Speech Recognition Using Deep Learning Algorithms | f1f1a245dcce16a587aafc33399cbb08

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Speech Emotion Recognition Using Convolutional Neural Networks

Proceedings of the International E-Conference on Intelligent Systems and Signal Processing

This book constitutes the proceedings of the 10th Mexican Conference on Pattern Recognition, MCPR 2018, held in Puebla, Mexico, in June 2018. The 28 papers presented in this volume were carefully reviewed and selected from 44 submissions. They were organized in topical sections named: pattern recognition principles; deep learning, neural networks and associative memories; data mining; and computer vision.
Intelligent Speech Signal Processing This book focuses on the fundamentals of deep learning along with reporting on the current state-of-art research on deep learning. In addition, it provides an insight of deep neural networks in action with illustrative coding examples. Deep learning is a new area of machine learning research which has been introduced with the objective of moving ML closer to one of its original goals, i.e. artificial intelligence. Deep learning was developed as an ML approach to deal with complex input-output mappings. While traditional methods successfully solve problems where final value is a simple function of input data, deep learning techniques are able to capture composite relations between non-immediately related fields, for example between air pressure recordings and English words, millions of pixels and textual description, brand-related news and future stock prices and almost all real world problems. Deep learning is a class of nature inspired machine learning algorithms that uses a cascade of multiple layers of nonlinear processing units for feature extraction and transformation. Each successive layer uses the output from the previous layer as input. The learning may be supervised (e.g. classification) and/or unsupervised (e.g. pattern analysis) manners. These algorithms learn multiple levels of representations that correspond to different levels of abstraction by resorting to some form of gradient descent for training via backpropagation. Layers that have been used in deep learning include hidden layers of an artificial neural network and sets of propositional formulas. They may also include latent variables organized layer-wise in deep generative models such as the nodes in deep belief networks and deep boltzmann machines. Deep learning is part of state-of-the-art systems in various disciplines, particularly computer vision, automatic speech recognition (ASR) and human action recognition.

Intelligent Computing This book provides insights into the International e-Conference on Intelligent Systems and Signal Processing (eISSP 2020) held by Electronics & Communication Engineering Department of G H Patel College of Engineering & Technology, Gujarat, India, during 28-30 December 2020. The book comprises contributions by the research scholars and academicians covering the topics in signal processing and communication engineering, applied electronics and emerging technologies, Internet of Things (IoT), robotics, machine learning, deep learning and artificial intelligence. The main emphasis of the book is on dissemination of information, experience and research results on the current topics of interest through in-depth discussions and contribution of researchers from all over world. The book is useful for research community, academicians, industrialists and postgraduate students across the globe.

Automatic Snooker-playing Robot with Speech Recognition Using Deep Learning 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.

Machine Learning for Networking This book focuses on the core areas of computing and their applications in the real world. Presenting papers from the Computing Conference 2020 covers a diverse range of research areas, describing various detailed techniques that have been developed and implemented. The Computing Conference 2020, which provided a venue for academic and industry practitioners to share new ideas and development experiences, attracted a total of 514 submissions from pioneering academic researchers, scientists, industrial engineers and students from around the globe. Following a double-blind, peer-review process, 160 papers (including 15 poster papers) were selected to be included in these proceedings. Featuring state-of-the-art intelligent methods and techniques for solving real-world problems, the book is a valuable resource and will inspire further research and technological improvements in this important area.

Recent Advances in Data Science This book provides an insight into ways of inculcating the need for applying mobile edge data analytics in bioinformatics and medicine. The book is a comprehensive reference that provides an overview of the current state of medical treatments and systems and offers emerging solutions for a more personalized approach to the healthcare field. Topics include deep learning methods for applications in object detection and identification, object tracking, human action recognition, and cross-modal and multimodal data analysis. High performance computing systems for applications in healthcare are also discussed. The contributors also include information on microarray data analysis, sequence analysis, genomics based analytics, disease network analysis, and techniques for big data Analytics and health information technology.

Neural Information Processing "Millions of people around the world are diagnosed with neurological disorders like Parkinson’s, Cerebral Palsy or Amyotrophic Lateral Sclerosis. Due to the neurological damage as the disease progresses, the person suffering from the disease loses control of muscles, along with speech deterioration. Speech deterioration is due to neuro motor condition that limits manipulation of the articulators of the vocal tract, the condition collectively called as dysarthria. Even though dysartrhic speech is grammatically and syntactically correct, it is difficult for humans to understand and for Automatic Speech Recognition (ASR) systems to decipher. With the emergence of deep learning, speech recognition systems have improved a lot compared to traditional speech recognition
systems, which use sophisticated preprocessing techniques to extract speech features. In this digital era there are still many documents that are handwritten many of which need to be digitized. Offline handwriting recognition involves recognizing handwritten characters from images of handwritten text (i.e. scanned documents). This is an interesting task as it involves sequence learning with computer vision. The task is more difficult than Optical Character Recognition (OCR), because handwritten letters can be written in virtually infinite different styles. This thesis proposes exploiting deep learning techniques like Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN) for offline handwriting recognition. For speech recognition, we compare traditional methods for speech recognition with recent deep learning methods. Also, we apply speaker adaptation methods both at feature level and at parameter level to improve recognition of dysarthric speech."--Abstract.

Modern Approaches in Machine Learning and Cognitive Science: A Walkthrough Automatic speech recognition is an active field of study in artificial intelligence and machine learning whose aim is to generate machines that communicate with people via speech. Speech is an information-rich signal that contains paralinguistic information as well as linguistic information. Emotion is one key instance of paralinguistic information that is, in part, conveyed by speech. Developing machines that understand paralinguistic information, such as emotion, facilitates the human-machine communication as it makes the communication more clear and natural. In the current study, the efficacy of convolutional neural networks in recognition of speech emotions has been investigated. Wide-band spectrograms of the speech signals were used as the input features of the networks. The networks were trained on speech signals that were generated by the actors while acting a specific emotion. The speech databases with different languages were used to train and evaluate our models. The training data on each database were augmented with two levels of augmentations. The dropout technique was implemented to regularize the networks. Our results showed that the gender-independent, language-independent CNN models achieved the state-of-the-art accuracy, outperformed previously reported results in the literature, and emulated or even outperformed human performance over the benchmark databases. Future work is warranted to examine the capability of the deep learning models in speech emotion recognition using daily-life speech signals.

Advances in Face Detection and Facial Image Analysis This book covers the state-of-the-art in deep neural-network-based methods for noise robustness in distant speech recognition applications. It provides insights and detailed descriptions of some of the new concepts and key technologies in the field, including novel architectures for speech enhancement, microphone arrays, robust features, acoustic model adaptation, training data augmentation, and training criteria. The contributed chapters also include descriptions of real-world applications, benchmark tools and datasets widely used in the
field. This book is intended for researchers and practitioners working in the field of speech processing and recognition who are interested in the latest deep learning techniques for noise robustness. It will also be of interest to graduate students in electrical engineering or computer science, who will find it a useful guide to this field of research.

Audio Processing and Speech Recognition Volume 1 discusses various machine learning & cognitive science approaches, presenting high-throughput research by experts in this area. Bringing together machine learning, cognitive science and other aspects of artificial intelligence to help provide a roadmap for future research on intelligent systems, the book is a valuable reference resource for students, researchers and industry practitioners wanting to keep abreast of recent developments in this dynamic, exciting and profitable research field. Volume 2 provides a systematic and comprehensive overview of machine learning with cognitive science methods and technologies which have played an important role at the core of practical solutions for a wide scope of tasks between handheld apps, industrial process control, autonomous vehicles, environmental policies, life sciences, playing computer games, computational theory, and engineering development. The chapters in this book focus on readers interested in machine learning, cognitive and neuro-inspired computational systems theories, mechanisms, and architecture, which underline human and animal behaviour, and their application to conscious and intelligent systems. In the current version, it focuses on the successful implementation and step-by-step explanation of practical applications of the domain. It also offers a wide range of inspiring and interesting cutting-edge contributions to applications of machine learning and cognitive science such as healthcare products, medical electronics, and gaming. Overall, these two volumes provide valuable information on effective, cutting-edge techniques and approaches for students, researchers, practitioners, and academicians working in the field of AI, neural network, machine learning, and cognitive science. Furthermore, the purpose of this book is to address the interests of a broad spectrum of practitioners, students, and researchers, who are interested in applying machine learning and cognitive science methods in their respective domains.

Deep Learning Intelligent Speech Signal Processing investigates the utilization of speech analytics across several systems and real-world activities, including sharing data analytics related information, creating collaboration networks between several participants, and implementing video-conferencing in different application areas. It provides a forum for readers to discover the characteristics of intelligent speech signal processing systems across different domains. Chapters focus on the latest applications of speech data analysis and management tools across different recording systems. The book emphasizes the multi-disciplinary nature of the field, presenting different applications and challenges
with extensive studies on the design, implementation, development, and management of intelligent systems, neural networks, and related machine learning techniques for speech signal processing. Highlights different data analytics techniques in speech signal processing, including machine learning, and data mining Illustrates different applications and challenges across the design, implementation, and management of intelligent systems and neural networks techniques for speech signal processing Includes coverage of biomodal speech recognition, voice activity detection, spoken language and speech disorder identification, automatic speech to speech summarization, and convolutional neural networks

Pattern Recognition The two volumes LNCS 11935 and 11936 constitute the proceedings of the 9th International Conference on Intelligence Science and Big Data Engineering, ISCIDE 2019, held in Nanjing, China, in October 2019. The 84 full papers presented were carefully reviewed and selected from 252 submissions. The papers are organized in two parts: visual data engineering; and big data and machine learning. They cover a large range of topics including information theoretic and Bayesian approaches, probabilistic graphical models, big data analysis, neural networks and neuro-informatics, bioinformatics, computational biology and brain-computer interfaces, as well as advances in fundamental pattern recognition techniques relevant to image processing, computer vision and machine learning.

Deep Learning for NLP and Speech Recognition Robust Automatic Speech Recognition: A Bridge to Practical Applications establishes a solid foundation for automatic speech recognition that is robust against acoustic environmental distortion. It provides a thorough overview of classical and modern noise-and reverberation robust techniques that have been developed over the past thirty years, with an emphasis on practical methods that have been proven to be successful and which are likely to be further developed for future applications. The strengths and weaknesses of robustness-enhancing speech recognition techniques are carefully analyzed. The book covers noise-robust techniques designed for acoustic models which are based on both Gaussian mixture models and deep neural networks. In addition, a guide to selecting the best methods for practical applications is provided. The reader will: Gain a unified, deep and systematic understanding of the state-of-the-art technologies for robust speech recognition Learn the links and relationship between alternative technologies for robust speech recognition Be able to use the technology analysis and categorization detailed in the book to guide future technology development Be able to develop new noise-robust methods in the current era of deep learning for acoustic modeling in speech recognition The first book that provides a comprehensive review on noise and reverberation robust speech recognition methods in the era of deep neural networks Connects robust speech recognition techniques to machine learning paradigms with rigorous mathematical treatment Provides elegant and structural ways to categorize and analyze noise-robust speech
recognition techniques Written by leading researchers who have been actively working on the subject matter in both industrial and academic organizations for many years


Soft Computing and Signal Processing Deep Learning Models and its application: An overview with the help of R softwarePrefaceDeep learning models are widely used in different fields due to its capability to handle large and complex datasets and produce the desired results with more accuracy at a greater speed. In Deep learning models, features are selected automatically through the iterative process wherein the model learns the features by going deep into the dataset and selects the features to be modeled. In the traditional models the features of the dataset needs to be specified in advance. The Deep Learning algorithms are derived from Artificial Neural Network concepts and it is a part of broader Machine Learning Models. This book intends to provide an overview of Deep Learning models, its application in the areas of image recognition & classification, sentiment analysis, natural language processing, stock market prediction using R statistical software package, an open source software package. The book also includes an introduction to python software package which is also open source software for the benefit of the users.This books is a second book in series after the author’s first book- Machine Learning: An Overview with the Help of R Software https://www.amazon.com/dp/B07KQSN447EditorInternational Journal of Statistics and Medical Informaticswww.ijsmi.com/book.php

Generatives Deep Learning 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.
Proceedings of International Conference on Frontiers in Computing and Systems

Das maschinelle Lernen ist zwangsläufig eines der am schnellsten wachsenden Gebiete der Computerwissenschaft. Nicht nur die zu verarbeitenden Datenmengen werden immer umfangreicher, sondern auch die Theorie, wie man sie verarbeitet und in Wissen verwandeln kann. Maschinelles Lernen ist ein verständlich geschriebenes Lehrbuch, welches ein breites Spektrum an Themen aus verschiedenen Bereichen abdeckt, wie zum Beispiel Statistik, Mustererkennung, neuronale Netze, künstliche Intelligenz, Signalverarbeitung, Steuerung und Data Mining. Darüber hinaus beinhaltet das Buch auch Themen, die von einführenden Werken häufig nicht behandelt werden. Unter anderem: Überwachtes Lernen; Bayessche Entscheidungstheorie; parametrische und nichtparametrische Statistik; multivariate Analysis; Hidden-Markow-Modelle; bestärkendes Lernen; Kernel-Maschinen; graphische Modelle; Bayes-Schätzung und statistischen Testmethoden. Da maschinelles Lernen eine immer größere Rolle für Studierende der Informatik spielt, geht die zweite Auflage des Buches auf diese Veränderung ein und unterstützt gezielt Anfänger in diesem Gebiet, unter anderem durch Übungsaufgaben und zusätzlichen Beispieldatensätzen. Prof. Dr. Ethem Alpaydin, Bogazici University, Istanbul.

Simulation and Analysis of Mathematical Methods in Real-Time Engineering Applications

Learn the technology behind hearing aids, Siri, and Echo Audio source separation and speech enhancement aim to extract one or more source signals of interest from an audio recording involving several sound sources. These technologies are among the most studied in audio signal processing today and bear a critical role in the success of hearing aids, hands-free phones, voice command and other noise-robust audio analysis systems, and music post-production software. Research on this topic has followed three convergent paths, starting with sensor array processing, computational auditory scene analysis, and machine learning based approaches such as independent component analysis, respectively. This book is the first one to provide a comprehensive overview by presenting the common foundations and the differences between these techniques in a unified setting. Key features: Consolidated perspective on audio source separation and speech enhancement. Both historical perspective and latest advances in the field, e.g. deep neural networks. Diverse disciplines: array processing, machine learning, and statistical signal processing. Covers the most important techniques for both single-channel and multichannel processing. This book provides both introductory and advanced material suitable for people with basic knowledge of signal processing and machine learning. Thanks to its comprehensiveness, it will help students select a promising research track, researchers leverage the acquired cross-domain knowledge to design improved techniques, and engineers and developers choose the right technology for their target application scenario. It will also be useful for practitioners from other fields (e.g., acoustics, multimedia, phonetics, and musicology) willing to exploit audio source separation or speech enhancement as pre-
processing tools for their own needs.

Dysarthric Speech Recognition and Offline Handwriting Recognition Using Deep Neural Networks "Deep learning is currently one of the best providers of solutions regarding problems in image recognition, speech recognition, object recognition, and natural language with its increasing number of libraries that are available in Python. The aim of deep learning is to develop deep neural networks by increasing and improving the number of training layers for each network, so that a machine learns more about the data until its as accurate as possible. Developers can avail the techniques provided by deep learning to accomplish complex machine learning tasks, and train AI networks to develop deep levels of perceptual recognition. Deep learning is the next step to machine learning with a more advanced implementation. Currently, its not established as an industry standard, but is heading in that direction and brings a strong promise of being a game changer when dealing with raw unstructured data. Deep learning is currently one of the best providers of solutions regarding problems in image recognition, speech recognition, object recognition, and natural language processing. Developers can avail the benefits of building AI programs that, instead of using hand coded rules, learn from examples how to solve complicated tasks. With deep learning being used by many data scientists, deeper neural networks are evaluated for accurate results. This course takes you from basic calculus knowledge to understanding backpropagation and its application for training in neural networks for deep learning and understand automatic differentiation. Through the course, we will cover thorough training in convolutional, recurrent neural networks and build up the theory that focuses on supervised learning and integrate into your product offerings such as search, image recognition, and object processing. Also, we will examine the performance of the sentimental analysis model and will conclude with the introduction of Tensorflow. By the end of this course, you can start working with deep learning right away. This course will make you confident about its implementation in your current work as well as further research."--Resource description page.

Artificial Intelligence: From Beginning To Date This book constitutes selected papers of the Third International Conference on Data Science, Medicine and Bioinformatics, IDMB 2019, held in Nanning, China, in June 2019. The 19 full papers and 1 short paper were carefully reviewed and selected from 93 submissions. The papers are organized according to the following topical sections: business data science: fintech, management, and analytics.- health and biological data science.- novel data science theory and applications.

Deep Learning for Speech Classification and Speaker Recognition This book constitutes the refereed
proceedings of the 24th International Conference on Applications of Natural Language to Information Systems, NLDB 2019, held in Salford, UK, in June 2019. The 21 full papers and 16 short papers were carefully reviewed and selected from 75 submissions. The papers are organized in the following topical sections: argumentation mining and applications; deep learning, neural languages and NLP; social media and web analytics; question answering; corpus analysis; semantic web, open linked data, and ontologies; natural language in conceptual modeling; natural language and ubiquitous computing; and big data and business intelligence.

Intelligence Science and Big Data Engineering. Big Data and Machine Learning Abstract: Research on natural language processing, such as for image and speech recognition, is rapidly changing focus from statistical methods to neural networks. In this study, we introduce speech recognition capabilities along with computer vision to allow a robot to play snooker completely by itself. The color of the ball to be pocketed is provided as an audio input using an audio device such as a microphone. The system is able to recognize the color from the input using a trained deep learning network. The system then commands the camera to locate the ball of the identified color on a snooker table by using computer vision. To pocket the target ball, the system then predicts the best shot using an algorithm. This activity can be executed accurately based on the efficiency of the trained deep learning model.

Audio Source Separation and Speech Enhancement This book constitutes the thoroughly refereed proceedings of the Second International Conference on Machine Learning for Networking, MLN 2019, held in Paris, France, in December 2019. The 26 revised full papers included in the volume were carefully reviewed and selected from 75 submissions. They present and discuss new trends in deep and reinforcement learning, pattern recognition and classification for networks, machine learning for network slicing optimization, 5G system, user behavior prediction, multimedia, IoT, security and protection, optimization and new innovative machine learning methods, performance analysis of machine learning algorithms, experimental evaluations of machine learning, data mining in heterogeneous networks, distributed and decentralized machine learning algorithms, intelligent cloud-support communications, resource allocation, energy-aware communications, software de ned networks, cooperative networks, positioning and navigation systems, wireless communications, wireless sensor networks, underwater sensor networks.

Future Data and Security Engineering. Big Data, Security and Privacy, Smart City and Industry 4.0 Applications Written and edited by a group of renowned specialists in the field, this outstanding new volume addresses primary computational techniques for developing new technologies in soft computing. It
also highlights the security, privacy, artificial intelligence, and practical approaches needed by engineers and scientists in all fields of science and technology. It highlights the current research, which is intended to advance not only mathematics but all areas of science, research, and development, and where these disciplines intersect. As the book is focused on emerging concepts in machine learning and artificial intelligence algorithmic approaches and soft computing techniques, it is an invaluable tool for researchers, academicians, data scientists, and technology developers. The newest and most comprehensive volume in the area of mathematical methods for use in real-time engineering, this groundbreaking new work is a must-have for any engineer or scientist’s library. Also useful as a textbook for the student, it is a valuable contribution to the advancement of the science, both a working handbook for the new hire or student, and a reference for the veteran engineer.

Deep Learning with Applications Using Python

Deep Neural Networks (DNNs) are effective models for machine learning. Unfortunately, training a DNN is extremely time-consuming, even with the aid of a graphics processing unit (GPU). DNN training is especially slow for tasks with large datasets. Existing approaches for speeding up the process involve parallelizing the Stochastic Gradient Descent (SGD) algorithm used to train DNNs. Those approaches do not guarantee the same results as normal SGD since they introduce non-trivial changes into the algorithm. A new approach for faster training that avoids significant changes to SGD is to use low-precision hardware. The low-precision hardware is faster than a GPU, but it performs arithmetic with 1% error. In this arithmetic, 98 + 2 = 99:776 and 10 * 10 = 100:863. This thesis determines whether DNNs would still be able to produce state-of-the-art results using this low-precision arithmetic. To answer this question, we implement an approximate DNN that uses the low-precision arithmetic and evaluate it on the TIMIT phoneme recognition task and the WSJ speech recognition task. For both tasks, we find that acoustic models based on approximate DNNs perform as well as ones based on conventional DNNs; both produce similar recognition error rates. The approximate DNN is able to match the conventional DNN only if it uses Kahan summations to preserve precision. These results show that DNNs can run on low-precision hardware without the arithmetic causing any loss in recognition ability. The low-precision hardware is therefore a suitable approach for speeding up DNN training.

Multimodal Pattern Recognition of Social Signals in Human-Computer-Interaction

Deep Learning in Computer Vision

Generative Modelle haben sich zu einem der spannendsten Themenbereiche der Künstlichen Intelligenz entwickelt: Mit generativem Deep Learning ist es inzwischen möglich, einer Maschine das Malen, Schreiben oder auch das Komponieren von Musik beizubringen – kreative Fähigkeiten,

Robust Automatic Speech Recognition This book will help you to understand the realms of Deep Learning from A-Z. In today's modern world, Deep Learning has taken over the reins of Machine Learning and Artificial Intelligence. We are all familiar with the term "Deep Learning." But have you ever wondered what it really is? This book will cover all the major features of Deep Learning and how you can use it practically with the help of Python language. It has been designed as a guide to master Deep Learning. You will learn about the basics of Deep Learning, its models, supervised and unsupervised learning, how to perform GUI testing with the help of Deep Learning, and installing Jupyter. It also covers topics like neural networks, pattern recognition, and ANN. You will learn about predictive analysis in Python, Random forest model in Python, and common algorithms used in automation. We also cover the Speech recognition mechanism using Deep Learning with practical examples like Markov models, MFCC Algorithm, and DTW based recognition. Don't know how to use Robot Framework with Python? Don't worry. We will help you out. What about Python key points for Deep Learning? We got you covered. If you are looking for a guide to implement Principal Component Analysis in Python, then this book is for you. You will also learn about bulk image compression and front end GUI testing. It has been designed to prepare you to understand the word embedding in Python and linear regression modeling. So what are you waiting for? It is your chance to become a master of Deep Learning. Click the BUY NOW button to get started.
Distributed Computing and Artificial Intelligence, 15th International Conference This book constitutes the thoroughly refereed post-workshop proceedings of the Fourth IAPR TC9 Workshop on Pattern Recognition of Social Signals in Human-Computer-Interaction, MPRSS 2016, held in Cancun, Mexico, in December 2016. The 13 revised papers presented focus on pattern recognition, machine learning and information fusion methods with applications in social signal processing, including multimodal emotion recognition, user identification, and recognition of human activities.

Deep Learning This textbook explains Deep Learning Architecture, with applications to various NLP Tasks, including Document Classification, Machine Translation, Language Modeling, and Speech Recognition. With the widespread adoption of deep learning, natural language processing (NLP), and speech applications in many areas (including Finance, Healthcare, and Government) there is a growing need for one comprehensive resource that maps deep learning techniques to NLP and speech and provides insights into using the tools and libraries for real-world applications. Deep Learning for NLP and Speech Recognition explains recent deep learning methods applicable to NLP and speech, provides state-of-the-art approaches, and offers real-world case studies with code to provide hands-on experience. Many books focus on deep learning theory or deep learning for NLP-specific tasks while others are cookbooks for tools and libraries, but the constant flux of new algorithms, tools, frameworks, and libraries in a rapidly evolving landscape means that there are few available texts that offer the material in this book. The book is organized into three parts, aligning to different groups of readers and their expertise. The three parts are: Machine Learning, NLP, and Speech Introduction The first part has three chapters that introduce readers to the fields of NLP, speech recognition, deep learning and machine learning with basic theory and hands-on case studies using Python-based tools and libraries. Deep Learning Basics The five chapters in the second part introduce deep learning and various topics that are crucial for speech and text processing, including word embeddings, convolutional neural networks, recurrent neural networks and speech recognition basics. Theory, practical tips, state-of-the-art methods, experimentations and analysis in using the methods discussed in theory on real-world tasks. Advanced Deep Learning Techniques for Text and Speech The third part has five chapters that discuss the latest and cutting-edge research in the areas of deep learning that intersect with NLP and speech. Topics including attention mechanisms, memory augmented networks, transfer learning, multi-task learning, domain adaptation, reinforcement learning, and end-to-end deep learning for speech recognition are covered using case studies.

Deep Learning-Based Approaches for Sentiment Analysis This book presents the state-of-the-art in face detection and analysis. It outlines new research directions, including in particular psychology-based
facial dynamics recognition, aimed at various applications such as behavior analysis, deception
detection, and diagnosis of various psychological disorders. Topics of interest include face and facial
landmark detection, face recognition, facial expression and emotion analysis, facial dynamics analysis,
face classification, identification, and clustering, and gaze direction and head pose estimation, as
well as applications of face analysis.

Acoustic Models for Speech Recognition Using Deep Neural Networks Based on Approximate Math This
English edition monograph is developed and updated from China's best-selling, and award-winning, book
on Artificial Intelligence (AI). It covers the foundations as well as the latest developments of AI in
a comprehensive and systematic manner. It is a valuable guide for students and researchers on
artificial intelligence. A wide range of topics in AI are covered in this book with four distinct
features. First of all, the book comprises a comprehensive system, covering the core technology of AI,
including the basic theories and techniques of 'traditional' artificial intelligence, and the basic
principles and methods of computational intelligence. Secondly, the book focuses on innovation,
covering advanced learning methods for machine learning and deep learning techniques and other
artificial intelligence that have been widely used in recent years. Thirdly, the theory and practice of
the book are highly integrated. There are theories, techniques and methods, as well as many application
examples, which will help readers to understand the artificial intelligence theory and its application
development. Fourthly, the content structure of the book is quite characteristic, consisting of three
parts: (i) knowledge-based artificial intelligence, (ii) data-based artificial intelligence, and (iii)
artificial intelligence applications. It is closely related to the core elements of artificial
intelligence, namely knowledge, data, algorithms, and computing powers. This reflects the authors' deep
understanding of the artificial intelligence discipline.

Artificial Neural Networks and Machine Learning – ICANN 2018 The 15th International Symposium on
Distributed Computing and Artificial Intelligence 2018 (DCAI 2018) is a forum to present applications
of innovative techniques for studying and solving complex problems. The exchange of ideas between
scientists and technicians from both the academic and industrial sector is essential to facilitate the
development of systems that can meet the ever-increasing demands of today's society. The present
dition brings together past experience, current work and promising future trends associated with
distributed computing, artificial intelligence and their application in order to provide efficient
solutions to real problems. This symposium is organized by the University of Castilla-La Mancha, the
Osaka Institute of Technology and the University of Salamanca. The present edition was held in Toledo,
Spain, from 20th – 22nd June, 2018.
Deep Learning with Python

This book presents selected research papers on current developments in the fields of soft computing and signal processing from the Second International Conference on Soft Computing and Signal Processing (ICSCSP 2019). The respective contributions address topics such as soft sets, rough sets, fuzzy logic, neural networks, genetic algorithms and machine learning, and discuss various aspects of these topics, e.g. technological considerations, product implementation, and application issues.

Maschinelles Lernen

Deep learning algorithms have brought a revolution to the computer vision community by introducing non-traditional and efficient solutions to several image-related problems that had long remained unsolved or partially addressed. This book presents a collection of eleven chapters where each individual chapter explains the deep learning principles of a specific topic, introduces reviews of up-to-date techniques, and presents research findings to the computer vision community. The book covers a broad scope of topics in deep learning concepts and applications such as accelerating the convolutional neural network inference on field-programmable gate arrays, fire detection in surveillance applications, face recognition, action and activity recognition, semantic segmentation for autonomous driving, aerial imagery registration, robot vision, tumor detection, and skin lesion segmentation as well as skin melanoma classification. The content of this book has been organized such that each chapter can be read independently from the others. The book is a valuable companion for researchers, for postgraduate and possibly senior undergraduate students who are taking an advanced course in related topics, and for those who are interested in deep learning with applications in computer vision, image processing, and pattern recognition.

Deep Learning and Edge Computing Solutions for High Performance Computing

The seven-volume set of LNCS 11301-11307, constitutes the proceedings of the 25th International Conference on Neural Information Processing, ICONIP 2018, held in Siem Reap, Cambodia, in December 2018. The 401 full papers presented were carefully reviewed and selected from 575 submissions. The papers address the emerging topics of theoretical research, empirical studies, and applications of neural information processing techniques across different domains. The 4th volume, LNCS 11304, is organized in topical sections on feature selection, clustering, classification, and detection.

Natural Language Processing and Information Systems

Explore deep learning applications, such as computer vision, speech recognition, and chatbots, using frameworks such as TensorFlow and Keras. This book helps you to ramp up your practical know-how in a short period of time and focuses you on the domain, models, and algorithms required for deep learning applications. Deep Learning with Applications
Using Python covers topics such as chatbots, natural language processing, and face and object recognition. The goal is to equip you with the concepts, techniques, and algorithm implementations needed to create programs capable of performing deep learning. This book covers convolutional neural networks, recurrent neural networks, and multilayer perceptrons. It also discusses popular APIs such as IBM Watson, Microsoft Azure, and scikit-learn. What You Will Learn Work with various deep learning frameworks such as TensorFlow, Keras, and scikit-learn. Use face recognition and face detection capabilities Create speech-to-text and text-to-speech functionality Engage with chatbots using deep learning Who This Book Is For Data scientists and developers who want to adapt and build deep learning applications.

New Era for Robust Speech Recognition This book offers an overview of audio processing, including the latest advances in the methodologies used in audio processing and speech recognition. First, it discusses the importance of audio indexing and classical information retrieval problem and presents two major indexing techniques, namely Large Vocabulary Continuous Speech Recognition (LVCSR) and Phonetic Search. It then offers brief insights into the human speech production system and its modeling, which are required to produce artificial speech. It also discusses various components of an automatic speech recognition (ASR) system. Describing the chronological developments in ASR systems, and briefly examining the statistical models used in ASR as well as the related mathematical deductions, the book summarizes a number of state-of-the-art classification techniques and their application in audio/speech classification. By providing insights into various aspects of audio/speech processing and speech recognition, this book appeals a wide audience, from researchers and postgraduate students to those new to the field.

Deep Learning Models and its application: An overview with the help of R software: Second in series (Machine Learning) This three-volume set LNCS 11139-11141 constitutes the refereed proceedings of the 27th International Conference on Artificial Neural Networks, ICANN 2018, held in Rhodes, Greece, in October 2018. The papers presented in these volumes was carefully reviewed and selected from total of 360 submissions. They are related to the following thematic topics: AI and Bioinformatics, Bayesian and Echo State Networks, Brain Inspired Computing, Chaotic Complex Models, Clustering, Mining, Exploratory Analysis, Coding Architectures, Complex Firing Patterns, Convolutional Neural Networks, Deep Learning (DL), DL in Real Time Systems, DL and Big Data Analytics, DL and Big Data, DL and Forensics, DL and Cybersecurity, DL and Social Networks, Evolving Systems – Optimization, Extreme Learning Machines, From Neurons to Neuromorphism, From Sensation to Perception, From Single Neurons to Networks, Fuzzy Modeling, Hierarchical ANN, Inference and Recognition, Information and Optimization, Interacting with
Speech Emotion Recognition Using Convolutional Neural Networks

Deep learning is the state-of-the-art technique in machine learning with applications in speech recognition. In this study, an efficient system is formulated to process large amounts of speech data within the deep learning framework by harnessing the parallel processing power of High-Performance Computing oriented Graphics Processing Unit (GPU). This thesis focuses on applications of this approach to address stressed speech classification as well as discrimination between different flavors of noise-free speech under Lombard Effect. Different architectures of deep neural networks (DNN) are explored to build state-of-the-art classifiers for detection and classification of stressed speech and Lombard Effect flavors. Furthermore, applications of deep networks are explored to improve current state-of-the-art speaker recognition systems. Further integration of discriminative deep architectures is accomplished for unsupervised methods in training front-ends for Speaker Recognition Evaluation systems.

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