

Applying Ontology learning to the generation of a Space Mission Ontology

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Accumulated unstructured and semi-structured data on space mission design contains a wealth of information for engineers. However, the wider and heterogeneous the set of data the more difficult it is to efficiently merge and query it. The Design Engineering Assistant (DEA) project aims to develop an Expert System, a virtual assistant, to support the engineers in the conceptual design phase of new missions, by considerably reducing the time spent to access information on past missions.

Expert Systems are defined as computer programs able to capture Human expertise and mimic Human reasoning, the classic architecture relies on a Knowledge Base, an inference engine and a User interface.

The DEA's goal is to act as a knowledge portal facilitating knowledge management and reuse, thus reducing the workload of the engineers related to Literature research. To merge the different unstructured and semi-structured data into the DEA Knowledge Base and set the foundations for autonomous reasoning, an ontology needs to be built first. Ontology Learning is a field of research allowing to semi-automatically generate ontologies. This presentation will focus on the implementation of Ontology Learning methods on space missions feasibility reports to extract concepts and relationships between concepts from an unstructured language corpus using Natural Language Processing methods.