of natural argument, active since 2001, acts to nurture and provide succour to the ever-growing community working in "argument and computation." AI has witnessed a prodigious growth in uses of argumentation throughout many of its subdisciplines: agent system negotiation protocols that demonstrate higher levels of sophistication and robustness; argumentation-based models of evidential relations; groupwork tools that use argument to structure interaction and debate; computer-based learning tools that exploit monological and dialogical argument structures in designing pedagogic environments; decision support systems that build upon argumentation theoretic models of deliberation to better integrate with human reasoning. The CMNA workshop series focuses in particular on "natural" argumentation. Naturalness may involve the use of means that are more visual than linguistic to illustrate a point, such as graphics or multimedia, or to the use of more sophisticated rhetorical devices, interacting at various layers of abstraction; or the exploitation of "extra-rational" characteristics of the audience, taking into account emotions and affective factors.

Topics

Contributions are solicited addressing, but not limited to, the following areas of interest:

- ❦ The characteristics of natural arguments: ontological aspects and cognitive issues.
- ❦ The use of models from informal logic and argumentation theory, and in particular, approaches to specific schools of thought developed in informal logic and argumentation.
- ❦ Rhetoric and affect: the role of emotions, personalities, etc. in models of argumentation.
- ❦ The linguistic characteristics of natural argumentation. Empirical work based on corpora looking at these topics would be especially welcomed.
- ❦ Natural argumentation and media: visual arguments, multimodal arguments, spoken arguments.
- ❦ Evaluative arguments and their application in AI systems (such as decision support and advice giving).
- ❦ Applications of argumentation based systems, including, for example, the pedagogical, health-related, political, and promotional.
- ❦ Tools for interacting with structures of argument, including visualisation tools and interfaces supporting natural, stylised or formal dialogue.
- ❦ The building of computational resources such as online corpora related to argumentation.

Format

This workshop intends to provide, primarily, an informal forum for discussion, a venue to foster discussion and encourage cooperation. To facilitate this, accepted papers (by multiple reviewer blind review) are distributed to all participants in advance of the event, to improve coherence and interaction.

Attendance

Attendance at this workshop is open to all interested in the field, as well as authors of accepted papers. Those interested to attend who have not a paper to present, are encouraged to send a brief submission of interest to the workshop chairs before the event.

Submission Requirements

The workshop encourages submissions in three categories: (1) Long papers (up to 10 pages), (2) short papers describing work in progress (up to 5 pages), and (3) demonstration of implemented systems (submissions should be accompanied by written reports of up to 3 pages). Papers should be submitted at www.easychair.org/conferences/?conf=cmna11

Workshop Chairs

- ❦ Floriana Grasso (floriana@liverpool.ac.uk) Department of Computer Science University of Liverpool Ashton Building, Ashton Street Liverpool L69 3BX, UK
- ❦ Nancy Green (nlgreen@uncg.edu) Department of Computer Science, 159 Petty Building, University of North Carolina Greensboro, Greensboro, NC 27402-6170 Tel: 336-256-1133
- ❦ Chris Reed (chris@computing.dundee.ac.uk) School of Computing University of Dundee Dundee DD1 4HN, UK

Program Committee

Leila Amgoud (IRIT, France), Trevor Bench-Capon (University of Liverpool, UK), Tim Bickmore (Northeastern University, Boston), Guido Boella (University of Turin, Italy), Tom Gordon (Fraunhofer FOKUS, Berlin, Germany), Marco Guerini (ITC-IRST, Trento, Italy), Helmut Horacek (University of the Saarland, Germany), Anthony Hunter (University College London, UK), David Moore (Leeds Metropolitan University, UK), Fabio Paglieri (ISTC-CNR, Rome, Italy), Vincenzo Pallotta (University of Fribourg, Switzerland), Cecile Paris (CSIRO, Sydney, Australia), Paul Piwek (Open University, UK), Henry Prakken (University of Utrecht and University of Groningen, The Netherlands), Sara Rubinelli (University of Lugano, Switzerland), Patrick Saint-Dizier (IRIT-CNRS, Toulouse, France), Doug Walton (University of Winnipeg, Canada), Adam Wyner (University of Liverpool, UK), Tangming Yuan (University of York, UK)

Additional Information

For additional information, please visit the supplemental workshop site (hww.cmna.info/CMNA11)

Generalized Planning

The goal of this workshop is to explore ways of increasing the scope and scalability of automated planning by constructing and utilizing plans with rich representations and control structures. We plan to bring together researchers interested in new action and plan representations, as well as in synthesis, learning and analysis of plans. This workshop follows the very successful 2009 generalized planning workshop that was held in conjunction with ICAPS.

An additional objective of this workshop is to foster a greater exchange of ideas between many areas of research that these problems are connected with. These include knowledge representation, abstraction, learning, inductive logic programming, hierarchical decision making paradigms such as partial policies and HTNs, program synthesis, automated service composition, as well as plan verification and model checking in AI, in addition to the various forms of automated planning.

Topics

Potential topics include but are not limited to the following:

- Generating plans with loops
- Generating parametrized plans
- Instantiating parametrized plans
- Evaluation of generalized plans
- Learning macro actions
- Reasoning and planning with complex actions
- Learning and planning with domain control knowledge
- Learning and planning with partial policies
- Automated service composition
- Plan verification
- Model checking and abstraction for planning
- Generating robust or partial schedules

Format

The workshop program will include technical presentations, discussion session(s), and a poster session, depending on the participation. We will also have invited talks by three prominent researchers: Alessandro Cimatti, Hector Levesque and Stuart Russell. Further details will be posted at the workshop website.

Submissions

We invite technical papers (up to 8 pages), extended abstracts (up to 2 pages) and papers with clear formulations of open problems and potential approaches (up to 4 pages). We invite submissions including works in progress and mature work that may have been published at other research venues. Submission of previously published work may be in the form of a resubmission of a previous paper, or a position/survey paper that overviews and cites a body of work.

Paper submissions should be in PDF format and typeset in the AAAI style. Paper submissions and queries should be e-mailed to Siddharth Srivastava (siddharth@cs.umass.edu) with "GenPlan11" in the subject. Please note that if accepted, at least one of the authors will have to register and attend the workshop. AAAI-11 student volunteers will be given complimentary technical registrations.

Program Committee

Eyal Amir (University of Illinois at Urbana-Champaign, USA), Jorge Baier (Catholic University of Chile, Chile), Chitta Baral (Arizona State University, USA), Adi Botea (NICTA and Australian National University, Australia), Amanda Coles (University of Strathclyde, UK), Christian Fritz (Palo Alto Research Center, USA), Hector Geffner (ICREA, Spain), Robert Goldman (SIFT, USA), Subbarao Kambhampati (Arizona State University, USA), Roni Khardon (Tufts University, USA), Gerhard Lakemeyer (Aachen University of Technology, Germany), Bernhard Nebel (University of Freiburg, Germany), Karen Myers (SRI International, USA), Sebastian Sardina (RMIT University, Australia), Manuela Veloso (Carnegie Mellon University, USA)

Organizing Committee

Sheila McIlraith (University of Toronto, Canada), Siddharth Srivastava, Chair (University of Massachusetts Amherst, USA), Paolo Traverso (FBK, Center for Information Technology–IRST, Italy), Shlomo Zilberstein (University of Massachusetts Amherst, USA)

Additional Information

For additional information, please visit the supplemental workshop site (rbr.cs.umass.edu/GenPlan11/)

Human computation is a relatively new research area that studies how to build intelligent systems that involve human computers, with each of them performing computation (for example, image classification, translation, and protein folding) that challenges even the most sophisticated AI algorithms that exist today. With the immense growth of the Web, human computation systems can now leverage the abilities of an unprecedented number of Internet users to perform complex computation. Various genres of human computation applications are available today, including games with a purpose (for example, the ESP Game), crowdsourcing marketplaces (for example, Amazon Mechanical Turk), and identity verification systems (for example, reCAPTCHA).

Despite the variety of human computation applications, there exist many common core research issues. How can we design mechanisms for querying human computers that incentivizes truthful responses? How do we effectively assign tasks to human computers to match their particular expertise and interests? What are programming paradigms for designing algorithms that effectively leverage a crowd? How do we build human computation systems that involve the joint efforts of both machines and humans? Significant advances on such questions will likely draw on many disciplines, including machine learning, mechanism and market design, information retrieval, decision-theoretic planning, optimization, human computer interaction, and so on.

The goal of this workshop is to bring together academic and industry researchers from diverse subfields in AI for a stimulating discussion of existing human computation applications and future directions of this relatively new subject area.

Topics

Topics of interest include, but are not limited to (see workshop website for a more detailed list):

- Programming languages, tools and platforms to support human computation
- Domain-specific challenges in human computation
- Methods for estimating the cost, reliability, and skill of labelers
- Methods for designing and controlling workflows for human computation tasks
- Empirical and formal models of incentives in human computation systems
- Design of manipulation-resistance mechanisms in human computation
- Techniques for inferring expertise and routing tasks to the appropriate individuals
- Theoretical limitations of human computation
- Novel human computation systems

Format

The workshop consists of invited talks from prominent researchers, presentations of selected technical and position papers, and two poster and demo sessions.

Submission

Technical papers and position papers may be up to 6 pages in length. For demos and poster presentations, authors should submit a short paper or extended abstract, up to 2 pages. All papers should follow AAAI formatting guidelines and should be submitted electronically to cmt.research.microsoft.com/HCOMP2011/Default.aspx.

Organizing Committee

Luis von Ahn, cochair (biglou@cs.cmu.edu, Carnegie Mellon University), Panagiotis G Ipeirotis, cochair (panos@stern.nyu.edu, New York University), Edith Law (primary contact) (edith@cmu.edu, Carnegie Mellon University), Haoqi Zhang (hq@eecs.harvard.edu, Harvard University), Jing Wang (jwang5@stern.nyu.edu, New York University)

Additional Information

For additional information, please visit the supplemental workshop site (humancomputation.com)

Human Computation

Human-Robot Interaction in Elder Care

AI research and development is being conducted in many parts of the world to create assistive robots for the care of older people. Complexity and scale of this work mark it as an important technological phenomenon, commonly associated with challenges presented by interrelated social conditions such as expanding longevity, declining birth rates, rising health care costs, and shortages of nurses. Although these conditions understandably recommend cost, reliability, and efficiency as measures for success of the robotic applications it also is important that we attend to resulting quality of life for the end users. This latter measure points especially to concerns of the relatively young and conspicuously multidisciplinary research field of human-robot interaction (HRI). Accordingly, our workshop aims to assemble leading representatives from a fairly broad range of disciplines (for example, engineering, computer science, psychology, and health care) to enable responsible dialogue contributing to achievement of our main objective: delivering robotic care for elders that enhances — or, at least, does not degrade — their quality of life.

Topics

Topics to be addressed in this workshop will reflect its organization in terms of disciplinary concerns. Engineers and computer scientists, for example, may tend to focus upon technical issues that they have encountered in robot design, involving machine vision, natural language understanding, spatial reasoning and the like. Representatives from psychology and health care might generally be more concerned with issues related to the elders actually receiving care, such as cognitive impairments and factors affecting acceptance of the subject technology. Needless to say, openness to this broad range of topics can best be expected to realize its potential value if we schedule adequate time for worthwhile interdisciplinary dialogue during and/or following presentations. Although our invitations will be directed to assembling a workshop with 25–75 active researchers, the number of papers accepted for the workshop's presentations will be constrained by our interest in encouraging dialogue.

Submissions

Please submit papers of approximately 5–8 pages in length only via e-mail to the workshop chair.

Organizing Committee

Ted Metzler, Ph.D., chair (tmetzler@okcu.edu)
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Additional Information

More detailed information regarding this workshop may be found at our Facebook site, which is named simply "HRI in Elder Care."

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
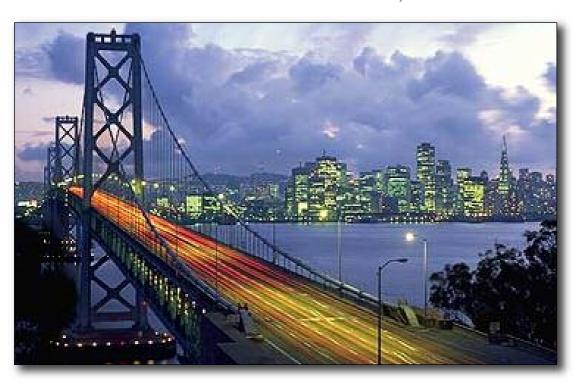
Topics include the following:

- 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
- Human-computer interaction
- Modeling agents and humans during interactions
- 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
- Descriptions of deployed systems

Submissions

Submit papers in PostScript or in PDF format to piotr@cs.uic.edu, by Friday, April 22, 2011.

Organizing Committee

Piotr Gmytrasiewicz (University of Illinois at Chicago); Prashant Doshi (University of Georgia); Simon Parsons (City University of New York); Karl Tuyls (Maastricht University)

Interactive Decision Theory and Game Theory

Language-Action Tools for Cognitive Artificial Agents: Integrating Vision, Action and Language

Endowing artificial agents with language and action abilities has been a quest in many AI subfields. A number of AI applications require coupling of language and motoric or visual action (and objects), ranging from language-based human-robot interaction to event recognition. Recent years have witnessed great advances in different disciplines that provide the theoretical and technological framework for an interdisciplinary approach to language-action integration. Neuroscience research provides more and more evidence on a common neural basis for language and action, both in perception and in production. A growing body of experimental cognitive science findings sheds light on the close interaction and reciprocal influence of language and action in a number of tasks, such as categorization and learning. On their part, technological advances in multisensory human behaviour measurement have enabled the development of recognitive and generative algorithms for the analysis of sensorimotor representations, ones that are analogical to language analysis and generation models. How could language-action integration benefit from all such developments? If it does, will this lead beyond the current state of the art in real-life AI applications that require generalization and optimality in language-action integration?

The goal of this workshop is to bring together an interdisciplinary group of computational linguists, computer vision researchers, roboticists and neuroscientists that will address the issue of developing biologically-inspired language and action technology for artificial agents. The focus is both on (1) how individual technologies can benefit from interdisciplinary research for going beyond the state of art in language-action integration tasks, and (2) how language processing, visual processing and/or motor control algorithms can be integrated in artificial agents allowing for behaviour generalization and optimization.

Submissions

The workshop will be a two-day meeting, which will comprise of a mix of invited talks, paper presentations and panel discussions. System demonstrations will also take place in break-out sessions that will allow for more interaction among participants. We invite original contributions on topics that include, but are not limited to the following:

- Embodied language processing, neurolinguistics
- Cognitive vision tools
- Active multisensory perception
- Neuroscience findings that impinge in technology (neurorobotics)
- Language-Action tools for visual scene understanding /event recognition
- Verbal requests for accomplishing everyday tasks

The workshop proceedings will appear as an AAAI technical report, which are citable archival proceedings. Submissions must be in AAAI format and be 6 pages in length. Please submit as PDF via e-mail to kpastra@ilsp.gr.

Organizing Committee

Katerina Pastra (kpastra@ilsp.gr, Institute for Language and Speech Processing, Greece) (primary contact), Yiannis Aloimonos (yiannis@cs.umd.edu, University of Maryland, USA), Giorgio Metta (giorgio.metta@iit.it, Italian Institute of Technology, Italy), Luciano Fadiga (fdl@unife.it, University of Ferrara)

Additional Information

For additional information, please visit the supplemental workshop site (sifnos.ilsp.gr/Poeticon/aaai-workshop)

A truly intelligent agent should be capable of learning online from a lifetime of raw sensorimotor experience, by autonomously developing internal structures that provide the foundations for learning and further development. This problem sits at the core of artificial intelligence, but it has traditionally been difficult for algorithms to learn online from a single high-dimensional time series of correlated data. However, recent progress in several branches of AI suggests that the goal is getting closer. This workshop will bring together researchers to share ideas and insights from several subfields including reinforcement learning, robotics, and deep learning. The workshop will cover methodology for life-long learning and discuss experimental platforms that can be used towards this goal.

Topics

The topics of interest include the following, but are not limited to them.

- ❧ Curiosity-driven exploration
- ❧ Representational development
- ❧ Deep learning
- ❧ Learning skill hierarchies
- ❧ Off-policy learning
- ❧ Developmental robotics
- ❧ Cognitive robotics
- ❧ Transfer learning

Format

This one-day workshop will consist of invited speakers, oral presentations, poster presentations, and group discussion. To encourage discussion, the workshop will be limited to 50 participants.

Submissions

We invite both full submissions (6 pages) on new or ongoing work, and extended abstracts (up to 2 pages) on previously published work. Accepted submissions will be selected for oral or poster presentation. Full papers should be formatted with standard AAAI style files. Please e-mail submissions to lifelonglearning2011@gmail.com with the title, author, and abstract in the body and the paper attached as a PDF.

Organizing Committee

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Program Committee

Patrick Beeson (TRACLabs), Thomas Degris (University of Alberta), Carlos Diuk (Princeton University), Ian Fasel (University of Arizona), Honglak Lee (University of Michigan), Lihong Li (Yahoo Research), Manuel Lopes (INRIA), Erik Talvittie (Franklin and Marshall College), Matthew Taylor (Lafayette College), David Wingate (MIT)

Additional Information

For additional information, please visit the supplemental workshop site (webdocs.cs.ualberta.ca/~jmodayil/lifelonglearning)

Lifelong Learning

Plan, Activity, and Intent Recognition

Plan recognition, activity recognition, and intent recognition all involve making inferences about other actors from observations of their behavior, i.e., 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 smart homes, personal agent assistants, opponent modeling in games and simulation systems, computer and network security, coordination in robots and software agents, video surveillance, and dialog modeling.

This workshop seeks to bring together researchers and practitioners from diverse backgrounds, to share in ideas and recent results. The theme of this year's workshop will be relating plan recognition to models of human cognition; we especially hope to draw invitees from the cognitive science community. It will aim to identify important research directions and to identify opportunities for synthesis and unification. Contributions are sought in the following areas of research.

- Plan, activity, intent, or behavior recognition
- Machine learning for plan recognition and user modeling
- Proactive assistant agents
- Adversarial planning, opponent modeling
- Modeling multiple agents, modeling teams
- User modeling on the web and in intelligent user interfaces
- Intelligent tutoring systems (ITS)
- Social network learning and analysis
- Observation-based failure detection
- Uncertainty reasoning for plan recognition
- Modeling social interactions
- Inferring emotional states
- Programming by demonstration
- Human activity recognition for smart homes
- Commercial applications of user modeling and plan recognition
- Cognitive models of intent recognition

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

Format

The workshop will be split equally between a series of research presentations, organized into topical sessions (topics to be decided based on submissions) and two interdisciplinary panels (1) seeking to highlight research contributions and challenges unifying the different subareas, and (2) to discuss the relevance of multiple approaches to different subareas to better understand the actual differences between the subareas and problems needing more focus.

Submissions

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 submit via EasyChair (www.easychair.org/conferences/?conf=pair2011).

Organizing Committee

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

Additional Information

For additional information, please visit the supplemental workshop site (www.planrec.org)

In the future, we expect that data- and model-rich approaches to visual analytics problem solving will benefit from conversationally-paced, mixed-initiative interaction. This workshop is devoted to the integration of visualization and analytical techniques, with focus on interactive exploration of heterogeneous and large-scale data sets, aided by machine learning and statistical techniques.

Topics

Topics include, but are not restricted to the following:

- Automation versus interaction for extreme-scale data
- Degree of personalization for representations and visualizations
- Visual languages for inputs and outputs of analytical processes
- Interactive feature selection, transformation, and construction for extremely large data sets
- Visualization of and interaction with different machine learning algorithms
- Solving analytical problems using single or multiple representations
- Integrating visualization and computation with large-scale probabilistic graphical models
- Handling probabilistic graphical models with hundreds, thousands, or millions of random variables
- Visualizing and understanding large spaces of symbolic and semantic information
- Visualization of computational processes from AI and statistics

Format and Attendance

This will be a one-day workshop. The workshop is planned to consist of a mix of oral and poster presentations, one or two invited talks, and a panel. We will leave ample time for discussions and informal interactions. We expect approximately 50 participants to be invited, based on peer review of submitted papers and abstracts.

Submissions

We are soliciting full papers and extended abstracts, formatted in AAAI's two-column style, and submitted electronically. Full papers are 5–6 pages; abstracts are 1–2 pages. Work will be presented in oral and poster sessions. Please submit to www.easychair.org/conferences/?conf=scalable11.

Organizing Committee

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Additional Information

For additional information, please visit the supplemental workshop site (sites.google.com/site/scalable11)

Scalable Integration of Analytics and Visualization