

Educational Advances in Artificial Intelligence

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SUMMARY

In 2010 a new annual symposium on Educational Advances in Artificial Intelligence (EAAI) was launched as part of the AAAI annual meeting. The event was held in cooperation with ACM SIGCSE and has many similar goals related to broadening and disseminating work in computer science education. EAAI has a particular focus, however, as the event is specific to educational work in Artificial Intelligence and collocated with a major research conference (AAAI) to promote more interaction between researchers and educators in that domain. This panel seeks to introduce participants to EAAI as a way of fostering more interaction between educational communities in computing. Specifically, the panel will discuss the goals of EAAI, provide an overview of the kinds of work presented at the symposium, and identify potential synergies between that EAAI and SIGCSE as a way of better linking the two communities going forward.

Categories and Subject Descriptors

K.3.2 [Computers and Education]: Computer and Information Science Education; I.2.0 [Artificial Intelligence]: General.

General Terms

Algorithms, Experimentation, Theory.

Keywords

Artificial Intelligence Education, Model AI Assignments.

1. INTRODUCTION

This past summer marked the inauguration of a new educationally focused annual symposium with the launch of the First Symposium on Educational Advances in Artificial Intelligence (EAAI-2010). EAAI is sponsored by the Association for the Advancement of Artificial Intelligence (AAAI), and seeks to advance AAAI's goal of improving the teaching and training of Artificial Intelligence (AI) researchers, educators, and practitioners. The symposium provides a venue for researchers and educators to discuss pedagogical issues

and share resources related to teaching AI and using AI in education across a variety of curricular levels (K-12 through postgraduate training), with a natural emphasis on undergraduate and graduate teaching and learning.

Organized as an independent program within the annual AAAI National Conference, EAAI is also held in cooperation with ACM SIGCSE, reflecting the aligned goal of improving computer science education. Given the SIGCSE 2011 theme of "reaching out", this panel seeks to inform the SIGCSE community of this new event and discuss opportunities for further working together in the future.

Indeed, beyond the obvious issue of how to specifically improve AI education, there are several new thrusts of work involving AI in computer science education. There has recently been a great deal of interest in the use of robotics as a platform for teaching introductory computing [1, 3] as well as encouraging greater participation in computing from underrepresented groups [4, 9]. Several introductory programming courses now use problems in AI as motivating examples [6, 8], and AI has been used as a topic to interest non-majors in computing [2]. Moreover, the use of AI in games [6, 10, 11] has also been advanced as a way of attracting more students into computing.

In support of the shared goal of improving computer science education, EAAI incorporates a number of components including a technical program of high-quality refereed papers, special sessions of peer-reviewed *Model AI Assignments*, a workshop for mentoring new faculty/graduate students on teaching, and coordination with a track on Educational Robotics. These activities are described below, and will be discussed in further detail at the panel as a means for identifying more synergistic activities with the SIGCSE community. We believe the panel will be of interest to AI educators as well as anyone with an interest in using topics/platforms from AI to motivate greater participation in computing at the K-12, undergraduate, or graduate level. The panel includes the general chair of EAAI-2010, the in-coming general chair of EAAI-2011, and the chairs of the Model AI Assignments and Educational Robotics tracks, respectively.

2. TECHNICAL PROGRAM (SAHAMI)

EAAI includes a program of refereed technical papers spanning multiple topics in AI education. One clear focus of the program is

the improvement of introductory AI and AI-related courses. Papers on this topic tended to focus on engaging software projects that incorporate multiple themes from AI into a working artifact. In this way, students are motivated to see AI as a technology that is integrated into real systems, rather than simply being a set of somewhat disjoint topics whose commonality is that they appear in the same textbook. Moreover, AI is discussed as a topic that can be integrated into computing courses at multiple levels, including K-12.

Another major focus of the EAAI technical program is the use of robotics in education. Again this work spanned multiple levels. For example, there was coverage of using simple robots as a means for interesting middle and high school students in computing all the way to the development of robotics infrastructure to teach graduate courses in this area at a more accelerated level.

The breadth of coverage in the EAAI technical program reflects the diversity of ways that AI can be used to address many of the same educational issues that are often grappled with at SIGCSE. Thus, we believe there are many opportunities to share and align work by the two communities.

3. MODEL AI ASSIGNMENTS (NELLER)

Another highlight of EAAI-10 is the *Model AI Assignments* program, which presents a number of innovative, ready-to-adopt course assignments that were used successfully in a variety of AI courses. The program is modeled on the popular *Nifty Assignments* [7] session at SIGCSE, but with a focus on AI-related assignments rather than projects directly aimed at CS1/2. This program not only includes presentations on the assignments, but also provides an online repository [5] where educators may download pedagogical materials. In this way, the program helps to promote the sharing of ideas and best pedagogical practices among AI educators. Indeed, in developing this program there were discussions with the original creators of *Nifty Assignments*.

4. TEACHER MENTORING WORKSHOP (DESJARDINES)

In addition to sharing experiences, research, and assignments in AI education, EAAI also seeks to help develop the next generation of AI educators. To this end, the symposium includes a mentoring program aimed at sharing experiences and materials with new faculty and graduate students in AI. The workshop held at EAAI-10 was very successful, and interestingly included many topics in improving pedagogy that were not AI-specific.

While SIGCSE has recently introduced the New Educators Roundtable in a similar vein, the structure of the EAAI teaching mentoring workshop was, in fact, quite different. Rather than focusing on sharing experiences with seasoned educators, the EAAI workshop focused on the theme of active learning, providing a presentation of research in this area as well as concrete examples of how active learning can be used in the classroom generally. Participants in the workshop then engaged in a hands-on session aimed at producing actionable examples of active learning to teach various concrete topics in an introductory AI course. The workshop concluded with a more traditional panel discussion from

experienced educators sharing their thoughts on various questions from the audience.

5. EDUCATIONAL ROBOTICS (DODDS)

Highlighting the growing interest in robotics as an education platform, EAAI is also held in coordination with the Educational Robotics track from the AAAI Robotics Exhibition. The Educational Robotics track provides the opportunity for pre-college, undergraduate, or early graduate student teams to exhibit an autonomous robotic system or curricular project.

By sharing participants and presentations with this longstanding exhibition, EAAI taps an established community of regular AAAI attendees already committed to advancing educational practices in the field. It also contributes to the education-track exhibition by offering a focused paper session on novel approaches to robotics education and education with robots.

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