

## Preface

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The "Symposium on Discovery Informatics: The Role of AI Research in Innovating Scientific Processes" will be held on November 2-4, 2012 in Arlington Virginia as part of the Fall Symposium Series of the Association for the Advancement of Artificial Intelligence (AAAI).

Addressing the ambitious research agendas put forward by many scientific disciplines requires meeting a multitude of challenges in intelligent systems, information sciences, and human-computer interaction. Many aspects of the scientific discovery process are often largely manual and could be automated, improved, or made more efficient. Better interfaces for collaboration, visualization, and understanding would significantly improve scientific practice. Scientific data, publications, and tools could be published in open formats with appropriate semantic descriptions and metadata annotations to improve sharing and dissemination. Opportunities for broader participation in well-defined scientific tasks enable human contributors to provide large amounts of data, annotations, or complex processing results that could not otherwise be obtained. Improvements and innovations across the spectrum of scientific processes and activities will have a profound impact on the rate of scientific discoveries.

Our goal with this symposium is to provide a forum for researchers interested in understanding the role of AI techniques in improving or innovating scientific processes. The topics solicited for submissions included: ontologies and knowledge bases that model particular areas of scientific knowledge, semantic representations of metadata for all aspects of scientific processes, techniques for organizing scientific literature, workflow systems to manage complex data analysis processes, knowledge discovery techniques that are embedded in the context of scientific investigations, integrative approaches of machine learning and scientific model induction, automated systems

for experiment design, data analysis, and hypothesis generation and refinement, user-centered design of intelligent systems that partner with scientists to perform complex tasks, integrated approaches to visualizing data, models, and the connections between them to foster new insights, cognitive-centered design of scientist aids, and social computing systems that let novice participants contribute to scientific tasks.

The symposium proceedings include an introduction to Discovery Informatics, the abstracts of all six invited talks, and the seven refereed papers that will be presented at the meeting.

The symposium program includes invited talks, paper presentations, panel discussions, and plenary discussion sessions. Six invited speakers will provide their personal perspectives on successes and challenges for Discovery Informatics. There will be seven full papers presented, interleaved with the invited talks. Two of the sessions will be panel discussions on current topics of interest, with panelists from a variety of perspectives including academia, funding agencies, and industry. The symposium will open and close with plenary sessions that will serve for exchange of general observations and synthesis of views for all attendees.

We are really looking forward to the symposium!