NOR$_2$O: a Library for Transforming Non-Ontological Resources to Ontologies

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Abstract. With the goal of speeding up the ontology development process, ontology engineers are starting to reuse and transform as much as possible available non-ontological resources, such as classification schemes, thesauri, lexicons, etc. Within the NeOn project we propose a method for re-engineering non-ontological resources into ontologies. This method is based on the so-called re-engineering patterns. This paper presents the description of the software library, that implements the transformations suggested by the patterns.

Key words: Non-Ontological Resources, Ontologies, Re-engineering

1 Introduction and Motivation

Non-Ontological Resources (NORs) [?] are knowledge resources whose semantics has not yet been formalized by an ontology. Within the NeOn project[1] [?], we propose a pattern based method for re-engineering NORs into ontologies. The method relies on re-engineering patterns[2], which define a procedure that transforms the NOR components into ontology representational primitives. In this paper, we present the description of the NOR$_2$O, a Java library that implements the transformations proposed by the patterns.

2 NOR$_2$O

The NOR$_2$O library performs an ETL process[3] for transforming the NOR components into ontology elements. Figure 1 depicts the modules of the library.

The `NOR Connector` loads classification schemes, thesauri, and lexicons modelled with their corresponding data models, and implementations.

The `Transformer` performs the transformations by implementing the sequence of activities included in the patterns. This module interacts with the `Semantic Relation Disambiguator` module for obtaining the suggested semantic relations of the NOR elements.

The `Semantic Relation Disambiguator` is in charge of obtaining the semantic relation between two NOR elements. Basically, the module receives two NOR

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[1] http://www.neon-project.org
[2] http://ontologydesignpatterns.org/wiki/Submissions:ReengineeringODPs
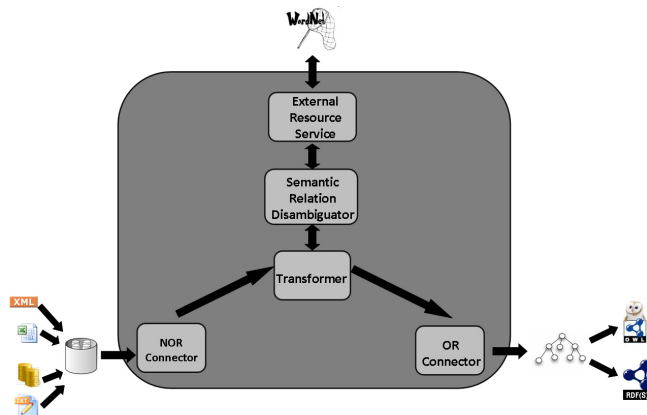[3] Extract, transform, and load (ETL) of legacy data sources.

Fig. 1. Modules of the NOR$_2$O software library.

elements from the `Transformer` module and returns the semantic relation between them. The module connects the external resource through the `External Resource Service` module to get the relation.

The `External Resource Service` is in charge of interacting with external resources for obtaining the semantic relations between two NOR elements. At this moment the module interacts with WordNet[4]. We are implementing the access to DBpedia[5].

The `OR Connector` generates the ontology in OWL. To this end, this module relies on the OWL API[6].

We have performed a set of evaluations[7] of the NOR$_2$O, and we have obtained very good results. Finally, to conclude the description of the software library, it is worth to mention that the implementation of this library follows a modular approach, therefore it is possible to extend it to include other types of NORs, data models, and implementations in a simple way, as well as exploiting other external resources for relation disambiguation.

References

1. A. García-Silva, A. Gómez-Pérez, M. C. Suárez-Figueroa, and B. Villazón-Terrazas. A Pattern Based Approach for Re-engineering Non-Ontological Resources into Ontologies. In *ASWC '08: Proceedings of the 3rd Asian Semantic Web Conference on The Semantic Web*, pages 167–181, Berlin, Heidelberg, 2008. Springer-Verlag.
2. A. Gómez-Pérez and M. C. Suárez-Figueroa. Scenarios for Building Ontology Networks within the NeOn Methodology. In *Proceedings of the Fifth International Conference on Knowledge Capture (K-CAP 2009)*, 2009.

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[4] `http://wordnet.princeton.edu/`

[5] `http://dbpedia.org/`

[6] `http://owlapi.sourceforge.net/`

[7] NORs available at `http://droz.dia.fi.upm.es/nors` and the ontologies generated at `http://droz.dia.fi.upm.es/ontologies`