Experiments on automatic alignment of reputation models' ontologies

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Introduction

In societies, a way to obtain social order is the use of trust and reputation models to leverage interaction among their citizens. Therefore, some efforts are addressed to use ontologies to describe agent reputation models in multiagent systems (MAS). The major problem such approaches need to deal with is the interoperability among different reputation models. The Service Oriented Architecture for Reputation Interaction – SOARI [1] supports agent interaction about reputation by adopting an ontology-based approach to describe agent reputation models and deals with the mapping among their concepts in a semi-automatic approach.

Objective

In this paper, we analyze the viability of automating the alignment between reputation models ontologies created independently of the common vocabulary and the vocabulary itself in the context of the SOARI architecture.

Method

In the way to analyze the possibility of adopting an automatic approach to align the concepts of diverse ontologies that describe reputation models in SOARI, a review about the avaible tools for ontologies alignment was conducted. Some of them, such as [2] , [3] and [4] were used to perform the alignment between ontologies that describe Repage [5] and Typology of Reputation [6] and a comparison between their results and the ones obtained by SOARI was described.

Results

The alignments had considered the developed ontology as source and the Functional Ontology of Reputation – FORe, the common vocabulary of SOARI, as the target ontology, which means that concepts form source ontologies were mapped to concepts of FORe. A confidence value in the [0,1] interval is attached to each alignment result. The alignments concerning the Repage model were, in general, low rated. Each concept alignment had a low confidence and they were mostly inaccurate. Meanwhile, the alignments between Typology and FORe was much more satisfactory, although they still had minor problems. The confidence was considerably higher, so was the quality. The structured model is close to what FORe has proposed as types of reputation, making the alignments better succeded than the Repage ones.

Conclusion

Results were compared with the ones provided by the SOARI Ontology Mapping Service and indicate that the semiautomatic approach does a better job. Although such comparison results were already expected, the difference between them was bigger than expected.

References

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