Islamic Resource Ontology Extraction and Search Tool

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Abstract

There are many digital Islamic resources that can be used by Muslims and non-Muslims to enhance their knowledge about Islam. However, the searching and mining of the wealth of knowledge in these resources depend on how well we can index them. Until recently, much of this task is done manually by Islamic scholars. In this system, we propose a way to store and extract ontology from Islamic resources such as Al-Quran translations, hadith translations and other Islamic documents. Ontology level extracted includes terms, synonyms, relations, definitions and taxonomy. We used statistical techniques such as TF-IDF, linguistics methods such as Stanford Parser; and Artificial Intelligence Techniques such as Particle Swarm for the extraction. The extracted ontology is stored in the system and can be used for searching resources. Our system provides users with ontology-based search facility to search Islamic resources based on the extracted ontology, where Islamic resources containing the ontology will be retrieved and instances of the ontology occurrence will be highlighted. Test on solat-related ontology compiled by a number of Malaysian Islamic scholars shows satisfactory results. The system can be used by Muslim and Non-Muslims to automatically store Islamic documents, organize them, extract ontology from them and search them by different ontology levels.

Keywords: Ontology Extraction, Information Retrieval, Islamic Resources Management, Natural Language Processing.