

The Innovative Applications Conference

Highlights and Changes

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This issue of *AI Magazine* contains several papers from the 1995 Innovative Applications of Artificial Intelligence (IAAI-95) conference. IAAI has been held annually since 1989 and has been collocated with the national (or international) AI conference since 1991. The proceedings were published in book form through 1992. Since 1993, a conference proceedings volume has been published, and selected papers have been republished as articles in *AI Magazine*. This introduction briefly discusses the 1995 IAAI award winners and presents goals and plans for next year's conference.

IAAI features real, deployed AI applications, selected for their innovation. An application is considered deployed if it has been used for a minimum of several months and has been relied on for operational business decisions. Four categories of innovation are recognized: (1) demonstration of a new technology, (2) application of existing technology to a new domain, (3) application of existing technology to an old domain in an innovative way, and (4) demonstration of a novel integration of different technologies. Taken together, the award winners provide clear evidence of the commercial value of AI technology as a key component of complex information systems. The articles are case studies that provide a valuable guide to designing, building, managing, and deploying systems whose value depends on AI technology. The articles also illustrate the

applicability and limitations of various AI techniques. The Call for Papers, appearing elsewhere in this issue, provides a detailed set of topics that are addressed at the conference.

IAAI-95 Award Winners

Seventeen applications represent this year's award winners: 11 were from the United States, 4 from the Pacific Rim, 1 from Europe, and 1 from the Middle East. Winning companies include Canon USA; General Electric Capital Mortgage Corporation (2); General Motors; GTE Laboratories; IBM; United Technologies with Pratt & Whitney; Daewoo Heavy Industries (Korea); Mita Industrial Co., Ltd. (Japan); Singapore Telecomm; and Enso-Gutzeit (Finland). Award-winning government agencies include the Ministry of Agriculture and Land Reclamation (Egypt), Port of Singapore Authority, National Aeronautics and Space Administration (NASA) Jet Propulsion Laboratory (2), U.S. Army, and U.S. Department of the Treasury Financial Crimes Enforcement Network. Winning applications represent manufacturing, government, finance, telecommunications, and business domains. AI techniques used in the applications include expert and knowledge-based systems, model-based reasoning, intelligent agents, planning, data mining, machine learning, case-based reasoning, neural networks, blackboards, and fuzzy qualitative reasoning. Many of the applications involve a combination

of AI and database technologies. Two award winners have been commercialized, one is embedded in a product, and one is a task-oriented shell that has been used for multiple applications. The AI component used commercially available shells in only about one-third of the applications; others used custom shells developed in their own research labs or languages such as C/C++.

The five articles presented here discuss one scheduling system, three troubleshooting systems, and a large database monitoring system. Daewoo Heavy Industries, in conjunction with the Korean Advanced Institute of Science and Technology, integrated five separate schedulers based on different AI techniques, resulting in increased productivity that corresponds to annual savings of \$4 million. Two troubleshooting systems are applications of qualitative reasoning. Mita Industrial Co., Ltd., said Japan's troubleshooting expert system has been supplied as an embedded component of its photocopiers since April 1994. It uses new reasoning methods based on virtual cases and fuzzy qualitative values and is noteworthy for fitting in 280 kilobytes. AGETS-MBR, developed by United Technologies and Pratt & Whitney, assists the U.S. Air Force to diagnose jet engines. The third troubleshooting system, AUTOCELL, was developed for Singapore Telecomm and provides online monitoring, planning, and control facilities for cellular networks. The Financial Crimes Enforcement Network (FINCEN) AI system (FAIS) identifies potential money laundering from reports of large cash transactions by linking related transactions and evaluating database changes using a traditional rule base as a component in an overall blackboard architecture.

IAAI-96

IAAI was founded because of the belief that we, the AI community, needed to "get the story out." The intent was to benefit AI and the AI community by demonstrating that AI research has significant operational payoffs in the real world. The

method was to feature innovative, deployed AI applications with measurable benefits. The primary purpose of IAAI is to tell these success stories. Other purposes are to recognize application developers at a national conference and to provide a forum for them to exchange experiences and lessons learned in the “heartland” of AI. These purposes have, for the most part, been realized.

IAAI can serve another important purpose, one that also directly benefits the membership of the American Association for Artificial Intelligence (AAAI): to promote the interchange of ideas between basic and applied AI. It is our experience that AI technology transfer is a two-way street; that is, not only can AI applications benefit from the latest advances in AI research and can these benefits increase support for AI research, but quality AI research is also stimulated by real problems. David Waltz expressed this idea best in his ballot statement as nominee for president-elect of AAAI: “It is essential to develop an effective dialog between basic and applied AI. Applied AI needs a

between them. We aim to serve the AI community by highlighting success stories for the world at large but also provide valuable and interesting content for the AAAI membership. We want to expand the conference to cover the full range of AI technologies, increase the number and quality of papers submitted and accepted, and increase participation. We want IAAI to be valuable for all members of the AI community, especially those graduate students who form the major portion of the attendees at the national conference and who are likely to find jobs not in academia but in organizations that apply AI. Most importantly, we want IAAI to complement the national conference to achieve the benefits of an effective interchange between basic and applied AI. The following paragraphs discuss our plans for revitalizing IAAI. Our ideas fall into two categories: (1) content and (2) logistics.

We are broadening the program committee to include representation from the speech, natural language, vision, and robotics communities. We are asking AI vendors, especially

but might have difficulty preparing a paper.

Logistically, we are proposing a single registration fee and a combined proceedings for the national conference and IAAI. These suggestions will allow for more extensive interactions between participants and ensure that all researchers are aware of the current state of real AI applications. We are working closely with the AAAI-96 Program Committee and the KDD-96 Program Committee to schedule invited talks and panels to minimize potential conflicts on topics of mutual interest and, perhaps more important, to schedule joint sessions where appropriate. (Ed Feigenbaum’s 1993 talk “Tiger in a Cage” was an extremely effective joint session.) AI-on-Line panels, which originated as part of the national conference and then became joint events, encouraged interactions between participants. We are also trying to coordinate session times better, although this effort is difficult because of the different presentation lengths.

Finally and most importantly, we solicit and welcome additional ideas, suggestions, discussion, and, most of all, participation from the entire cross-section of AAAI members. IAAI is sponsored by AAAI for the benefit of the members. We promise to consider carefully all suggestions and adopt those that are feasible, either for this year’s conference or the next. Please keep an eye out for worthy applications, and submit papers or encourage colleagues to do so. Please submit panel and invited talk proposals, as described in the Call for Papers, Panels, and Invited Talks, as well as suggestions, ideas, and so on, for panels or invited talks that you would like to hear—even if you are unable to organize it yourself. We call on the entire AAAI membership to take responsibility for the success of this conference through active participation and to ensure an effective and rewarding dialog between basic and applied AI.

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IAAI-96 Program Chair

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steady stream of fundamental AI results in order to generate novel applications of increasing power; basic AI needs to be informed by applied AI about the nature and relative importance of application domains and the efficacy and relevance of various proposed systems and formalisms for building applications.” Collocating IAAI with the national conference, and encouraging joint attendance and cross-fertilization, is an attempt to promote this dialog.

Our objectives for IAAI-96 are to enhance the content and maintain the focus of IAAI as an applications-oriented conference, distinct from the research-oriented national conference, and minimize—or even eliminate—the logistical barriers

those who exhibit at the national conference, to encourage their customers to submit papers, or to submit joint papers, describing their most successful applications. (Phil Klahr deserves special recognition for his extensive and largely successful efforts in this area for many years.) We have asked the AAAI fellows to make a special commitment to identify worthy applications and to encourage their submission. We are contacting program committees of AAAI cosponsored conferences to ask them to identify appropriate applications in their areas. We are insisting on a renewed commitment from IAAI Program Committee members to personally solicit papers for submission and assist potential submitters who have a worthy application