

Editorial

Natural Language Processing: Recent Development and Applications

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Natural Language Processing (NLP) can be categorized into the subfields of artificial intelligence (AI) and linguistics. NLP mainly explores how to make machines understand, process, reproduce, and generate natural languages. In today's Internet of Things (IoT) era, digital devices and cyberspace help people solve their daily needs and problems. They are not only personal assistants in our daily lives but also play an important role in sharing humans' burdens. In other words, the developments of NLP determine the progress of machines' developments. In terms of NLP applications, they embrace corpus analysis, information retrieval (IR), machine translation (MT), part-of-speech (POS) tagging, semantic analysis, text categorization, and so on. Those applications are closely related to the processing efficiency of big textual information and directly affect the advances of information technology (IT). Therefore, to enable machines to understand humans' intentions and assist humans in more efficient ways and to enhance the quality of human-computer interactions, proper tools and methods must be developed to improve the efficiency of NLP.

This Special Issue will focus on technologies and methodologies in the fields of NLP issues, also considering their combined use with algorithms, corpus-based approaches, IoT devices, internet resources, and AI methods. This Special Issue contains a total of 15 papers. Its content covers topics such as corpus design, analysis, and processing; the application of artificial intelligence methods for natural language processing; NLP applications; text classification; and corpus linguistics.

In terms of corpus design, analysis, and processing, several notable contributions stand out. Alfraidi et al. [1] introduced the Saudi Novels Corpus to advance the study of corpus stylistics in Arabic. Zhang [2] conducted a corpus-based systemic functional analysis to investigate the syntactic and semantic properties of 'on the contrary' in British university student essay writing. Chen et al. [3] utilized the lexical threshold theory and a corpus-based word classification method to assess the difficulty level of a military online English proficiency test.

In terms of applying artificial intelligence methods for natural language processing, several notable studies stand out. Ahmad et al. [4] employed an enhanced deep learning model to detect rumors on social media networks. Lin et al. [5] combined the analytic hierarchy process method with the artificial neural network method to address risk-related issues in construction projects. Chandio et al. [6] utilized the deep recurrent architecture of bidirectional long-short-term memory for sentiment analysis in Roman Urdu.

In terms of NLP applications, Alrumayyan and Al-Yahya [7] utilized language modeling and neural embeddings to support the task of jurisprudence principles. Al-Ghamdi et al. [8] employed the fine-tuning of Arabic bidirectional encoder representations from transformer-based models to develop Arabic pre-trained models. Alanazi [9] used cryptocurrency-related Twitter text to classify pure and compound sentiments. Nie and Li [10] introduced a self-adaptive learning framework to propose an automatic label correction mechanism for identifying mislabeled data and processing label corrections.



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Recent Developments And Applications Of Natural Language Processing

L Darling-Hammond



Recent Developments And Applications Of Natural Language Processing:

Emerging Applications of Natural Language Processing: Concepts and New Research Bandyopadhyay, Sivaji, 2012-10-31 This book provides pertinent and vital information that researchers postgraduate doctoral students and practitioners are seeking for learning about the latest discoveries and advances in NLP methodologies and applications of NLP Provided by publisher

Recent Advances in Natural Language Processing III Nicolas Nicolov, 2004 This volume brings together revised versions of a selection of papers presented at the 2003 International Conference on Recent Advances in Natural Language Processing A wide range of topics is covered in the volume semantics dialog summarization anaphora resolution shallow parsing morphology part of speech tagging named entity question answering word sense disambiguation information extraction Various state of the art techniques are explored finite state processing machine learning support vector machines maximum entropy decision trees memory based learning inductive logic programming transformation based learning perceptions latent semantic analysis constraint programming The papers address different languages Arabic English German Slavic languages and use different linguistic frameworks HPSG LFG constraint based DCG This book will be of interest to those who work in computational linguistics corpus linguistics human language technology translation studies cognitive science psycholinguistics artificial intelligence and informatics

Recent Advances in NLP: The Case of Arabic Language Mohamed Abd Elaziz, Mohammed A. A. Al-qaness, Ahmed A. Ewees, Abdelghani Dahou, 2019-11-29 In light of the rapid rise of new trends and applications in various natural language processing tasks this book presents high quality research in the field Each chapter addresses a common challenge in a theoretical or applied aspect of intelligent natural language processing related to Arabic language Many challenges encountered during the development of the solutions can be resolved by incorporating language technology and artificial intelligence The topics covered include machine translation speech recognition morphological syntactic and semantic processing information retrieval text classification text summarization sentiment analysis ontology construction Arabizi translation Arabic dialects Arabic lemmatization and building and evaluating linguistic resources This book is a valuable reference for scientists researchers and students from academia and industry interested in computational linguistics and artificial intelligence especially for Arabic linguistics and related areas

Recent Advances in Natural Language Processing , 1997

Natural Language Processing in Action Hannes Hapke, Cole Howard, Hobson Lane, 2019-03-16 Summary Natural Language Processing in Action is your guide to creating machines that understand human language using the power of Python with its ecosystem of packages dedicated to NLP and AI Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the Technology Recent advances in deep learning empower applications to understand text and speech with extreme accuracy The result Chatbots that can imitate real people meaningful resume to job matches superb predictive search and automatically generated document summaries all at a low cost New techniques along with accessible tools like Keras and

TensorFlow make professional quality NLP easier than ever before About the Book Natural Language Processing in Action is your guide to building machines that can read and interpret human language In it you ll use readily available Python packages to capture the meaning in text and react accordingly The book expands traditional NLP approaches to include neural networks modern deep learning algorithms and generative techniques as you tackle real world problems like extracting dates and names composing text and answering free form questions What s inside Some sentences in this book were written by NLP Can you guess which ones Working with Keras TensorFlow gensim and scikit learn Rule based and data based NLP Scalable pipelines About the Reader This book requires a basic understanding of deep learning and intermediate Python skills About the Author Hobson Lane Cole Howard and Hannes Max Hapke are experienced NLP engineers who use these techniques in production Table of Contents PART 1 WORDY MACHINES Packets of thought NLP overview Build your vocabulary word tokenization Math with words TF IDF vectors Finding meaning in word counts semantic analysis PART 2 DEEPER LEARNING NEURAL NETWORKS Baby steps with neural networks perceptrons and backpropagation Reasoning with word vectors Word2vec Getting words in order with convolutional neural networks CNNs Loopy recurrent neural networks RNNs Improving retention with long short term memory networks Sequence to sequence models and attention PART 3 GETTING REAL REAL WORLD NLP CHALLENGES Information extraction named entity extraction and question answering Getting chatty dialog engines Scaling up optimization parallelization and batch processing

Deep Natural Language Processing and AI Applications for Industry 5.0 Tanwar, Poonam, Saxena, Arti, Priya, C., 2021-06-25 To sustain and stay at the top of the market and give absolute comfort to the consumers industries are using different strategies and technologies Natural language processing NLP is a technology widely penetrating the market irrespective of the industry and domains It is extensively applied in businesses today and it is the buzzword in every engineer s life NLP can be implemented in all those areas where artificial intelligence is applicable either by simplifying the communication process or by refining and analyzing information Neural machine translation has improved the imitation of professional translations over the years When applied in neural machine translation NLP helps educate neural machine networks This can be used by industries to translate low impact content including emails regulatory texts etc Such machine translation tools speed up communication with partners while enriching other business interactions Deep Natural Language Processing and AI Applications for Industry 5 0 provides innovative research on the latest findings ideas and applications in fields of interest that fall under the scope of NLP including computational linguistics deep NLP web analysis sentiments analysis for business and industry perspective This book covers a wide range of topics such as deep learning deepfakes text mining blockchain technology and more making it a crucial text for anyone interested in NLP and artificial intelligence including academicians researchers professionals industry experts business analysts data scientists data analysts healthcare system designers intelligent system designers practitioners and students

Natural Language Processing for Online Applications Peter Jackson, Isabelle

Moulinier,2007-06-05 This text covers the technologies of document retrieval information extraction and text categorization in a way which highlights commonalities in terms of both general principles and practical concerns It assumes some mathematical background on the part of the reader but the chapters typically begin with a non mathematical account of the key issues Current research topics are covered only to the extent that they are informing current applications detailed coverage of longer term research and more theoretical treatments should be sought elsewhere There are many pointers at the ends of the chapters that the reader can follow to explore the literature However the book does maintain a strong emphasis on evaluation in every chapter both in terms of methodology and the results of controlled experimentation

Recent Developments and Applications of Natural Language Processing Jeremy Peckham,1989 Getting Started with Natural Language Processing Ekaterina Kochmar,2022-11-15 Hit the ground running with this in depth introduction to the NLP skills and techniques that allow your computers to speak human In Getting Started with Natural Language Processing you ll learn about Fundamental concepts and algorithms of NLP Useful Python libraries for NLP Building a search algorithm Extracting information from raw text Predicting sentiment of an input text Author profiling Topic labeling Named entity recognition Getting Started with Natural Language Processing is an enjoyable and understandable guide that helps you engineer your first NLP algorithms Your tutor is Dr Ekaterina Kochmar lecturer at the University of Bath who has helped thousands of students take their first steps with NLP Full of Python code and hands on projects each chapter provides a concrete example with practical techniques that you can put into practice right away If you re a beginner to NLP and want to upgrade your applications with functions and features like information extraction user profiling and automatic topic labeling this is the book for you About the technology From smart speakers to customer service chatbots apps that understand text and speech are everywhere Natural language processing or NLP is the key to this powerful form of human computer interaction And a new generation of tools and techniques make it easier than ever to get started with NLP About the book Getting Started with Natural Language Processing teaches you how to upgrade user facing applications with text and speech based features From the accessible explanations and hands on examples in this book you ll learn how to apply NLP to sentiment analysis user profiling and much more As you go each new project builds on what you ve previously learned introducing new concepts and skills Handy diagrams and intuitive Python code samples make it easy to get started even if you have no background in machine learning What s inside Fundamental concepts and algorithms of NLP Extracting information from raw text Useful Python libraries Topic labeling Building a search algorithm About the reader You ll need basic Python skills No experience with NLP required About the author Ekaterina Kochmar is a lecturer at the Department of Computer Science of the University of Bath where she is part of the AI research group Table of Contents 1 Introduction 2 Your first NLP example 3 Introduction to information search 4 Information extraction 5 Author profiling as a machine learning task 6 Linguistic feature engineering for author profiling 7 Your first sentiment analyzer using sentiment lexicons 8

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Representation Learning for Natural Language Processing Zhiyuan Liu, Yankai Lin, Maosong Sun, 2020-07-03 This open access book provides an overview of the recent advances in representation learning theory algorithms and applications for natural language processing NLP It is divided into three parts Part I presents the representation learning techniques for multiple language entries including words phrases sentences and documents Part II then introduces the representation techniques for those objects that are closely related to NLP including entity based world knowledge sememe based linguistic knowledge networks and cross modal entries Lastly Part III provides open resource tools for representation learning techniques and discusses the remaining challenges and future research directions The theories and algorithms of representation learning presented can also benefit other related domains such as machine learning social network analysis semantic Web information retrieval data mining and computational biology This book is intended for advanced undergraduate and graduate students post doctoral fellows researchers lecturers and industrial engineers as well as anyone interested in representation learning and natural language processing

Real-World Natural Language Processing Masato Hagiwara, 2021-12-14 Real world Natural Language Processing shows you how to build the practical NLP applications that are transforming the way humans and computers work together In Real world Natural Language Processing you will learn how to Design develop and deploy useful NLP applications Create named entity taggers Build machine translation systems Construct language generation systems and chatbots Use advanced NLP concepts such as attention and transfer learning Real world Natural Language Processing teaches you how to create practical NLP applications without getting bogged down in complex language theory and the mathematics of deep learning In this engaging book you ll explore the core tools and techniques required to build a huge range of powerful NLP apps including chatbots language detectors and text classifiers Purchase of the print book includes a free eBook in PDF Kindle and ePub formats from Manning Publications About the technology Training computers to interpret and generate speech and text is a monumental challenge and the payoff for reducing labor and improving human computer interaction is huge The field of Natural Language Processing NLP is advancing rapidly with countless new tools and practices This unique book offers an innovative collection of NLP techniques with applications in machine translation voice assistants text generation and more About the book Real world Natural Language Processing shows you how to build the practical NLP applications that are transforming the way humans and computers work together Guided by clear explanations of each core NLP topic you ll create many interesting applications including a sentiment analyzer and a chatbot Along the way you ll use Python and open source libraries like AllenNLP and HuggingFace Transformers to speed up your development process What s inside Design develop and deploy useful NLP applications Create named entity taggers Build machine translation systems Construct language generation systems and chatbots About the reader For Python programmers No prior machine learning knowledge assumed About the

author Masato Hagiwara received his computer science PhD from Nagoya University in 2009 He has interned at Google and Microsoft Research and worked at Duolingo as a Senior Machine Learning Engineer He now runs his own research and consulting company

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Digital Transformation of the Design, Construction and Management Processes of the Built Environment Bruno Daniotti, Marco Gianinetti, Stefano Della Torre, 2019-12-30 This open access book focuses on the development of methods interoperable and integrated ICT tools and survey techniques for optimal management of the building process The construction sector is facing an increasing demand for major innovations in terms of digital dematerialization and technologies such as the Internet of Things big data advanced manufacturing robotics 3D printing blockchain technologies and artificial intelligence The demand for simplification and transparency in information management and for the rationalization and optimization of very fragmented and splintered processes is a key driver for digitization The book describes the contribution of the ABC Department of the Polytechnic University of Milan Politecnico di Milano to R D activities regarding methods and ICT tools for the interoperable management of the different phases of the building process including design construction and management Informative case studies complement the theoretical discussion The book will be of interest to all stakeholders in the building process owners designers constructors and faculty managers as well as the research sector

Computational Intelligence and Healthcare Informatics Om Prakash Jena, Alok Ranjan Tripathy, Ahmed A. Elngar, Zdzislaw Polkowski, 2021-10-19 COMPUTATIONAL INTELLIGENCE and HEALTHCARE INFORMATICS The book provides the state of the art innovation research design and implements methodological and algorithmic solutions to data processing problems designing and analysing evolving trends in health informatics intelligent disease prediction and computer aided diagnosis Computational intelligence CI refers to the ability of computers to accomplish tasks that are normally completed by intelligent beings such as humans and animals With the rapid advance of technology artificial intelligence AI techniques are being effectively used in the fields of health to improve the efficiency of treatments avoid the risk of false diagnoses make therapeutic decisions and predict the outcome in many clinical scenarios Modern health treatments are faced with the challenge of acquiring analyzing and applying the large amount of knowledge necessary to solve complex problems Computational intelligence in healthcare mainly uses computer techniques to perform clinical diagnoses and suggest treatments In the present scenario of computing CI tools present adaptive mechanisms that permit the understanding of data in difficult and changing environments The desired results of CI technologies profit medical fields by assembling patients with the same types of diseases or fitness problems so that healthcare facilities can provide

effectual treatments This book starts with the fundamentals of computer intelligence and the techniques and procedures associated with it Contained in this book are state of the art methods of computational intelligence and other allied techniques used in the healthcare system as well as advances in different CI methods that will confront the problem of effective data analysis and storage faced by healthcare institutions The objective of this book is to provide researchers with a platform encompassing state of the art innovations research and design implementation of methodological and algorithmic solutions to data processing problems and the design and analysis of evolving trends in health informatics intelligent disease prediction and computer aided diagnosis Audience The book is of interest to artificial intelligence and biomedical scientists researchers engineers and students in various settings such as pharmaceutical biotechnology companies virtual assistants developing companies medical imaging diagnostics centers wearable device designers healthcare assistance robot manufacturers precision medicine testers hospital management and researchers working in healthcare system

Natural Language Processing with Python Steven Bird,Ewan Klein,Edward Loper,2009-06-12 This book offers a highly accessible introduction to natural language processing the field that supports a variety of language technologies from predictive text and email filtering to automatic summarization and translation With it you ll learn how to write Python programs that work with large collections of unstructured text You ll access richly annotated datasets using a comprehensive range of linguistic data structures and you ll understand the main algorithms for analyzing the content and structure of written communication Packed with examples and exercises *Natural Language Processing with Python* will help you Extract information from unstructured text either to guess the topic or identify named entities Analyze linguistic structure in text including parsing and semantic analysis Access popular linguistic databases including WordNet and treebanks Integrate techniques drawn from fields as diverse as linguistics and artificial intelligence This book will help you gain practical skills in natural language processing using the Python programming language and the Natural Language Toolkit NLTK open source library If you re interested in developing web applications analyzing multilingual news sources or documenting endangered languages or if you re simply curious to have a programmer s perspective on how human language works you ll find *Natural Language Processing with Python* both fascinating and immensely useful

Recent Developments and the New Directions of Research, Foundations, and Applications Shahnaz N. Shahbazova,Ali M. Abbasov,Vladik Kreinovich,Janusz Kacprzyk,Ildar Z. Batyrshin,2023-06-26 This book is a collection of papers presented during the 8th World Conference on Soft Computing in February 2022 The papers cover multiple areas important for soft computing Some papers are dedicated to fundamental aspects of soft computing i e fuzzy mathematics type 2 fuzzy sets evolutionary based optimization aggregation and neural networks Others emphasize the application of soft computing methods to data analysis image processing decision making classification series prediction economics control and modeling

Advances in Natural Language Processing Tapio Salakoski,Filip Ginter,Sampo Pyysalo,Tapio Pahikkala,2006-08-10 This book constitutes the refereed proceedings of the 5th

International Conference on Natural Language Processing FinTAL 2006 held in Turku Finland in August 2006 The book presents 72 revised full papers together with 1 invited talk and the extended abstracts of 2 invited keynote addresses The papers address all current issues in computational linguistics and monolingual and multilingual intelligent language processing theory methods and applications

Recent Developments and the New Direction in Soft-Computing Foundations and Applications Shahnaz N. Shahbazova, Janusz Kacprzyk, Valentina Emilia Balas, Vladik

Kreinovich, 2020-07-10 This book gathers authoritative contributions in the field of Soft Computing Based on selected papers presented at the 7th World Conference on Soft Computing which was held on May 29 31 2018 in Baku Azerbaijan it describes new theoretical advances as well as cutting edge methods and applications New theories and algorithms in fuzzy logic cognitive modeling graph theory and metaheuristics are discussed and applications in data mining social networks control and robotics geoscience biomedicine and industrial management are described This book offers a timely broad snapshot of recent developments including thought provoking trends and challenges that are yielding new research directions in the diverse areas of Soft Computing

Natural Language Processing for Social Media Atefeh Farzindar, Diana Inkpen, 2017-12-15 In recent years online social networking has revolutionized interpersonal communication The newer research on language analysis in social media has been increasingly focusing on the latter's impact on our daily lives both on a personal and a professional level Natural language processing NLP is one of the most promising avenues for social media data processing It is a scientific challenge to develop powerful methods and algorithms which extract relevant information from a large volume of data coming from multiple sources and languages in various formats or in free form We discuss the challenges in analyzing social media texts in contrast with traditional documents Research methods in information extraction automatic categorization and clustering automatic summarization and indexing and statistical machine translation need to be adapted to a new kind of data This book reviews the current research on NLP tools and methods for processing the non traditional information from social media data that is available in large amounts big data and shows how innovative NLP approaches can integrate appropriate linguistic information in various fields such as social media monitoring healthcare business intelligence industry marketing and security and defence We review the existing evaluation metrics for NLP and social media applications and the new efforts in evaluation campaigns or shared tasks on new datasets collected from social media Such tasks are organized by the Association for Computational Linguistics such as SemEval tasks or by the National Institute of Standards and Technology via the Text REtrieval Conference TREC and the Text Analysis Conference TAC In the concluding chapter we discuss the importance of this dynamic discipline and its great potential for NLP in the coming decade in the context of changes in mobile technology cloud computing virtual reality and social networking In this second edition we have added information about recent progress in the tasks and applications presented in the first edition We discuss new methods and their results The number of research projects and publications that use social media data is constantly

increasing due to continuously growing amounts of social media data and the need to automatically process them We have added 85 new references to the more than 300 references from the first edition Besides updating each section we have added a new application digital marketing to the section on media monitoring and we have augmented the section on healthcare applications with an extended discussion of recent research on detecting signs of mental illness from social media

Speech and Language Processing Daniel Jurafsky, James H. Martin, 2000-01 This book takes an empirical approach to language processing based on applying statistical and other machine learning algorithms to large corpora Methodology boxes are included in each chapter Each chapter is built around one or more worked examples to demonstrate the main idea of the chapter Covers the fundamental algorithms of various fields whether originally proposed for spoken or written language to demonstrate how the same algorithm can be used for speech recognition and word sense disambiguation Emphasis on web and other practical applications Emphasis on scientific evaluation Useful as a reference for professionals in any of the areas of speech and language processing Natural Language Processing in Artificial Intelligence Brojo Kishore Mishra, Raghvendra Kumar, 2022-06 Natural Language Processing in Artificial Intelligence focuses on natural language processing artificial intelligence and allied areas The book delves into natural language processing which enables communication between people and computers and automatic translation to facilitate easy interaction with others around the world

The Enigmatic Realm of **Recent Developments And Applications Of Natural Language Processing**: Unleashing the Language is Inner Magic

In a fast-paced digital era where connections and knowledge intertwine, the enigmatic realm of language reveals its inherent magic. Its capacity to stir emotions, ignite contemplation, and catalyze profound transformations is nothing lacking extraordinary. Within the captivating pages of **Recent Developments And Applications Of Natural Language Processing** a literary masterpiece penned by a renowned author, readers set about a transformative journey, unlocking the secrets and untapped potential embedded within each word. In this evaluation, we shall explore the book's core themes, assess its distinct writing style, and delve into its lasting impact on the hearts and minds of those that partake in its reading experience.

https://now.acs.org/files/uploaded-files/default.aspx/Phenomenological_Interpretation_Of_Lao_Tzus_Tao_T.pdf

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Recent Developments And Applications Of Natural Language Processing Introduction

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