
mOeX bibliography (2017-01-01)

[cheatham2017a] Michelle Cheatham, Isabel Cruz, Jérôme Euzenat, Catia Pesquita (eds),
Special issue on ontology and linked data matching,
Semantic web journal (special issue) 8(2):183--251, 2017

[cheatham2017b] Michelle Cheatham, Isabel Cruz, Jérôme Euzenat, Catia Pesquita,
Special issue on ontology and linked data matching,
2017
<http://content.iospress.com/articles/semantic-web/sw251>
<ftp://ftp.inrialpes.fr/pub/moex/papers/cheatham2017b.pdf>

[euzenat2017a] Jérôme Euzenat,
Interaction-based ontology alignment repair with expansion and relaxation,
Proc. 26th International Joint Conference on Artificial Intelligence (IJCAI), Melbourne (VIC AU),
pp185-191, 2017
<http://static.ijcai.org/proceedings-2017/0027.pdf>
<ftp://ftp.inrialpes.fr/pub/moex/papers/euzenat2017a.pdf>

Agents may use ontology alignments to communicate when they represent knowledge with different ontologies: alignments help reclassifying objects from one ontology to the other. These alignments may not be perfectly correct, yet agents have to proceed. They can take advantage of their experience in order to evolve alignments: upon communication failure, they will adapt the alignments to avoid reproducing the same mistake. Such repair experiments had been performed in the framework of networks of ontologies related by alignments. They revealed that, by playing simple interaction games, agents can effectively repair random networks of ontologies. Here we repeat these experiments and, using new measures, show that previous results were underestimated. We introduce new adaptation operators that improve those previously considered. We also allow agents to go beyond the initial operators in two ways: they can generate new correspondences when they discard incorrect ones, and they can provide less precise answers. The combination of these modalities satisfy the following properties: (1) Agents still converge to a state in which no mistake occurs. (2) They achieve results far closer to the correct alignments than previously found. (3) They reach again 100% precision and coherent alignments.

[euzenat2017b] Jérôme Euzenat,
Crafting ontology alignments from scratch through agent communication,
In: Bo An, Ana Bazzan, João Leite (eds), (Proc. 20th International Conference on Principles and practice of multi-agent systems (PRIMA)), *Lecture notes in computer science* 10621, 2017,
<ftp://ftp.inrialpes.fr/pub/exmo/publications/euzenat2017b.pdf>

Agents may use different ontologies for representing knowledge and take advantage of alignments between ontologies in order to communicate. Such alignments may be provided by dedicated algorithms, but their accuracy is far from satisfying. We already explored operators allowing agents to repair such alignments while using them for communicating. The question remained of the capability of agents to craft alignments from scratch in the same way. Here we explore the use of expanding repair operators for that purpose. When starting from empty alignments, agents fails to create them as they have nothing to repair. Hence, we introduce the capability for agents to risk adding new correspondences when no existing one is useful. We compare and discuss the results provided by this modality and show that, due to this generative capability, agents reach better results than without it in terms of the accuracy of their alignments. When starting with empty alignments, alignments reach the same quality level as when starting with random alignments, thus providing a reliable way for agents to build alignment from scratch through communication.

[rousset2017a] Marie-Christine Rousset, Manuel Attencia, Jérôme David, Fabrice Jouanot, Olivier Palombi, Federico Ulliana,

Datalog revisited for reasoning in linked data,

Proc. 26th International Joint Conference on Artificial Intelligence (IJCAI), Melbourne (VIC AU), (Giovambattista Ianni, Domenico Lembo, Leopoldo Bertossi, Wolfgang Faber, Birte Glimm, Georg Gottlob, Steffen Staab (eds), (Proc. 13th International summer school on reasoning web (RW)), *Lecture notes in computer science* 10370, 2017), pp121-166, 2017

Linked Data provides access to huge, continuously growing amounts of open data and ontologies in RDF format that describe entities, links and properties on those entities. Equipping Linked Data with inference paves the way to make the Semantic Web a reality. In this survey, we describe a unifying framework for RDF ontologies and databases that we call deductive RDF triplestores. It consists in equipping RDF triplestores with Datalog inference rules. This rule

language allows to capture in a uniform manner OWL constraints that are useful in practice, such as property transitivity or symmetry, but also domain-specific rules with practical relevance for users in many domains of interest. The expressivity and the genericity of this framework is illustrated for modeling Linked Data applications and for developing inference algorithms. In particular, we show how it allows to model the problem of data linkage in Linked Data as a reasoning problem on possibly decentralized data. We also explain how it makes possible to efficiently extract expressive modules from Semantic Web ontologies and databases with formal guarantees, whilst effectively controlling their succinctness. Experiments conducted on real-world datasets have demonstrated the feasibility of this approach and its usefulness in practice for data integration and information extraction.

[vizzini2017a] Jérémy Vizzini,

Data interlinking with relational concept analysis,

Master's thesis, Université Grenoble Alpes, Grenoble (FR), 2017

<ftp://ftp.inrialpes.fr/pub/moex/reports/m2r-vizzini.pdf>

Vast amounts of RDF data are made available on the web by various institutions providing overlapping information. To be fully exploited, different representations of the same object across various data sets have to be identified. This is what is called data interlinking. One novel way to generate such links is to use link keys. Link keys generalise database keys by applying them across two data sets. The structure of RDF makes this problem much more complex than for relational databases for several reasons. An instance can have multiple values for a given attribute. Moreover, values of properties are not necessarily datatypes but instances of the graph. A first method has been designed to extract and select link keys from two classes of objects which deals with multiple values but not object values. Moreover, the extraction step has been rephrased in formal concept analysis (FCA) allowing to generate link keys across relational tables. Our aim is to extend this work so that it can deal with multiple values. Then, we show how to use it to deal with object values when the data set is cycle free. This encoding does not necessarily generate the optimal link keys. Hence, we use relational concept analysis (RCA), an extension of FCA taking relations between concepts into account. We show that a new expression of this problem is able to extract the optimal link keys even in the presence of circularities. Moreover, the elaborated process does not require information about the alignments of the ontologies to find out for which pairs of classes to extract link keys. We implemented these methods and evaluated them by reproducing the experiments made in previous studies. This shows that the method extracts the expected results as well as (also expected) scalability issues.

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