COLLOBORATIVE DISCUSSION 2

Initial Post

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Kalibatiene and Vasilecas (2011) define an ontology as “a formal, explicit specification of a shared conceptualization.” Based on this, the effectiveness of an ontology language lies not only in its syntax but also in its ability to enable machine-readable, logically structured, and semantically rich knowledge representation—especially on Web-based systems.

The most popular ontology languages are Knowledge Interchange Format (KIF), Resource Description Framework (RDF), Web Ontology Language (OWL) Lite, and OWL 2. OWL2 is considered the most suitable for expressing ontologies usable by software agents on the World Wide Web (Kalibatiene & Vasilecas, 2011).

Knowledge Interchange Format (KIF) is a very rich logic-based representation language developed in the early 1990s by DARPA to interchange knowledge between systems. Although it is built on first-order logic and can model complex relationships, it is complicated to implement, inefficient when working at scale and not designed for web applications (Slimani, 2015; Kalibatiene & Vasilecas, 2011).

Resource Description Framework (RDF) is a W3C framework developed in 1997 to characterize web resources and their relationships based on simple subject–predicate–object triples. It allows for machine readability and data linking all over the Web but does not include formal semantics and built-in reasoning, which can narrow down the inferencing (W3C, 1997; Kalibatiene & Vasilecas, 2011).

OWL Lite is a W3C-approved subset of OWL 1 type ontologies for people or applications that want an ontology language. It supports simple class hierarchies and constraints, allows reasoning, and has a simple syntax. However, it retains limited expressiveness and is absent from OWL 2, so it is inappropriate for complex or large-scale ontology modelling (Cuenca Grau et al., 2008; Kalibatiene & Vasilecas, 2011).

OWL 2 is the enhanced version of the Web Ontology Language, released by the W3C in 2009. It is designed to represent complex, structured knowledge for machine reasoning on the Semantic Web. OWL2 extends OWL 1 and RDF with rich semantics, advanced reasoning, and specialized profiles (EL, QL, RL) for different use cases. Although OWL2 can be complicated to work with, given its expressiveness, it can build complex and intelligent systems over the Semantic Web (W3C, 2012; Cuenca Grau et al., 2008).

References

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