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Exploiting Semantic Search Methodologies to Analyse Fast Nuclear Reactor Nuclear Related Information

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This paper describes an experiment to evaluate the outcomes of using the semantic search engine together with the entity extraction approach and the visualisation tools in large set of nuclear data related to Fast Nuclear Reactors (FNR) documents originated from INIS database and the IAEA Web publication. The INIS database has been used because is the larger collection of nuclear related data and a sub-set of it can be utilised to verify the efficiency and the effectiveness of this approach. In a nutshell, the goal of the study was to: 1. find and monitor documents dealing with FNR; 2. building knowledge base (KB) according to the FNR nuclear components and populate the KB with relevant documents; 3. communicate the conclusion of the analysis by utilising visualisation tools. The semantic search engine used in the case study has the capability to perform what is called evidential reasoning: accruing, weighing and evaluating the evidence to determinate a mathematical score for each article that measures its relevance to the subject of interest. This approach provides a means to differentiate between articles that closely meet the search criteria versus those less relevant articles. Tovek software platform, was chosen for this case study.

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