

Contents

What Is an <i>Ontology</i>?	
<i>Nicola Guarino, Daniel Oberle, and Steffen Staab</i>	1

Part I Ontology Representation Languages

Description Logics	
<i>Franz Baader, Ian Horrocks, and Ulrike Sattler</i>	21
Ontologies in F-Logic	
<i>Jürgen Angele, Michael Kifer, and Georg Lausen</i>	45
Resource Description Framework	
<i>Jeff Z. Pan</i>	71
Web Ontology Language: OWL	
<i>Grigoris Antoniou and Frank van Harmelen</i>	91
Ontologies and Rules	
<i>Pascal Hitzler and Bijan Parsia</i>	111

Part II Ontology Engineering

Ontology Engineering Methodology	
<i>York Sure, Steffen Staab, and Rudi Studer</i>	135
Ontology Engineering and Evolution in a Distributed World Using DILIGENT	
<i>H. Sofia Pinto, C. Tempich, and Steffen Staab</i>	153
Formal Concept Analysis	
<i>Gerd Stumme</i>	177

XVIII Contents

An Overview of OntoClean

Nicola Guarino and Christopher A. Welty 201

Ontology Design Patterns

Aldo Gangemi and Valentina Presutti 221

Ontology Learning

*Philipp Cimiano, Alexander Mädche, Steffen Staab,
and Johanna Völker* 245

Ontology and the Lexicon

Graeme Hirst 269

Ontology Evaluation

Denny Vrandečić 293

Ontology Engineering Environments

Riichiro Mizoguchi and Kouji Kozaki 315

Exploring the Economical Aspects of Ontology Engineering

Elena Simperl and Christoph Tempich 337

Part III Ontologies

Foundational Choices in DOLCE

Stefano Borgo and Claudio Masolo 361

An Ontology for Software

Daniel Oberle, Stephan Grimm, and Steffen Staab 383

COMM: A Core Ontology for Multimedia Annotation

Richard Arndt, Raphaël Troncy, Steffen Staab, and Lynda Hardman 403

Using the PSL Ontology

Michael Grüninger 423

Ontologies for Formal Representation of Biological Systems

Nigam Shah and Mark Musen 445

Ontologies for Cultural Heritage

Martin Doerr 463

Part IV Infrastructures for Ontologies

RDF Storage and Retrieval Systems

Alice Hertel, Jeen Broekstra, and Heiner Stuckenschmidt 489

Tableau-Based Reasoning	
<i>Ralf Möller and Volker Haarslev</i>	509
Resolution-Based Reasoning for Ontologies	
<i>Boris Motik</i>	529
Ontology Repositories	
<i>Jens Hartmann, Raúl Palma, and Asunción Gómez-Pérez</i>	551
Ontology Mapping	
<i>Natalya F. Noy</i>	573

Part V Ontology-Based Infrastructure and Methods

Ontologies and Software Engineering	
<i>Dragan Gašević, Nima Kaviani, and Milan Milanović</i>	593
Semantic Web Services	
<i>Jos de Bruijn, Mick Kerrigan, Michal Zaremba, and Dieter Fensel</i>	617
Ontologies for Machine Learning	
<i>Stephan Blöhdorn and Andreas Hotho</i>	637
Information Extraction	
<i>Claire Nédellec, Adeline Nazarenko, and Robert Bossy</i>	663
Browsing and Navigation in Semantically Rich Spaces: Experiences with Magpie Applications	
<i>Martin Dzbor, Enrico Motta, and Laurian Gridinoc</i>	687

Part VI Ontology-Based Applications

Ontologies for Knowledge Management	
<i>Andreas Abecker and Ludger van Elst</i>	713
Application of Ontologies in Bioinformatics	
<i>Robert Stevens and Phillip Lord</i>	735
Semantic Portals for Cultural Heritage	
<i>Eero Hyvönen</i>	757
Ontology-Based Recommender Systems	
<i>Stuart E. Middleton, David De Roure, and Nigel R. Shadbolt</i>	779
Author Index	797
Subject Index	799