University of Memphis Licensing Opportunity
System and Method for Automatic Extraction of Conceptual Graphs

One on one tutoring provides the most effective form of learning, but human tutors are a scarce resource. Computer-based Intelligent Tutoring Systems (ITSs) are an effective alternative, but they can be time-intensive to create.

One way to automate this process, and thus reduce cost and development time, is to automatically convert existing textbooks into materials usable by ITSs.   A novel technology from the Institute for Intelligent Systems at the University of Memphis will give ITS developers this valuable tool for extracting conceptual graphs using semantic information in the text.
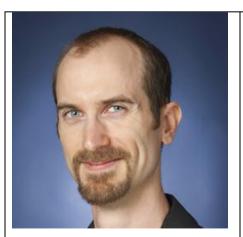
Applications

- Improve efficiency of Intelligent Tutoring System authoring tools by automating conceptual graph extraction from raw text such as biology textbooks
- The extracted conceptual graphs are useful in student assessment, natural language generation and student modeling

Advantages

- Extracts conceptual graphs from text without the need to develop large scale ontologies (which is labor-intensive)
- Independence from a thesaurus and ontologies means the graphs this tool returns can be more comprehensive than, and equally as rich as the supplied text.
- A prototype of this method has returned promising results. 1800 graphs consisting of ~30,000 relations have been extracted

The Inventor

Andrew Olney is presently an Assistant Professor in the Department of Psychology at the University of Memphis and Associate Director of the Institute for Intelligent Systems. Dr. Olney received a B.A. in Linguistics with Cognitive Science from University College London in 1998, a M.S. in Evolutionary and Adaptive Systems from the University of Sussex in 2001, and a Ph.D. in Computer Science from the University of Memphis in 2006. Dr. Olney's primary research interests are in cognitive science and the psychology of language. Specific interests include vector space models, dialogue systems, unsupervised grammar induction, robotics, and intelligent tutoring systems.