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Conference Abstract

SOCCOMAS: A Self-Describing and Content-Independent Application for Semantic Ontology-Controlled Web-Content-Management-Systems

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Abstract

Ontologies are usually utilized for representing knowledge. Here, we extend this use and demonstrate that ontologies also can be used for describing and controlling semantic Web-Content-Management-Systems (WCMS). We call the resulting application SOCCOMAS: a self-describing and content-independent application for semantic ontology-controlled Web-Content-Management-Systems (http://escience.biowikifarm.net/wiki/SOCCOMAS). SOCCOMAS manages the contents of its WCMS through a corresponding knowledge base that is stored in a tuple store. It makes its contents accessible via a flexible and interactive graphical user interface (GUI), utilizing the JavaScript framework AngularJS. Central to SOCCOMAS is a set of application ontologies and a Java middleware, both of which have been developed by us. The ontologies contain the descriptions that control the behavior of the WCMS and the Java middleware interprets these descriptions as an operation-language with commands, attributes and variables. This language is used for describing and therewith defining the function and design of the GUI of the WCMS, including all its user interactions, the underlying data schemes and representations, and all workflow processes of the WCMS. The core application implements a set of default features, such as versioning, provenance and access rights management. These features

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will be available in all semantic WCMS instances that are based on SOCCOMAS. Because of the ontology-controlled design, SOCCOMAS allows easy customization with a minimum of technical programming background required. Thereby, each WCMS can have its own particular data views, input forms and workflows. The morphological data repository Morph·D·Base serves as a first use-case for SOCCOMAS, for which we are implementing ontology-based specimen and media entry representations as well as a new module for the generation of ontology-based morphological descriptions with semantic image annotation.

Keywords

ontology, ontology-controlled application, content management system, tuple store, triple store, data management, knowledge base, semantic annotation, linked open data, Morph·D·Base, morphology

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