NATIONAL INTEGRATED
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Application of Ontology Engineering in Data Intensive Research

Theme/Focus Area: Harnessing the Power of Data Intensive Research for 4IR

Abstract:

Data is used on a daily basis to enable the functioning of organizations and the execution of pertinent tasks and projects. With this in mind, technological trends play a vital role in how it is generated, retrieved and processed to add value. The prevalence of the 4IR which has resulted in the vast and rapid generation of data across various channels and platforms. This has in turn necessitated a need for the revisiting and or development of tools and methodologies that can foster the effective management and processing of said data.

In comes a miraculous "solution" in the form of ontologies, which bear gifts in the form of the following (to name a few):

• Semantics (improves a system's efficiency of reasoning-makes domain assumptions explicit)
• Information extraction
• Domain conceptualization/modelling
• Knowledge discovery
• Knowledge representation and packaging
• Adapting to user preferences
• Mitigation of information overload

The application of Ontology Engineering in data intensive research has the potential of harnessing fruitful research outputs if applied effectively. This will required having a comprehensive understanding of the underlying needs and requirements of the research that will be undertook by experts. This will in turn guide the overall project through ensuring that all tasks and activities executed are aligned with the vision of the project. Seeing that one of the underlying objectives of the 4IR entails the use of machines to facilitate and automate tasks performed by humans; the use of ontologies in conjunction with data intensive research will enable effective and efficient decision-making through the provision of the retrieval and representation of relevant/applicable sources of data and information.

This presentation seeks to address the manner in which the notion of Ontology Engineering can be applied to aid many of the current methodologies applied to facilitate data intensive research in the era of the 4IR.

Keywords: Ontology, Information Management, Information Retrieval, Information Extraction, Decision Support, Data, Information, Ontology Engineering, Knowledge Management

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