

ABSTRACT

Computers and Legal Affairs

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Legal systems all over the world are becoming overwhelmed with the volume of litigation continuously rising coupled with the slow pace in which cases are processed and resolved. The by-product of the increasing litigation is the creation of a gargantuan number of legal documents. Ineffective storage and retrieval techniques used in the present legal system have resulted in information overload issues that have impacted negatively on the overall integrity of the legal system.

This thesis examines the potential use of Artificial Intelligence in the development of a semantic legal information storage and retrieval system that addresses the issue of information overload. Unlike current systems that are based on syntactic search techniques, the semantic storage and retrieval technique utilized in this thesis allows for more meaningful legal document retrieval, tailored to the needs of the researcher.

The Case Study Research technique was used to develop a prototype based on a combination of Knowledge Engineering and Functional Ontology techniques. The prototype ‘intelligently’ stored knowledge pertaining to previously-decided cases in order to guarantee highly relevant and accurate legal document retrieval.

The data subjects used to test the prototype included both data sourced from the Family Law division of the Judiciary of the Republic of Trinidad and Tobago and fictitious data. The semantic prototype was tested against the existing syntactic system with very encouraging results. The semantic approach was able to reduce the number of cases retrieved by 35% and proved the potential effectiveness of the system to better filter legal documents.

The semantic concept has future potential in the development of AI-based computer applications including advisory and support systems for legal professionals, legal education and for legal information service systems for the general public. This design will also benefit countries seeking to engage in Business Process Reengineering (BPR) of their legal system.

Keywords: Anna-Maria Khan; artificial intelligence and law; legal ontologies; semantic information retrieval systems; knowledge engineering; knowledge bases; information retrieval; computers and legal affairs.