

# **ONTOLOGY MAPPING: TOWARDS SEMANTIC INTEROPERABILITY IN DISTRIBUTED AND HETEROGENEOUS ENVIRONMENTS**

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The World Wide Web (WWW) now is widely used as a universal medium for information exchange. Semantic interoperability among different information systems in the WWW is limited due to information heterogeneity, and the non semantic nature of HTML and URLs. Ontologies have been suggested as a way to solve the problem of information heterogeneity by providing formal, explicit definitions of data and reasoning ability over related concepts. Given that no universal ontology exists for the WWW, work has focused on finding semantic correspondences between similar elements of different ontologies, i.e., ontology mapping. Ontology mapping can be done either by hand or using automated tools. Manual mapping becomes impractical as the size and complexity of ontologies increases. Full or semi-automated mapping approaches have been examined by several research studies. Previous full or semi-automated mapping approaches include analyzing linguistic information of elements in ontologies, treating ontologies as structural graphs, applying heuristic rules and machine learning techniques, and using probabilistic and reasoning methods etc. In this paper, two generic ontology mapping approaches are proposed. One is the PRIOR+ approach, which utilizes both information retrieval and artificial intelligence techniques in the context of ontology mapping. The other is the non-instance learning based approach, which experimentally explores machine learning algorithms to solve ontology mapping problem without requesting any instance. The results of the PRIOR+ on different tests at OAEI ontology matching campaign 2007 are

encouraging. The non-instance learning based approach has shown potential for solving ontology mapping problem on OAEI benchmark tests.