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Source: https://www.sciencedirect.com/science/article/pii/S1877050921002581

Web Intelligence and Artificial Intelligence in Education

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Keywords: Web intelligence, Ontologies, Semantic Web, Educational Web services, Pedagogical agents.

The paper presents a survey of Web Intelligence (WI) in the context of Artificial Intelligence in Education (AIED) research. WI is the field of scientific research and development that explores the roles and uses of artificial intelligence (AI) and information technology for new products, services and frameworks that are made possible by the Web.

AIED community has already started studying various issues related to teaching and learning theories relevant to WI. Extensive research and development efforts have been dedicated to autonomous software entities, aiming to enhance human learning through interactions with students, learners, authors, teachers, and collaborative endeavors with similar agents.

Moreover, the work in Web-based intelligent tutoring systems (ITS) is important for WI since they demonstrate how different intelligent techniques can address learning and teaching processes on the Web. These systems exemplify key aspects such as personalization, adaptivity, and collaboration.

In particular, the focus on personalization is facilitated by the inherent nature of educational servers. Intelligent educational servers can personalize a session for a specific learner by retrieving the necessary material from other servers. WI plays a crucial role in enabling personalization within intelligent educational servers, emphasizing an adaptive process based on observations of learners' browsing behavior during previous sessions. This capability allows for dynamic adaptation and personalized sessions, contributing to a more effective and tailored learning process.

Web Intelligence also allows the creation of Intelligent Web Services. The primary idea is to move beyond the XML/RDF infrastructure of traditional web pages and explore the use of intelligent web services. The aim is to enable the Web to be perceived as a collection of educational resources with well-defined interfaces for invoking services.

Moreover, WI enables the development of the Intelligent Educational Servers architecture (INES). Through knowledge-level Web Intelligence, INES dynamically organizes educational content and utilizes agents for various operations, including search, aggregation, classification, filtering, managing, mining, and discovery. This sophisticated approach showcases the intelligent handling of educational material within the system.

Conclusion: The intersection of Web Intelligence (WI) with Artificial Intelligence in Education (AIED) presents numerous research opportunities. The paper anticipates changes in discussing issues due to the rapid evolution of web technologies, emphasizing the ongoing transformation and growth in this dynamic field.