Signals and Communication Technology

Dong Yu
Li Deng

Automatic Speech Recognition

A Deep Learning Approach

Springer

Automatic Speech Recognition A Deep Learning Approach Signals And Communication Technology

Marcel A. Müller

Automatic Speech Recognition A Deep Learning Approach Signals And Communication Technology:

Automatic Speech Recognition Dong Yu,Li Deng,2014-11-11 This book provides a comprehensive overview of the recent advancement in the field of automatic speech recognition with a focus on deep learning models including deep neural networks and many of their variants This is the first automatic speech recognition book dedicated to the deep learning approach In addition to the rigorous mathematical treatment of the subject the book also presents insights and theoretical foundation of a series of highly successful deep learning models **Deep Learning Approaches for Spoken and Natural Language Processing** Virender Kadyan,Amitoj Singh,Mohit Mittal,Laith Abualigah,2022-01-01 This book provides insights into how deep learning techniques impact language and speech processing applications The authors discuss the promise limits and the new challenges in deep learning The book covers the major differences between the various applications of deep learning and the classical machine learning techniques The main objective of the book is to present a comprehensive survey of the major applications and research oriented articles based on deep learning techniques that are focused on natural language and speech signal processing The book is relevant to academicians research scholars industrial experts scientists and post graduate students working in the field of speech signal and natural language processing and would like to add deep learning to enhance capabilities of their work Discusses current research challenges and future perspective about how deep learning techniques can be applied to improve NLP and speech processing applications Presents and escalates the research trends and future direction of language and speech processing Includes theoretical research experimental results and applications of deep learning Automatic Speech Recognition and Translation for Low Resource Languages L. Ashok Kumar,D. Karthika Renuka,Bharathi Raja Chakravarthi,Thomas Mandl,2024-04-30 AUTOMATIC SPEECH RECOGNITION and TRANSLATION for LOW RESOURCE LANGUAGES This book is a comprehensive exploration into the cutting edge research methodologies and advancements in addressing the unique challenges associated with ASR and translation for low resource languages Automatic Speech Recognition and Translation for Low Resource Languages contains groundbreaking research from experts and researchers sharing innovative solutions that address language challenges in low resource environments The book begins by delving into the fundamental concepts of ASR and translation providing readers with a solid foundation for understanding the subsequent chapters It then explores the intricacies of low resource languages analyzing the factors that contribute to their challenges and the significance of developing tailored solutions to overcome them The chapters encompass a wide range of topics ranging from both the theoretical and practical aspects of ASR and translation for low resource languages The book discusses data augmentation techniques transfer learning and multilingual training approaches that leverage the power of existing linguistic resources to improve accuracy and performance Additionally it investigates the possibilities offered by unsupervised and semi supervised learning as well as the benefits of active learning and crowdsourcing in enriching the training data Throughout the book emphasis is placed on the importance of considering the

cultural and linguistic context of low resource languages recognizing the unique nuances and intricacies that influence accurate ASR and translation Furthermore the book explores the potential impact of these technologies in various domains such as healthcare education and commerce empowering individuals and communities by breaking down language barriers Audience The book targets researchers and professionals in the fields of natural language processing computational linguistics and speech technology It will also be of interest to engineers linguists and individuals in industries and organizations working on cross lingual communication accessibility and global connectivity **Understanding and Bridging the Gap between Neuromorphic Computing and Machine Learning** Lei Deng,Kaushik Roy,Huajin Tang,2021-05-05 **Computational Analysis of Sound Scenes and Events** Tuomas Virtanen,Mark D. Plumbley,Dan Ellis,2017-09-21 This book presents computational methods for extracting the useful information from audio signals collecting the state of the art in the field of sound event and scene analysis The authors cover the entire procedure for developing such methods ranging from data acquisition and labeling through the design of taxonomies used in the systems to signal processing methods for feature extraction and machine learning methods for sound recognition The book also covers advanced techniques for dealing with environmental variation and multiple overlapping sound sources and taking advantage of multiple microphones or other modalities The book gives examples of usage scenarios in large media databases acoustic monitoring bioacoustics and context aware devices Graphical illustrations of sound signals and their spectrographic representations are presented as well as block diagrams and pseudocode of algorithms *Deep Learning Approach for Natural Language Processing, Speech, and Computer Vision* L. Ashok Kumar,D. Karthika Renuka,2023-05-22 Deep Learning Approach for Natural Language Processing Speech and Computer Vision provides an overview of general deep learning methodology and its applications of natural language processing NLP speech and computer vision tasks It simplifies and presents the concepts of deep learning in a comprehensive manner with suitable full fledged examples of deep learning models with an aim to bridge the gap between the theoretical and the applications using case studies with code experiments and supporting analysis Features Covers latest developments in deep learning techniques as applied to audio analysis computer vision and natural language processing Introduces contemporary applications of deep learning techniques as applied to audio textual and visual processing Discovers deep learning frameworks and libraries for NLP speech and computer vision in Python Gives insights into using the tools and libraries in Python for real world applications Provides easily accessible tutorials and real world case studies with code to provide hands on experience This book is aimed at researchers and graduate students in computer engineering image speech and text processing *An Introduction to Audio Content Analysis* Alexander Lerch,2022-11-22 An Introduction to Audio Content Analysis Enables readers to understand the algorithmic analysis of musical audio signals with AI driven approaches An Introduction to Audio Content Analysis serves as a comprehensive guide on audio content analysis explaining how signal processing and machine learning approaches can be

utilized for the extraction of musical content from audio It gives readers the algorithmic understanding to teach a computer to interpret music signals and thus allows for the design of tools for interacting with music The work ties together topics from audio signal processing and machine learning showing how to use audio content analysis to pick up musical characteristics automatically A multitude of audio content analysis tasks related to the extraction of tonal temporal timbral and intensity related characteristics of the music signal are presented Each task is introduced from both a musical and a technical perspective detailing the algorithmic approach as well as providing practical guidance on implementation details and evaluation To aid in reader comprehension each task description begins with a short introduction to the most important musical and perceptual characteristics of the covered topic followed by a detailed algorithmic model and its evaluation and concluded with questions and exercises For the interested reader updated supplemental materials are provided via an accompanying website Written by a well known expert in the music industry sample topics covered in Introduction to Audio Content Analysis include Digital audio signals and their representation common time frequency transforms audio features Pitch and fundamental frequency detection key and chord Representation of dynamics in music and intensity related features Beat histograms onset and tempo detection beat histograms and detection of structure in music and sequence alignment Audio fingerprinting musical genre mood and instrument classification An invaluable guide for newcomers to audio signal processing and industry experts alike An Introduction to Audio Content Analysis covers a wide range of introductory topics pertaining to music information retrieval and machine listening allowing students and researchers to quickly gain core holistic knowledge in audio analysis and dig deeper into specific aspects of the field with the help of a large amount of references **Deep Learning-Based Approaches for Sentiment Analysis** Basant Agarwal,Richi Nayak,Namita Mittal,Srikanta Patnaik,2020-01-24 This book covers deep learning based approaches for sentiment analysis a relatively new but fast growing research area which has significantly changed in the past few years The book presents a collection of state of the art approaches focusing on the best performing cutting edge solutions for the most common and difficult challenges faced in sentiment analysis research Providing detailed explanations of the methodologies the book is a valuable resource for researchers as well as newcomers to the field **The Oxford Handbook of Computational Linguistics** Ruslan Mitkov,2022-06-02 Ruslan Mitkov s highly successful Oxford Handbook of Computational Linguistics has been substantially revised and expanded in this second edition Alongside updated accounts of the topics covered in the first edition it includes 17 new chapters on subjects such as semantic role labelling text to speech synthesis translation technology opinion mining and sentiment analysis and the application of Natural Language Processing in educational and biomedical contexts among many others The volume is divided into four parts that examine respectively the linguistic fundamentals of computational linguistics the methods and resources used such as statistical modelling machine learning and corpus annotation key language processing tasks including text segmentation anaphora resolution and speech recognition and the major

applications of Natural Language Processing from machine translation to author profiling The book will be an essential reference for researchers and students in computational linguistics and Natural Language Processing as well as those working in related industries **Artificial Intelligence and Speech Technology** Amita Dev,Arun Sharma,S. S. Agrawal,Ritu Rani,2024-11-23 This two volume set CCIS 2267 and 2268 constitutes the refereed proceedings of 5th International Conference on Artificial Intelligence and Speech Technology AIST 2023 held in Delhi India during December 26 27 2023 The 71 papers presented in two volumes were carefully reviewed and selected from 235 submissions Part I focuses on Speech Technology using AI and Part II focuses on AI innovations for CV and NLP These volumes are organized in the following topical sections Part I Trends and Applications in Speech Processing Recent Trends in Speech and NLP Emerging trends in Speech Processing Advances in Computational Linguistics and NLP Part II Recent Trends in Machine Learning and Deep Learning Analysis using Hybrid technologies with Artificial Intelligence Exploring New Horizons in Computer Vision Research Applications of Machine Learning and Deep Learning

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