Some Thoughts on Using Computers to Teach Argumentation

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Abstract

Argumentation has become a "hot topic" of AI research – especially outside the United States. The last year or two have seen *AI Journal* special issues devoting more than 300 pages to argumentation in AI, a new series of conferences on Computational Models of Argument, and a recent Dagstuhl Perspectives Seminar on Theory and Practice of Argumentation Systems, focusing on the future of argumentation research for the semantic web, multi-agent systems, social networks, and decision support in application areas.

For some time before this, however, a small group of researchers has focused on using computer technology to teach humans argumentation skills, either in general or in application areas such as law, ethics, and the sciences. This research has yielded intellectual products including computational models of argumentation, techniques for integrating argumentation into human computer interfaces via argument diagrams or by engaging students in argument-making, techniques for assessing how well students learn argumentation skills, and many interesting questions.

This talk surveys selected argumentation tutoring research and addresses the following questions:

(1) Why teach argumentation? Why use computers to teach argumentation?
(2) For purposes of teaching argumentation, what argument features or patterns should be represented and at what grain-sizes?
(3) How can intelligent tutoring systems adapt to teaching argumentation in ill-defined domains/tasks where there often is no one right answer? What kind of feedback can they provide?
(4) How useful are argumentation diagrams as teaching aids or as diagnostic tools?
(5) How successfully have computers engaged students in making and responding to arguments?
(6) How can the learning of argumentation skills be assessed objectively?
(7) How successful have intelligent tutoring systems been in teaching humans argumentation skills? How can they do better?

Answers to these questions have ramifications not only for the teaching of argumentation with computers but for the future direction and impact of AI research on argumentation.