aaai-11 – san francisco
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The Twenty-Fifth AAAI Conference on Artificial Intelligence
Special Track on Computational Sustainability and Artificial Intelligence

Sponsored by the Association for the Advancement of Artificial Intelligence

Computational sustainability is a new interdisciplinary field that aims to apply techniques from computer and information science and related disciplines (for example, operations research, applied mathematics, and statistics) to the balancing of environmental, economic, and societal needs, in order to support sustainable development and a sustainable future. Research in computational sustainability is inherently interdisciplinary: It brings together computational fields and a variety of fields with a long tradition in the study of sustainability problems, such as environmental sciences, biology, economics, and sociology. Artificial intelligence (AI), in particular, can play a key role in addressing challenges in computational sustainability.

Sustainability domains and areas include the following:

Natural resources and the environment (for example, climate, atmosphere, water, oceans, forest, land, soil, biodiversity, species, and so on.)

Economics and human behavior (for example, human well-being, poverty, infectious diseases, over-population, resource harvesting, and so on.)

Energy resources (for example, renewable energy, smart grid, material discovery for fuel cell technology, and so on.)

Human-built systems and land use (for example, transportation systems, cities, buildings, datacenters, food systems, agriculture, and so on.)

This special track invites the submission of research papers on novel concepts, models, algorithms, and systems, in order to address problems in computational sustainability. We are looking for a broad range of papers ranging from formal analysis to applied research. Examples include papers explaining how the research addresses specific computational problems, opportunities, or issues underlying sustainability challenges and papers describing a sustainability challenge or application that can be tackled using AI methods. Papers proposing general challenges and competitions for computational sustainability are also welcome.

All AI topics that address computational sustainability issues are relevant. Examples of AI topics include the following:

Modeling and prediction of dynamic and spatiotemporal phenomena and systems. Examples include bird migration, invasive species diffusion, ocean spatial impacts of climate change, and poverty mapping.

Control and optimization of dynamic and spatiotemporal systems. Examples include constraint reasoning and optimization, MDPs/POMDPs, stochastic programming, model-based reasoning, and optimal control of hybrid dynamical systems for management and control of complex systems ranging from ecosystems and natural resources, to human-built systems such as transportation and energy networks, communities, and cities, to social-economic phenomena.

Timetable for Authors

- February 3, 2011: Electronic abstracts due
- February 8, 2011: Electronic papers due
- April 15, 2011: Notification of acceptance or rejection
- May 3, 2011: Camera-ready copy due at AAAI office

Network modeling, prediction, and optimization. Examples include transportation networks, power grid, food networks, epidemic networks, and social networks.

Modeling and control of complex high-dimensional systems by combining physics-based models, model-based reasoning, optimization and control methods, and machine learning models built from sensor data. Examples include global and regional climate models, ecosystems models, models of operation of office buildings and data centers.

Modeling the interactions of agents with different and often conflicting interests: multiagent systems, multiagent equilibrium models, game theory, and design of effective mechanisms and policies for the exchange of goods.

Sensor networks for monitoring environments: data collection, analysis, synthesis, and inference in large-scale autonomous sensor networks.

Support for public engagement and decision making by the public; collecting, modeling, and presenting relevant information via usable interfaces; preference elicitation and automated decision making for power purchases (managing the timing of appliance loads to minimize cost while maximizing preferences); crowd-sourcing and citizen science; computer games and intelligent tutoring systems; and models, methods and tools for dissemination and increasing awareness of sustainability practices.

Papers will be reviewed by qualified reviewers that are drawn from a special track committee, in addition to the general program committee. Submissions to this special track that are deemed not relevant to the track may be considered for review for the general technical papers track, at the discretion of the track and conference cochairs

Author Registration

Authors must register at the AAAI-11 Computational Sustainability and Artificial Intelligence web-based technical paper submission site, which will be accessible from this site after December 1, 2010. The software will assign a password, which will enable the author to log on to submit an abstract and paper. In order to avoid a rush at the last minute, authors are encouraged to register as soon as possible after December 1, and well in advance of the February 3 abstract deadline.

- ☞ Registration will close at 11:00 PM PST on February 3, 2011.
- ☞ Abstract submissions will close at 11:59 PM PST on February 3, 2011.
- ☞ Final paper submissions will close at 11:59 PM PST on February 8, 2011.

Abstract and Paper Submission

Electronic abstract and paper submission through the AAAI-11 special track paper submission site is required on or (preferably) before the deadline dates listed above. We cannot accept submissions by e-mail or fax.

Papers must be in trouble-free, high resolution PDF format, formatted for US letter (8.5" x 11") paper, using type 1 or TrueType fonts. Papers may be no longer than 6 pages including references, and formatted in AAAI two-column, camera-ready style (see the author instructions page at www.aaai.org/Publications/Author). Please note that these formatting instructions are for final, accepted papers; no additional pages can be purchased at the review stage. In addition, the copyright slug may be omitted in the initial submission phase. Please also refer to the blind-review webpage for instructions on how to prepare your paper for blind review.

Authors will receive confirmation of receipt of their abstracts or papers, including an ID number, shortly after submission. AAAI will contact authors again only if problems are encountered with papers. Inquiries regarding lost papers must be made no later than February 15, 2011.

Submissions to Other Conferences or Journals: Papers submitted to this conference must not have been accepted for publication elsewhere or be under review for another AI conference. The guidelines of the AAAI policy on multiple submissions are fully detailed on the AAAI website and must be carefully followed.

Review Process: Program committee members will identify papers they are qualified to review based on the information submitted electronically (the paper's title, keywords, and abstract). Their reviewing will be done blind to the identities of the authors and their institutions.

Authors will have a limited opportunity to respond to initial reviews. This author's feedback may then be taken into account in the final reviews and recommendations. The program committee's reviews will make recommendations to the senior program committee, which in turn will make recommendations to the track cochairs. Although the track cochairs will formally make all final decisions, in practice almost all will be made earlier in the process.

Publication: Accepted papers will be allocated six (6) pages in the conference proceedings. Up to two (2) additional pages may be used at a cost to the authors of US$ 275 per page. Final papers exceeding eight (8) pages and those violating the instructions to authors will not be included in the proceedings. Authors will be required to transfer copyright of their paper to AAAI.

Questions and Suggestions

Concerning author instructions and conference registration, write to aaai11@aaai.org. Concerning suggestions for the program and other inquiries, write to the special track cochairs.

Special Track Cochairs

Carla P. Gomes (Cornell University)
Brian C. Williams (Massachusetts Institute of Technology)