

1. Record Nr.	UNISA996466391103316
Autore	Lavrac Nada
Titolo	Representation learning : propositionalization and embeddings // Nada Lavrac, Vid Podpecan, Marko Robnik-Sikonja
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , 2021
ISBN	3-030-68817-8
Descrizione fisica	1 online resource (175 pages)
Disciplina	006.31
Soggetti	Machine learning Aprenentatge automàtic Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Foreword -- Preface -- Contents -- 1 Introduction to Representation Learning -- 1.1 Motivation -- 1.2 Representation Learning in Knowledge Discovery -- 1.2.1 Machine Learning and Knowledge Discovery -- 1.2.2 Automated Data Transformation -- 1.3 Data Transformations and Information Representation Levels -- 1.3.1 Information Representation Levels -- 1.3.2 Propositionalization: Learning Symbolic Vector Representations -- 1.3.3 Embeddings: Learning Numeric Vector Representations -- 1.4 Evaluation of Propositionalization and Embeddings -- 1.4.1 Performance Evaluation -- 1.4.2 Interpretability -- 1.5 Survey of Automated Data Transformation Methods -- 1.6 Outline of This Monograph -- References -- 2 Machine Learning Background -- 2.1 Machine Learning -- 2.1.1 Attributes and Features -- 2.1.2 Machine Learning Approaches -- 2.1.3 Decision and Regression Tree Learning -- 2.1.4 Rule Learning -- 2.1.5 Kernel Methods -- 2.1.6 Ensemble Methods -- 2.1.7 Deep Neural Networks -- 2.2 Text Mining -- 2.3 Relational Learning -- 2.4 Network Analysis -- 2.4.1 Selected Homogeneous Network Analysis Tasks -- 2.4.2 Selected Heterogeneous Network Analysis Tasks -- 2.4.3 Semantic Data Mining -- 2.4.4 Network Representation Learning -- 2.5 Evaluation -- 2.5.1 Classifier Evaluation Measures -- 2.5.2 Rule Evaluation Measures -- 2.6 Data Mining and Selected Data Mining Platforms -- 2.6.1 Data Mining -- 2.6.2 Selected Data Mining Platforms

-- 2.7 Implementation and Reuse -- References -- 3 Text Embeddings
-- 3.1 Background Technologies -- 3.1.1 Transfer Learning -- 3.1.2
Language Models -- 3.2 Word Cooccurrence-Based Embeddings --
3.2.1 Sparse Word Cooccurrence-Based Embeddings -- 3.2.2 Weighting
Schemes -- 3.2.3 Similarity Measures -- 3.2.4 Sparse Matrix
Representations of Texts -- 3.2.5 Dense Term-Matrix Based Word
Embeddings -- 3.2.6 Dense Topic-Based Embeddings.
3.3 Neural Word Embeddings -- 3.3.1 Word2vec Embeddings -- 3.3.2
GloVe Embeddings -- 3.3.3 Contextual Word Embeddings -- 3.4
Sentence and Document Embeddings -- 3.5 Cross-Lingual Embeddings
-- 3.6 Intrinsic Evaluation of Text Embeddings -- 3.7 Implementation
and Reuse -- 3.7.1 LSA and LDA -- 3.7.2 word2vec -- 3.7.3 BERT --
References -- 4 Propositionalization of Relational Data -- 4.1
Relational Learning -- 4.2 Relational Data Representation -- 4.2.1
Illustrative Example -- 4.2.2 Example Using a Logical Representation --
4.2.3 Example Using a Relational Database Representation -- 4.3
Propositionalization -- 4.3.1 Relational Features -- 4.3.2 Automated
Construction of Relational Features by RSD -- 4.3.3 Automated Data
Transformation and Learning -- 4.4 Selected Propositionalization
Approaches -- 4.5 Wordification: Unfolding Relational Data into BoW
Vectors -- 4.5.1 Outline of the Wordification Approach -- 4.5.2
Wordification Algorithm -- 4.5.3 Improved Efficiency of Wordification
Algorithm -- 4.6 Deep Relational Machines -- 4.7 Implementation and
Reuse -- 4.7.1 Wordification -- 4.7.2 Python-rdm Package --
References -- 5 Graph and Heterogeneous Network Transformations --
5.1 Embedding Simple Graphs -- 5.1.1 DeepWalk Algorithm -- 5.1.2
Node2vec Algorithm -- 5.1.3 Other Random Walk-Based Graph
Embedding Algorithms -- 5.2 Embedding Heterogeneous Information
Networks -- 5.2.1 Heterogeneous Information Networks -- 5.2.2
Examples of Heterogeneous Information Networks -- 5.2.3 Embedding
Feature-Rich Graphs with GCNs -- 5.2.4 Other Heterogeneous Network
Embedding Approaches -- 5.3 Propositionalizing Heterogeneous
Information Networks -- 5.3.1 TEHmINe Propositionalization of Text-
Enriched Networks -- 5.3.1.1 Heterogeneous Network Decomposition
-- 5.3.1.2 Feature Vector Construction -- 5.3.1.3 Data Fusion -- 5.3.2
HINMINE Heterogeneous Networks Decomposition.
5.4 Ontology Transformations -- 5.4.1 Ontologies and Semantic Data
Mining -- 5.4.2 NetSDM Ontology Reduction Methodology -- 5.4.2.1
Converting Ontology and Examples into Network Format -- 5.4.2.2
Term Significance Calculation -- 5.4.2.3 Network Node Removal -- 5.5
Embedding Knowledge Graphs -- 5.6 Implementation and Reuse --
5.6.1 Node2vec -- 5.6.2 Metapath2vec -- 5.6.3 HINMINE -- References
-- 6 Unified Representation Learning Approaches -- 6.1 Entity
Embeddings with StarSpace -- 6.2 Unified Approaches for Relational
Data -- 6.2.1 PropStar: Feature-Based Relational Embeddings -- 6.2.2
PropDRM: Instance-Based Relational Embeddings -- 6.2.3 Performance
Evaluation of Relational Embeddings -- 6.3 Implementation and Reuse
-- 6.3.1 StarSpace -- 6.3.2 PropDRM -- References -- 7 Many Faces of
Representation Learning -- 7.1 Unifying Aspects in Terms of Data
Representation -- 7.2 Unifying Aspects in Terms of Learning -- 7.3
Unifying Aspects in Terms of Use -- 7.4 Summary and Conclusions --
References -- Index.
