mOeX bibliography (2018-12-12)

[achichi2017a] Manel Achichi, Michelle Cheatham, Zlatan Dragisic, Jérôme Euzenat, Daniel Faria, Alfio Ferrara, Giorgos Flouris, Irini Fundulaki, Ian Harrow, Valentina Ivanova, Ernesto Jiménez-Ruiz, Kristian Kolthoff, Elena Kuss, Patrick Lambrix, Henrik Leopold, Huanyu Li, Christian Meilicke, Majid Mohammadi, Stefano Montanelli, Catia Pesquita, Tzanina Saveta, Pavel Shvaiko, Andrea Splendiani, Heiner Stuckenschmidt, Élodie Thiéblin, Konstantin Todorov, Cássia Trojahn dos Santos, Ondrej Zamazal,
Results of the Ontology Alignment Evaluation Initiative 2017,
Pavel Shvaiko, Jérôme Euzenat, Ernesto Jiménez-Ruiz, Michelle Cheatham, Oktie Hassanzadeh (eds), Proc. 12th ISWC workshop on ontology matching (OM), Wien (AT), pp61-113, 2017
http://ceur-ws.org/Vol-2032/oaei17_paper0.pdf
http://oaei.ontologymatching.org/2017/results/oaei2017.pdf
ftp://ftp.inrialpes.fr/pub/moex/papers/achichi2017a.pdf

Ontology matching consists of finding correspondences between semantically related entities of different ontologies. The Ontology Alignment Evaluation Initiative (OAEI) aims at comparing ontology matching systems on precisely defined test cases. These test cases can be based on ontologies of different levels of complexity (from simple thesauri to expressive OWL ontologies) and use different evaluation modalities (e.g., blind evaluation, open evaluation, or consensus). The OAEI 2017 campaign offered 9 tracks with 23 test cases, and was attended by 21 participants. This paper is an overall presentation of that campaign.

[adrian2018a] Kemo Adrian, Jérôme Euzenat, Dagmar Gromann (eds),
(Proc. 1st JOMO workshop on Interaction-Based Knowledge Sharing (WINKS)),
42p., 2018
http://ceur-ws.org/Vol-2050/

[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,
Semantic web journal 8(2):183-184, 2017
http://content.iospress.com/articles/semantic-web/sw251
ftp://ftp.inrialpes.fr/pub/moex/papers/cheatham2017b.pdf

[david2018a] Jérôme David, Jérôme Euzenat, Pierre Genevès, Nabil Layaïda,
Evaluation of query transformations without data,
Proc. WWW workshop on Reasoning on Data (RoD), Lyon (FR), pp1599-1602, 2018
ftp://ftp.inrialpes.fr/pub/moex/papers/david2018a.pdf

Query transformations are ubiquitous in semantic web query processing. For any situation in which transformations are not proved correct by construction, the quality of these transformations has to be evaluated. Usual evaluation measures are either overly syntactic and not very informative ---the result being: correct or incorrect--- or dependent from the evaluation sources. Moreover, both approaches do not necessarily yield the same result. We suggest that grounding the evaluation on query containment allows for a data-independent evaluation that is more informative than the usual syntactic evaluation. In addition, such evaluation modalities may take into account ontologies, alignments or different query languages as soon as they are relevant to query evaluation.

[david2018b] Jérôme David, Jérôme Euzenat, Jérémy Vizzini,
Linkky: Extraction de clés de liage par une adaptation de l'analyse relationnelle de concepts,
Actes 29e journées francophones sur Ingénierie des connaissances (IC), Nancy (FR), pp271-274, 2018
ftp://ftp.inrialpes.fr/pub/moex/papers/david2018b.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

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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,
Proc. 20th International Conference on Principles and practice of multi-agent systems (PRIMA), Nice (FR), (Bo An, Ana Bazzan, João Leite, Serena Villata, Leendert van der Torre (eds), (Proc. 20th International Conference on Principles and practice of multi-agent systems (PRIMA)), *Lecture notes in computer science* 10621, 2017), pp245-262, 2017
ftp://ftp.inrialpes.fr/pub/moex/papers/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.

[euzenat2017c] Jérôme Euzenat,
Knowledge diversity under socio-environmental pressure,
2017
ftp://ftp.inrialpes.fr/pub/moex/papers/euzenat2017c.pdf

Experimental cultural evolution has been convincingly applied to the evolution of natural language and we aim at applying it to knowledge. Indeed, knowledge can be thought of as a shared artefact among a population influenced through communication with others. It can be seen as resulting from contradictory forces: internal consistency, i.e., pressure exerted by logical constraints, against environmental and social pressure, i.e., the pressure exerted by the world and the society agents live in. However, adapting to environmental and social pressure may lead agents to adopt the same knowledge. From an ecological perspective, this is not particularly appealing: species can resist changes in their environment because of the diversity of the solutions that they can offer. This problem may be approached by involving diversity as an internal constraint resisting external pressure towards uniformity.

[euzenat2018a] Jérôme Euzenat,
De la langue à la connaissance: approche expérimentale de l'évolution culturelle,
Bulletin de l'AFIA 100:9-12, 2018
ftp://ftp.inrialpes.fr/pub/moex/papers/euzenat2018a.pdf

[euzenat2018b] Jérôme Euzenat, François Schwarzentruber (éds),
(Actes conference AFIA sur Conférence Nationale d'Intelligence Artificielle et Rencontres Jeunes Chercheurs en Intelligence Artificielle (CNIA+RJCIA)),
133p., 2018
http://ceur-ws.org/Vol-2133/
ftp://ftp.inrialpes.fr/pub/moex/reports/CNIA+RJCIA2018.pdf

[pauwels2018a] Pieter Pauwels, María Poveda Villalón, Alvaro Sicilia, Jérôme Euzenat,

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Semantic technologies and interoperability in the built environment,
Semantic web journal 9(6):731-734, 2018
http://content.iospress.com/articles/semantic-web/sw321
ftp://ftp.inrialpes.fr/pub/moex/papers/pauwels2018a.pdf

The built environment consists of plenty of physical assets with which we interact on a daily basis. In order to improve not only our built environment, but also our interaction with that environment, we would benefit a lot from semantic representations of this environment. This not only includes buildings, but also large infrastructure (bridges, tunnels, waterways, underground systems), and geospatial data. With this special issue, an insight is given into the current state of the art in terms of semantic technologies and interoperability in this built environment. This editorial not only summarizes the content of the Special Issue on Semantic Technologies and interoperability in the Built Environment, it also provides a brief overview of the current state of the art in general in terms of standardisation and community efforts.

[rousset2017a] Marie-Christine Rousset, Manuel Atencia, Jérôme David, Fabrice Jouanot, Olivier Palombi, Federico Ulliana,
Datalog revisited for reasoning in linked data,
In: 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

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.

[shvaiko2017a] Pavel Shvaiko, Jérôme Euzenat, Ernesto Jiménez-Ruiz, Michelle Cheatham, Oktie Hassanzadeh (eds),
(Proc. 12th ISWC workshop on ontology matching (OM)),
225p., 2017
http://ceur-ws.org/Vol-2032/
ftp://ftp.inrialpes.fr/pub/moex/reports/ISWC2017-OM-ws.pdf

[shvaiko2018a] Pavel Shvaiko, Jérôme Euzenat, Ernesto Jiménez-Ruiz, Michelle Cheatham, Oktie Hassanzadeh (eds),
(Proc. 13th ISWC workshop on ontology matching (OM)),
227p., 2018
http://ceur-ws.org/Vol-2288/
ftp://ftp.inrialpes.fr/pub/moex/reports/ISWC2018-OM-ws.pdf

[sicilia2018a] Alvaro Sicilia, Pieter Pauwels, Leandro Madrazo, María Poveda Villalón, Jérôme Euzenat (eds),
Special Issue on Semantic Technologies and Interoperability in the Build Environment,
Semantic web journal (special issue) 9(6):729-855, 2018

[silva2017a] Jomar da Silva, Fernanda Araujo Baião, Kate Revoredo, Jérôme Euzenat,
Semantic interactive ontology matching: synergistic combination of techniques to improve the set of candidate correspondences,
Pavel Shvaiko, Jérôme Euzenat, Ernesto Jiménez-Ruiz, Michelle Cheatham, Oktie Hassanzadeh (eds), Proc. 12th ISWC workshop on ontology matching (OM), Wien (AT), pp13-24, 2017
http://ceur-ws.org/Vol-2032/om2017_Tpaper2.pdf
ftp://ftp.inrialpes.fr/pub/moex/papers/silva2017a.pdf

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Ontology Matching is the task of finding a set of entity correspondences between a pair of ontologies, i.e. an alignment. It has been receiving a lot of attention due to its broad applications. Many techniques have been proposed, among which the ones applying interactive strategies. An interactive ontology matching strategy uses expert knowledge towards improving the quality of the final alignment. When these strategies are based on the expert feedback to validate correspondences, it is important to establish criteria for selecting the set of correspondences to be shown to the expert. A bad definition of this set can prevent the algorithm from finding the right alignment or it can delay convergence. In this work we present techniques which, when used simultaneously, improve the set of candidate correspondences. These techniques are incorporated in an interactive ontology matching approach, called ALINSyn. Experiments successfully show the potential of our proposal.

[silva2018a] Jomar da Silva, Kate Revoredo, Fernanda Araujo Baião, Jérôme Euzenat,
Interactive ontology matching: using expert feedback to select attribute mappings,
Pavel Shvaiko, Jérôme Euzenat, Ernesto Jiménez-Ruiz, Michelle Cheatham, Oktie Hassanzadeh (eds),
Proc. 13th ISWC workshop on ontology matching (OM), Monterey (CA US), pp25-36, 2018
http://ceur-ws.org/Vol-2288/om2018_LTpaper3.pdf
ftp://ftp.inrialpes.fr/pub/moex/papers/silva2018a.pdf

Interactive Ontology Matching considers the participation of domain experts during the matching process of two ontologies. An important step of this process is the selection of mappings to submit to the expert. These mappings can be between concepts, attributes or relationships of the ontologies. Existing approaches define the set of mapping suggestions only in the beginning of the process before expert involvement. In previous work, we proposed an approach to refine the set of mapping suggestions after each expert feedback, benefiting from the expert feedback to form a set of mapping suggestions of better quality. In this approach, only concept mappings were considered during the refinement. In this paper, we show a new approach to evaluate the benefit of also considering attribute mappings during the interactive phase of the process. The approach was evaluated using the OAEI conference data set, which showed an increase in recall without sacrificing precision. The approach was compared with the state-of-the-art, showing that the approach has generated alignment with state-of-the-art quality.

[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.

[wudagechekol2018a] Melisachew Wudage Chekol, Jérôme Euzenat, Pierre Genevès, Nabil Layaïda,
SPARQL Query containment under schema,
Journal on data semantics 7(3):133-154, 2018
ftp://ftp.inrialpes.fr/pub/moex/papers/wudagecheckol2018a.pdf

Query containment is defined as the problem of determining if the result of a query is included in the result of another query for any dataset. It has major applications in query optimization and knowledge base verification. The main objective of this work is to provide sound and complete procedures to determine containment of SPARQL queries under expressive description logic schema axioms. Beyond that, these procedures are experimentally evaluated. To date, testing query containment has been performed using different techniques: containment mapping, canonical databases, automata theory techniques and through a reduction to the validity problem in logic. In this work, we use the latter technique to test containment of SPARQL queries using an expressive modal logic called mu-calculus. For that purpose, we define an RDF graph encoding as a transition system which preserves its characteristics. In addition, queries and

schema axioms are encoded as mu-calculus formulae. Thereby, query containment can be reduced to testing validity in the logic. We identify various fragments of SPARQL and description logic schema languages for which containment is decidable. Additionally, we provide theoretically and experimentally proven procedures to check containment of these decidable fragments. Finally, we propose a benchmark for containment solvers which is used to test and compare the current state-of-the-art containment solvers.

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