

Semantic Web and Beyond: Computing for Human Experience

Terminological Ontologies

Design, Management and Practical Applications

Javier Lacasta, Javier Nogueras-Iso, Francisco Javier Zarazaga-Soria

 Springer

Contents

1	Ontology basic concepts	1
1.1	Introduction	1
1.2	Ontology families	2
1.3	Ontology classification	3
1.3.1	Controlled vocabularies	5
1.3.2	Glossaries	6
1.3.3	Subject headings and taxonomies	6
1.3.4	Thesauri	8
1.3.5	Semantic Networks	12
1.3.6	Is-a Hierarchies and Formal Instances	14
1.3.7	Frame based ontologies	15
1.3.8	General Constraints and Disjointness	17
1.4	Alignment of ontologies and ontology mappings	18
1.5	Summary	24
2	A representation framework for terminological ontologies	25
2.1	Introduction	25
2.2	Related work in the representation of terminological ontologies	26
2.2.1	Representation of knowledge models	26
2.2.2	Representation of mappings	28
2.3	Representation of terminological ontologies	32
2.3.1	Knowledge model representation	32
2.3.2	Metadata for ontology description	37
2.4	Representation of ontology mappings	41
2.4.1	Mapping representation	41
2.4.2	Metadata for mapping description	45
2.5	Case of study: Mapping of terminological ontologies to an upper level ontology	49
2.6	Summary	53

- 3 Ontology learning for terminological ontologies** 55
 - 3.1 Introduction 55
 - 3.2 Ontology learning from corpora 56
 - 3.3 Ontology learning from dictionaries 57
 - 3.4 Ontology learning from schemata 58
 - 3.5 Ontology learning from thesauri 59
 - 3.6 Cases of study 61
 - 3.6.1 Transformation of heterogeneous thesaurus representations into terminological ontologies 62
 - 3.6.2 Terminological ontologies as a result of thesaurus merging 76
 - 3.7 Summary 96

- 4 Formalization of terminological ontologies** 99
 - 4.1 Introduction 99
 - 4.2 Current approaches towards formalization 100
 - 4.3 Increase of formalism in terminological models 102
 - 4.4 Application of the formalization process 104
 - 4.5 Summary 106

- 5 Access to terminological ontologies** 107
 - 5.1 Introduction 107
 - 5.2 Terminological ontology management 108
 - 5.3 Terminological ontology storage and access 112
 - 5.3.1 Architecture 112
 - 5.3.2 Terminological ontology repository 113
 - 5.3.3 Terminological ontology manager 116
 - 5.4 Edition of terminological ontologies 117
 - 5.5 Accessing terminological ontologies through a web service 123
 - 5.6 Performance analysis 125
 - 5.7 Summary 128

- 6 Applicability of terminological ontologies to information retrieval** ... 131
 - 6.1 Introduction 131
 - 6.2 Resource classification 132
 - 6.3 Improvement of information discovery through query expansion ... 134
 - 6.3.1 State of the art in query expansion 135
 - 6.3.2 A proposal for terminological based query expansion 137
 - 6.3.3 Testing the retrieval model 143
 - 6.4 Information browsing 148
 - 6.4.1 State of the art in information browsing approaches 149
 - 6.4.2 Topic map based browsing 151
 - 6.4.3 Cluster based browsing 154
 - 6.4.4 Browsing methods comparison 159
 - 6.5 Summary 166

- 7 Concluding remarks and outlook** 169

Contents	xvii
References	177
Index	193



<http://www.springer.com/978-1-4419-6980-4>

Terminological Ontologies

Design, Management and Practical Applications

Lacasta, J.; Nogueras-Iso, J.; Zarazaga Soria, F.J.

2010, XVII, 197 p. 100 illus., 50 in color., Hardcover

ISBN: 978-1-4419-6980-4