Semantic Similarity Computation and Concept Mapping in Earth and Environmental Science [1]

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Abstract:
Ontologies have been widely adopted and used by Earth and Environmental Science community to capture and represent knowledge in the domain. One of the major problems that prevent us to combine and reuse these ontologies to conduct real-world applications is the semantic heterogeneity issue, for example, a same term from two different ontologies may refer to two different concepts; or two terms from two different ontologies may have the same meaning. In this work, we addressed the problem by (1) developing a semantic similarity computation model to compute similarity among the concepts in Earth and Environmental Science; (2) based on the computation model, we implemented a concept mapping tool that creates alignment for concepts that are semantically the same or similar; (3) we demonstrated the effectiveness of the tool using GCMD and CLEAN vocabularies and other earth science related ontologies.

Author(s):

Name: Jin Guang Zheng [3]
Organization(s): Tetherless World Constellation [4]
Email: zhengj3@rpi.edu [5]

Name: Marshall Ma [6]
Email: max7@rpi.edu [7]

Name: Peter Fox [8]
Organization(s): TWC [9]
Email: pfox@cs.rpi.edu [10]

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