LogMap Family Participation in the OAEI 2020 ⋆

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Abstract. We present the participation of LogMap and its variants in the OAEI 2020 campaign. The LogMap project started in January 2011 with the objective of developing a scalable and logic-based ontology matching system. This is the ninth participation in the OAEI and the experience has so far been very positive. LogMap is one of the few systems that participates in (almost) all OAEI tracks.

1 Presentation of the system

LogMap [7, 9] is a highly scalable ontology matching system that implements the consistency and locality principles [8]. LogMap is one of the few ontology matching system that *(i)* can efficiently match semantically rich ontologies containing tens (and even hundreds) of thousands of classes, *(ii)* incorporates sophisticated reasoning and repair techniques to minimise the number of logical inconsistencies, and *(iii)* provides support for user intervention during the matching process.

1.1 LogMap variants in the 2020 campaign

As in previous campaigns, in the OAEI 2020 we have participated with two additional variants:

LogMapLt is a "lightweight" variant of LogMap, which essentially only applies (efficient) string matching techniques.
LogMapBio includes an extension to use BioPortal [4, 5] as a (dynamic) provider of mediating ontologies instead of relying on a few preselected ontologies [1].

In previous years we also participated with LogMapC[3].

1.2 Link to the system and parameters file

LogMap is open-source and released under GNU Lesser General Public License 3.0.[4] LogMap components and source code are available from the LogMap's GitHub page: `https://github.com/ernestojimenezruiz/logmap-matcher/`.

[3] LogMapC is a variant of LogMap which, in addition to the consistency and locality principles, also implements the conservativity principle (see details in [11]).

[4] `http://www.gnu.org/licenses/`

LogMap distributions can be easily customized through a configuration file containing the matching parameters.

LogMap, including support for interactive ontology matching, can also be used directly through an AJAX-based Web interface: `http://krrwebtools.cs.ox.ac.uk/`. This interface has been very well received by the community since it was deployed in 2012. More than 4,500 requests coming from a broad range of users have been processed so far.

1.3 LogMap as a mapping repair system

Only a very few systems participating in the OAEI competition implement repair techniques. As a result, existing matching systems (even those that typically achieve very high precision scores) compute mappings that lead in many cases to a large number of unsatisfiable classes.

We believe that these systems could significantly improve their output if they were to implement repair techniques similar to those available in LogMap. Therefore, with the goal of providing a useful service to the community, we have made LogMap's ontology repair module (LogMap-Repair) available as a self-contained software component that can be seamlessly integrated in most existing ontology matching systems [10, 3].

1.4 LogMap as a matching task division system

LogMap also includes a novel module to divide the ontology alignment task into (independent) manageable subtasks [6]. This component relies on LogMap's lexical index, a neural embedding model [12] and locality-based modules [2]. This module can be integrated in existing ontology alignment systems as a external module. The results in [6] are encouraging as the division enabled systems to complete some large-scale matching tasks.

2 General comments and conclusions

Please refer to `http://oaei.ontologymatching.org/2020/results/` for the results of the LogMap family in the OAEI 2020 campaign.

2.1 Comments on the results

As in previous campaigns, LogMap has been one of the top systems and one of the few systems that participates in (almost) all tracks. Furthermore, it has also been one of the few systems implementing repair techniques and providing (almost) coherent mappings in all tracks.

LogMap's main weakness is that the computation of candidate mappings is based on the similarities between the vocabularies of the input ontologies; hence, in the cases where the ontologies are lexically disparate or do not provide enough lexical information LogMap is at a disadvantage.

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