Embedded Benchmarking and Expert Authoring for Ontology Mapping and Alignment Generation



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Introduction

We propose an extendable evaluation method for exploring ontology matching performances. The tests are embedded into a semantic search architecture and allow to build tests with new datasets, new alignment input, or new individual matching algorithm as expert authoring environment. Expert users are involved by generating test cases, supervising initial alignments and parameters to the matching process and by combining matchers into global matching methods.

Features

· Interactive ontology matching and alignment generation by user-friendly and editable HTML test cases:

· Ontology mapping for domain-specific applications;

· State-of-the-art ontology mapping research should includes the development of scalable methods by

- combining methods; and

- tools for supporting users to tackle the interoperability problem between distributed knowledge sources. ->

Convenient editors for iterative, semiautomatic mapping

Embedded **Benchmarking Tests in Search Architecture**

Interactive Semantic Mediation for for basically three purposes:

1. Interactive benchmark tests on similarity matching algorithms and pipelines; 2. Interactive definition of relevant user feedback:

3. Interactive alignment generation for further use



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assengerVebicle	Lastwagen	0.7	0	0	0	true	0.25	1	0.400	1.0	2.0	3.0	0.0
/an	Lastwagen	0.7	0	0	0	true	0.25	1	0.400	1.0	3.0	3.0	0.0
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ìнк	Lastenbrages.	-1	1	0		true	0.429	1	0.600	3.0	4.0	4.0	0.0
/an	Lartkraftwagen	0.7	0	0	0	true	0.429	1	0.600	3.0	5.0	4.0	0.0
reck.	Passenger Vehicle	0.7	0	0	0	true	0.429	1	0.600	3.0	6.0	4.0	0.0
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diotor Vehicle	PassengerVehicle	0.5	1	0.559	1	true	0.5	1	0.667	4.0	8.0	4.0	0.0
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/an	Kraffahrzeug	0.7	1	0	0	false	0.455	1	0.625	5.0	8.0	6.0	0.0
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diriVan	Lastkraftwagen	0.7	0	0	0	true	0.462	1	0.632	6.0	10.0	7.0	0.0
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orVehicle	Kraffikerrag	0.7	1		1	trie			1	1.0	0.0	0.0	0.0
on	Mensch	0.7		0.914	1	tree			1	2.0	0.0	0.0	0.0
Van	Mehrzweckfahrzeug	0.7	0	0.281	0	true	1	1	1	2.0	1.0	0.0	0.0
	PassengerVehicle	0.7	1	0.153	0	faise	0.667	1	0.900	2.0	1.0	1.0	0.0
enger Vehicle	PassengerVebicle	0.7		0.950	1	true	0.75		0.857	3.0	1.0	1.0	0.0
enger Vehicle	Lastwagen	0.7	0	0.101	0	true	0.75	1	0.857	3.0	2.0	1.0	0.0
	Lastwagen	0.7	0	0.101	0	tree	0.75	1	0.857	3.0	3.0	1.0	0.0
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enger Vehicle	Lasticaltwagen	0.7	0	0.0790	0	true	0.600	1	0.750	3.0	4.0	2.0	0.0
k	Lastwagen	0.7		0.0790	0	failse	0.5		0.667	3.0	4.0	3.0	0.0
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	Lasticatiwagen	0.7	0	0.0790	0	trie	0.429	1	0.600	3.0	5.0	4.0	0.0
k.	PassengerVehicle	0.7	0	0.0790	0	tree	0.429		0.600	3.0	6.0	4.0	0.0
or Vehicle	Menach	0.7	0	0.449	0	true	0.429		0.600	3.0	7.0	4.0	0.0
on	Kraffikerrag	0.7	0	0.449	0	tree	0.429	1	0.600	3.0	8.0	4.0	0.0
orVehicle	PassengerVebicle	0.7		0.464	0	faire	0.375		0.545	3.0	8.0	5.0	0.0
orVehicle	Lastwagen	0.7		0.170	0	false	0.333	1	0.500	3.0	8.0	6.0	0.0
enger Vehicle	Kraftfahrzwag	0.7	1	0.171	0	faise	0.300	1	0.462	3.0	8.0	7.0	0.0
	Kraftishezwag	0.7		0.171	0	faire	0.273		0.429	3.0	8.0	8.0	0.0
enser Vehicle	Mehrzweckfahrzeuz	0.7		0.110	0	false	0.25		0.400	3.0	8.0	9.0	0.0
	Mehrzweckfahrzeug	0.7		0.110	0	false	0.231	1	0.375	3.0	8.0	10.0	0.0
k	Mehrweckfahrzeug	0.7	0	0.110	0	true	0.231	1	0.375	3.0	9.0	10.0	0.0
Van	Lastkraftwagen	0.7	0	0.114	0	true	0.231	1	0.375	3.0	10.0	10.0	0.0
Val	Lastwagen	0.7	0	0.114	0	tree	0.231	1	0.375	3.0	11.0	10.0	0.0
Van	ParrengerVebicle	0.7		0.114	0	falze	0.214		0.353	3.0	11.0	11.0	0.0
	Car	0.7		0.111	0	false	0.200	1	0.333	3.0	11.0	12.0	0.0
engerVehicle	Car	0.7		0.111	0	failse	0.188	1	0.316	3.0	11.0	13.0	0.0
k	Car	0.7	0	0.0840	0	true	0.188		0.316	3.0	12.0	13.0	0.0

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Enabling Technologies

Publicly available testing and matching software can be used.

Open Source Software	Description						
Fit (http://fit.c2.com/)	FIT is a framework for integrated testing. A test case is written in tables in an HTML file, so that no programming skills are needed for ediling. A programmer writes a program which uses the test case's input and checks whether or not the expected output is computed. In our testing cases, we use the main FIT library.						
itNesse							
(http://www.bandxi.com/fitnesse/)	We make use of this extended version of FIT as a testing tool. This extension can be used as a plugin in Eclipse (whereby the procedure o writing the test cases and the respective programs remains the same as in FIT).						
Phaselibs							
http://phaselibs.opendfki.de)	First, this programming platform supports custom combinations of al- gorithms. Second, it is entirely written in Jaca which allows us to di- rectly integrate the API with the expert authoring environment based on FIT. Third, the API supports individual modules and libraries for ontol- ogy adapters, similarity measures (e.g., string based, instance based, or graph based), and alignment generators.						

Evaluation Procedure

You can use input from, e.g., visual ontology matching tools to create test tables

The expert user is involved in the specification of the test cases and provides suggestions on mappings. This makes the process of creating and validating mappings interactive and personalised to experts or expert groups.

Load and exchange ontologies to match and write supervised benchmark cases.

The user knows about the functional primitives which correspond to functions of a Java API.

Supervise intermediate results, interpret incremental precision, recall, and F measure values, and sequentially combine matchers (which also may require input alignments)

The second matching phase benefits from pre-compiling the first alignment. Users can add comments; a summary is generated.

Conclusion

We described a tool for ontology mapping and alignment generation.

In this way, we increase the transparency and usability of an incremental ontology matching process. The method should be particularly useful in cases where, in response to industry requirements, a collection of reference test sets is not available.

<?xml version="1.0"?>
<rdf:RDF xmlns;j.0="http://km.opendfki.de/PHASE#"
xmlns:rdf=Thtp://wnw.wo.org/1999/02/22-rdf-syntax-ns#">
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-ddtib-dib-dib-proposedMappingEquab-dib-proposedMappingEquab-dib-proposedMappingEquab-dib-proposedMappingEquab-ddtib-proposedMappingEquab-

</j.0:ProposedMappingsList> </rdf:RDF>

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Daniel Sonntag, Embedded Benchmarking and Expert Authoring for Ontology Mapping and Alignment Generation, FOIS 2008

This research is supported by the German Federal Ministry of Economics and Technology under the grant number 01MQ07016 (THESEUS). The responsibility for this publication lies with the author