Ontology Matching: An Ultimate Solution for Semantic Interoperability in Healthcare

Abstract

The healthcare domain is a complex domain which lacks a unified terminological set, most especially in clinical cases. As a result of this, the messaging standards employed in the healthcare domain use different terms for the same concept which often results in clinical misinterpretation, knowledge mismanagement, misdiagnosis of the patient’s illness or even death. Consequently, the healthcare system is characterized by high error rate and semantic heterogeneity. A lot of efforts have been made to resolve this problem through the use of standards, clinical terminologies, web services as well as the use of archetype. However, these solutions have proved unsuccessful in resolving semantic heterogeneity in healthcare. Ontologies have also been developed to resolve this problem by making explicit the meaning of terms used in healthcare. Ontologies provide a source of shared and precisely defined terms, resulting in interoperability by knowledge sharing and reuse. Unfortunately, the variety of ways that the healthcare domain is conceptualized results in the creation of different ontologies with contradicting or overlapping parts. Thus, the available ontologies also introduce semantic heterogeneity to this domain. An effective solution to this problem is the introduction of methods for finding matches among the various components of ontologies in healthcare in
order to facilitate semantic interoperability. Therefore, this paper aims at examining the various attempts for achieving semantic interoperability in healthcare and also motivates the critical needs for ontology matching in healthcare systems.

References

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