(Ontología de Modelado del Estudiante) – Student Modelling Ontology

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Technological Offers type

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Research and innovation areas

- Innovación Social, Ciencia Abierta, Gobernanza, y Ciencias de la Educación
- Tecnologías digitales, Inteligencia Artificial, ciberseguridad, 5G, robótica

Where?

Center for Biomedical Technology Human-Computer Interaction and Advanced Interactive Systems

Software description

The Student Modelling Ontology described in this document represents the student's various types of knowledge which are considered necessary to model the student properly in an Intelligent Tutoring System (ITS) and will enable adaptive learning that fits in with each student¿s individual characteristics. The ontology was designed with a view to being used in teaching procedures, for example, in learning about activities referring to a graphic user interface, or in Virtual Learning Environments for procedural-type Training. In both types of Training/Educational Environments there is a plan of action, or sequence of actions, that the student must fulfil to complete the task successfully.

The ontology presented is expressed in OWL1 ontology definition language and was developed using the Protégé2 and TopBraid Composer3 ontology engineering tools. The ontology consists of the following modular ontologies:

Student Information Ontology (stored in the student_information.owl file). This ontology represents specific information about each student.
Student Profile Ontology (stored in the student_profile.owl file). This ontology represents a student¿s personal information: personal data, physical and psychological features, interaction preferences, learning style preferences, and personality traits, etc.
Learning Objective Ontology (stored in the learning_objective.owl file). This ontology makes it possible to specify objectives in various domains (affective, psychomotor and cognitive) and at different abstraction levels (objectives with a higher abstraction or didactic level and objectives with a lower abstraction level, or specific objectives).
Knowledge Object Ontology (stored in the knowledge_object.owl file). This ontology describes the main types of elements of knowledge that can be learned in a specific educational activity. The learning objectives are classified into objects that describe structural knowledge and objects that describe procedural knowledge.
Student State Ontology (stored in the student_state.owl file). This ontology describes the student¿s actual knowledge, their

accumulated performance (regarding carrying out sessions, activities and actions and fulfilling their associated preconditions), their educational status (level of carrying out the learning plan, courses and activities, etc.), their emotional state, and the state of the student’s general capacities and skills (level of attention and memory, etc.).
Student Trace Ontology (stored in the student_trace.owl file). This ontology contains a detailed record of a student¿s behaviour during a learning session. Using this record, certain cumulative information is obtained in the Student State Ontology.
Student Monitoring Ontology (stored in the student_monitoring.owl file). This ontology describes features relating to the procedure for monitoring certain variables during the student¿s learning, such as the student¿s way of looking and their position, etc. The ontology enables the sampling rate of these variables during learning to be defined.

Reference

M-008801/2009