

Approaches To Dialogue Systems And Dialogue Management

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Conversational AI - Michael McTear

2020-10-30

This book provides a comprehensive introduction to Conversational AI. While the idea of interacting with a computer using voice or text goes back a long way, it is only in recent years that this idea has become a reality with the emergence of digital personal assistants, smart speakers, and chatbots. Advances in AI, particularly in deep learning, along with the availability of massive computing power and vast amounts of data, have led to a new generation of dialogue systems and conversational interfaces. Current research in Conversational AI focuses mainly on the application of machine learning and statistical data-driven approaches to the development of dialogue systems. However, it is important to be aware of previous achievements in dialogue technology and to consider to what extent they might be relevant to current research and development. Three main approaches to the development of dialogue

systems are reviewed: rule-based systems that are handcrafted using best practice guidelines; statistical data-driven systems based on machine learning; and neural dialogue systems based on end-to-end learning. Evaluating the performance and usability of dialogue systems has become an important topic in its own right, and a variety of evaluation metrics and frameworks are described. Finally, a number of challenges for future research are considered, including: multimodality in dialogue systems, visual dialogue; data efficient dialogue model learning; using knowledge graphs; discourse and dialogue phenomena; hybrid approaches to dialogue systems development; dialogue with social robots and in the Internet of Things; and social and ethical issues.

Proactive Spoken Dialogue Interaction in Multi-Party Environments - Petra-Maria Strauß

2010-04-06

Proactive Spoken Dialogue Interaction in Multi-Party Environments describes spoken dialogue

systems that act as independent dialogue partners in the conversation with and between users. The resulting novel characteristics such as proactiveness and multi-party capabilities pose new challenges on the dialogue management component of such a system and require the use and administration of an extensive dialogue history. In order to assist the proactive spoken dialogue systems development, a comprehensive data collection seems mandatory and may be performed in a Wizard-of-Oz environment. Such an environment builds also the appropriate basis for an extensive usability and acceptance evaluation. Proactive Spoken Dialogue Interaction in Multi-Party Environments is a useful reference for students and researchers in speech processing.

Spoken Dialogue Technology - Michael F. McTear 2004-09-09

Spoken Dialogue Technology provides extensive coverage of spoken dialogue systems, ranging from the theoretical underpinnings of the study

of dialogue through to a detailed look at a number of well-established methods and tools for developing spoken dialogue systems. The book enables students and practitioners to design and test dialogue systems using several available development environments and languages, including the CSLU toolkit, VoiceXML, SALT, and XHTML+ voice. This practical orientation is usually available otherwise only in reference manuals supplied with software development kits. The latest research in spoken dialogue systems is presented along with extensive coverage of the most relevant theoretical issues and a critical evaluation of current research prototypes. A dedicated web site containing supplementary materials, code, links to resources will enable readers to develop and test their own systems (). Previously such materials have been difficult to track down, available only on a range of disparate web sites and this web site provides a unique and useful reference source which will

prove invaluable.

New Advances in Virtual Humans - Nadia Magnenat-Thalmann 2008-09-03

In this book, various aspects of cognitive and emotional behaviour is described. In chapter one, a state of the art introduction to VH is presented and the associated research is given. In Chapter 2, cognitive and emotions processes are described. A Comprehensive context model for multi-party interactions with the VH is given in the next chapter. Finally, it is very important to model the socializing of groups of virtual humans. This is discussed in Chapter 4. The automatic modelling of expressions for VH is described in Chapter 5. The last chapter gives a case study of an intelligent kiosk avatar and its usability. This book gives examples of some advances that enable VH to behave intelligently. It provides an overview of these research problems and some unsolved problems.

Statistical Methods for Spoken Dialogue Management - Blaise Thomson 2013-01-08

Speech is the most natural mode of communication and yet attempts to build systems which support robust habitable conversations between a human and a machine have so far had only limited success. A key reason is that current systems treat speech input as equivalent to a keyboard or mouse, and behaviour is controlled by predefined scripts that try to anticipate what the user will say and act accordingly. But speech recognisers make many errors and humans are not predictable; the result is systems which are difficult to design and fragile in use. Statistical methods for spoken dialogue management takes a radically different view. It treats dialogue as the problem of inferring a user's intentions based on what is said. The dialogue is modelled as a probabilistic network and the input speech acts are observations that provide evidence for performing Bayesian inference. The result is a system which is much more robust to speech recognition errors and for which a dialogue

strategy can be learned automatically using reinforcement learning. The thesis describes both the architecture, the algorithms needed for fast real-time inference over very large networks, model parameter estimation and policy optimisation. This ground-breaking work will be of interest both to practitioners in spoken dialogue systems and to cognitive scientists interested in models of human behaviour.

Domain-Level Reasoning for Spoken Dialogue Systems - Dirk Bühler 2011-04-07

Reasoning for Information: Seeking and Planning Dialogues provides a logic-based reasoning component for spoken language dialogue systems. This component, called Problem Assistant is responsible for processing constraints on a possible solution obtained from various sources, namely user and the system's domain-specific information. The authors also present findings on the implementation of a dialogue management interface to the Problem Assistant. The dialogue system supports simple

mixed-initiative planning interactions in the TRAINS domain, which is still a relatively complex domain involving a number of logical constraints and relations forming the basis for the collaborative problem-solving behavior that drives the dialogue.

Increasing Naturalness and Flexibility in Spoken Dialogue Interaction - Erik Marchi 2021-03-10

This book compiles and presents a synopsis on current global research efforts to push forward the state of the art in dialogue technologies, including advances to language and context understanding, and dialogue management, as well as human-robot interaction, conversational agents, question answering and lifelong learning for dialogue systems.

Neural Approaches to Conversational AI: Question Answering, Task-Oriented Dialogues and Social Chatbots - Jianfeng Gao 2019-02-21

This monograph is the first survey of neural approaches to conversational AI that targets

Natural Language Processing and Information Retrieval audiences. It provides a comprehensive survey of the neural approaches to conversational AI that have been developed in the last few years, covering QA, task-oriented and social bots with a unified view of optimal decision making. The authors draw connections between modern neural approaches and traditional approaches, allowing readers to better understand why and how the research has evolved and to shed light on how they can move forward. They also present state-of-the-art approaches to training dialogue agents using both supervised and reinforcement learning. Finally, the authors sketch out the landscape of conversational systems developed in the research community and released in industry, demonstrating via case studies the progress that has been made and the challenges that are still being faced. Neural Approaches to Conversational AI is a valuable resource for students, researchers, and software developers.

It provides a unified view, as well as a detailed presentation of the important ideas and insights needed to understand and create modern dialogue agents that will be instrumental to making world knowledge and services accessible to millions of users in ways that seem natural and intuitive.

[Data-Driven Methods for Adaptive Spoken Dialogue Systems](#) - Oliver Lemon 2012-10-21

Data driven methods have long been used in Automatic Speech Recognition (ASR) and Text-To-Speech (TTS) synthesis and have more recently been introduced for dialogue management, spoken language understanding, and Natural Language Generation. Machine learning is now present “end-to-end” in Spoken Dialogue Systems (SDS). However, these techniques require data collection and annotation campaigns, which can be time-consuming and expensive, as well as dataset expansion by simulation. In this book, we provide an overview of the current state of the

field and of recent advances, with a specific focus on adaptivity.

Conversational Dialogue Systems for the Next Decade - Luis Fernando D'Haro 2020-10-24

This book compiles and presents a synopsis on current global research efforts to push forward the state of the art in dialogue technologies, including advances to the classical problems of dialogue management, language generation, question answering, human-robot interaction, chatbots design and evaluation, as well as topics related to the human nature of the conversational phenomena such as humour, social context, specific applications for e-health, understanding, and awareness

Domain-Level Reasoning for Spoken Dialogue Systems - Dirk Bühler 2014-10-01

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Spoken Dialogue Technology - Michael F. McTear 2011-06-27

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Spoken Dialogue Systems Technology and Design - Wolfgang Minker 2010-11-09
Spoken Dialogue Systems Technology and Design covers key topics in the field of spoken

language dialogue interaction from a variety of leading researchers. It brings together several perspectives in the areas of corpus annotation and analysis, dialogue system construction, as well as theoretical perspectives on communicative intention, context-based generation, and modelling of discourse structure. These topics are all part of the general research and development within the area of discourse and dialogue with an emphasis on dialogue systems; corpora and corpus tools and semantic and pragmatic modelling of discourse and dialogue.

Recent Trends in Discourse and Dialogue - Laila Dybkjær 2008-02-13

The eleven chapters of this book represent an original contribution to the field of multimodal spoken dialogue systems. The material includes highly relevant topics, such as dialogue modeling in research systems versus industrial systems. The book contains detailed application studies, including speech-controlled MP3 players

in a car environment, negotiation training with a virtual human in a military context and the application of spoken dialogue to question-answering systems.

Intelligent Virtual Agents - Ruth Aylett

2013-08-16

This book constitutes the proceedings of the 13th International Conference on Intelligent Virtual Agents, IVA 2013, held in Edinburgh, UK, in August 2013. There was a total of 94 submissions. The 18 full and 18 short papers presented in this volume were carefully reviewed and selected for inclusion in the book. In addition, the volume lists the 34 posters which were on display during the conference. The papers are organized in topical sections named: cognitive models; applications; dialogue, language, speech; non-verbal behaviour; and social, cultural models and agents.

Spoken Dialogue Systems - Kristina Jokinen

2022-05-31

Considerable progress has been made in recent

years in the development of dialogue systems that support robust and efficient human-machine interaction using spoken language. Spoken dialogue technology allows various interactive applications to be built and used for practical purposes, and research focuses on issues that aim to increase the system's communicative competence by including aspects of error correction, cooperation, multimodality, and adaptation in context. This book gives a comprehensive view of state-of-the-art techniques that are used to build spoken dialogue systems. It provides an overview of the basic issues such as system architectures, various dialogue management methods, system evaluation, and also surveys advanced topics concerning extensions of the basic model to more conversational setups. The goal of the book is to provide an introduction to the methods, problems, and solutions that are used in dialogue system development and evaluation. It presents dialogue modelling and system

development issues relevant in both academic and industrial environments and also discusses requirements and challenges for advanced interaction management and future research. Table of Contents: Preface / Introduction to Spoken Dialogue Systems / Dialogue Management / Error Handling / Case Studies: Advanced Approaches to Dialogue Management / Advanced Issues / Methodologies and Practices of Evaluation / Future Directions / References / Author Biographies

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act accordingly. But speech recognisers make many errors and humans are not predictable; the result is systems which are difficult to design and fragile in use. Statistical methods for spoken dialogue management takes a radically different view. It treats dialogue as the problem of inferring a user's intentions based on what is said. The dialogue is modelled as a probabilistic network and the input speech acts are observations that provide evidence for performing Bayesian inference. The result is a system which is much more robust to speech recognition errors and for which a dialogue strategy can be learned automatically using reinforcement learning. The thesis describes both the architecture, the algorithms needed for fast real-time inference over very large networks, model parameter estimation and policy optimisation. This ground-breaking work will be of interest both to practitioners in spoken dialogue systems and to cognitive scientists interested in models of human behaviour.

Proceedings of the Paralinguistic Information and its Integration in Spoken Dialogue Systems Workshop - Ramón López-Cózar Delgado 2011-08-27

This volume includes proceedings articles presented at the Workshop on Paralinguistic Information and its Integration in Spoken Dialogue Systems held in Granada, Spain. The material focuses on the three broad areas of spoken dialogue systems for robotics, emotions and spoken dialogue systems, and Spoken dialogue systems for real-world applications. The workshop proceedings are part of the 3rd Annual International Workshop on Spoken Dialogue Systems, which brings together researchers from all over the world working in the field of spoken dialogue systems. It provides an international forum for the presentation of research and applications, and for lively discussions among researchers as well as industrialists.

Current and New Directions in Discourse

and Dialogue - Jan C.J. van Kuppevelt
2003-11-30

This volume covers key topics in the field from a variety of leading researchers. In one volume, readers gain exposure to several perspectives in the areas of corpus annotation and analysis, dialogue system construction, theoretical perspectives on communicative intention, context-based generation, and modeling of discourse structure. Based on the 2nd SIGdial workshop on Discourse and Dialogue held in conjunction with Eurospeech 2001, it is of interest to researchers and practitioners in dialogue and discourse processing.

The Routledge Handbook of Language and Dialogue - Edda Weigand 2017-06-27

The Routledge Handbook of Language and Dialogue is the first comprehensive overview of the emerging and rapidly growing sub-discipline in linguistics, Language and Dialogue. Edited by one of the top scholars in the field, Edda Weigand, and comprising contributions written

by a variety of likewise influential figures, the handbook aims to describe the history of modern linguistics as reasoned progress leading from de Saussure and the simplicity of artificial terms to the complexity of human action and behaviour, which is based on the integration of human abilities such as speaking, thinking, perceiving, and having emotions. The book is divided into three sections: the first focuses on the history of modern linguistics and related disciplines; the second part focuses on the core issues and open debates in the field of Language and Dialogue and introduces the arguments pro and contra certain positions; and the third section focuses on the three components that fundamentally affect language use: human nature, institutions, and culture. This handbook is the ideal resource for those interested in the relationship between Language and Dialogue, and will be of use to students and researchers in Linguistics and related fields such as Discourse Analysis, Cognitive Linguistics, and Communication.

Introducing Spoken Dialogue Systems into Intelligent Environments - Tobias Heinroth
2012-11-07

Introducing Spoken Dialogue Systems into Intelligent Environments outlines the formalisms of a novel knowledge-driven framework for spoken dialogue management and presents the implementation of a model-based Adaptive Spoken Dialogue Manager (ASDM) called OwlSpeak. The authors have identified three stakeholders that potentially influence the behavior of the ASDM: the user, the SDS, and a complex Intelligent Environment (IE) consisting of various devices, services, and task descriptions. The theoretical foundation of a working ontology-based spoken dialogue description framework, the prototype implementation of the ASDM, and the evaluation activities that are presented as part of this book contribute to the ongoing spoken dialogue research by establishing the fertile ground of model-based adaptive spoken dialogue

management. This monograph is ideal for advanced undergraduate students, PhD students, and postdocs as well as academic and industrial researchers and developers in speech and multimodal interactive systems.

Spoken Dialogue Systems - Kristina Jokinen
2009-11-04

Considerable progress has been made in recent years in the development of dialogue systems that support robust and efficient human-machine interaction using spoken language. Spoken dialogue technology allows various interactive applications to be built and used for practical purposes, and research focuses on issues that aim to increase the system's communicative competence by including aspects of error correction, cooperation, multimodality, and adaptation in context. This book gives a comprehensive view of state-of-the-art techniques that are used to build spoken dialogue systems. It provides an overview of the basic issues such as system architectures,

various dialogue management methods, system evaluation, and also surveys advanced topics concerning extensions of the basic model to more conversational setups. The goal of the book is to provide an introduction to the methods, problems, and solutions that are used in dialogue system development and evaluation. It presents dialogue modelling and system development issues relevant in both academic and industrial environments and also discusses requirements and challenges for advanced interaction management and future research. Table of Contents: Preface / Introduction to Spoken Dialogue Systems / Dialogue Management / Error Handling / Case Studies: Advanced Approaches to Dialogue Management / Advanced Issues / Methodologies and Practices of Evaluation / Future Directions / References / Author Biographies

Conversational AI for Natural Human-Centric Interaction - Svetlana Stoyanchev
2022-12-02

This book includes peer-reviewed articles from the 12th International Workshop on Spoken Dialogue System Technology, IWSDS 2021, Singapore. Nowadays, dialogue systems or conversational agents have become one of the most important mechanisms for human-computer or human-robot interaction that has been widely adopted as new paradigm for many applications, companies, and final users. On the other hand, recent advances in natural language processing, understanding and generation, as well as a continuous increasing computational power and large number of resources and data, have brought important and consistent improvements to the capabilities of dialogue systems enabling users to have more productive and enjoyable interactions. However, on the threshold of a new decade, the current state of the art shows important areas where improvements are needed such as incorporation of ground-based knowledge, personality, emotions, and adaptability, as well as automatic

mechanisms for objective, robust and fast evaluations, especially in the context of developing social and e-health applications. In this 12th edition of the International Workshop on Spoken Dialogue Systems (IWSDS), “Conversational AI for natural human-centric interaction” compiles and presents a synopsis on current global research efforts to push forward the state of the art in dialogue technologies, including advances to the classical problems of dialogue management, language generation and understanding, personalisation and generation, spoken and multimodal interaction, dialogue evaluation, dialogue modelling and applications, as well as topics related to chatbots and conversational agent technologies.

Error Handling in Spoken Dialogue Systems - Managing Uncertainty, Grounding and Miscommunication - Gabriel Skantze 2007

Perception in Multimodal Dialogue Systems - Elisabeth André 2008-06-17

This book constitutes the refereed proceedings of the 4th IEEE Tutorial and Research Workshop on Perception and Interactive Technologies for Speech-Based Systems, PIT 2008, held in Kloster Irsee, Germany, in June 2008. The 37 revised full papers presented together with 1 invited keynote lecture were carefully selected from numerous submissions for inclusion in the book. The papers are organized in topical sections on multimodal and spoken dialogue systems, classification of dialogue acts and sound, recognition of eye gaze, head poses, mimics and speech as well as combinations of modalities, vocal emotion recognition, human-like and social dialogue systems, and evaluation methods for multimodal dialogue systems.

Chatbot Research and Design - Asbjørn Følstad
2022-01-27

This book constitutes the proceedings of the 5th International Workshop on Chatbot Research and Design, CONVERSATIONS 2021, which was held during November 2021. Due to COVID-19

pandemic the conference was held online. The 12 papers included in this volume were carefully reviewed and selected from a total of 25 submissions. The papers in the proceedings are structured in four topical groups: Chatbot User Insight, Chatbots Supporting Collaboration and Social Interaction, and Chatbot UX and Design.

Human-Centric Interfaces for Ambient Intelligence - Hamid Aghajan 2009-09-25

To create truly effective human-centric ambient intelligence systems both engineering and computing methods are needed. This is the first book to bridge data processing and intelligent reasoning methods for the creation of human-centered ambient intelligence systems.

Interdisciplinary in nature, the book covers topics such as multi-modal interfaces, human-computer interaction, smart environments and pervasive computing, addressing principles, paradigms, methods and applications. This book will be an ideal reference for university researchers, R&D engineers, computer

engineers, and graduate students working in signal, speech and video processing, multi-modal interfaces, human-computer interaction and applications of ambient intelligence. Hamid Aghajan is a Professor of Electrical Engineering (consulting) at Stanford University, USA. His research is on user-centric vision applications in smart homes, assisted living / well being, smart meetings, and avatar-based social interactions. He is Editor-in-Chief of "Journal of Ambient Intelligence and Smart Environments", has chaired ACM/IEEE ICDCS 2008, and organized workshops/sessions/tutorials at ECCV, ACM MM, FG, ECAI, ICASSP, CVPR. Juan Carlos Augusto is a Lecturer at the University of Ulster, UK. He is conducting research on Smart Homes and Classrooms. He has given tutorials at IJCAI'07 and AAAI'08. He is Editor-in-Chief of the Book Series on "Ambient Intelligence and Smart Environments" and the "Journal of Ambient Intelligence and Smart Environments". He has co-Chaired ICOST'06, AITAmI'06/07/08, and is

Workshops Chair for IE'09. Ramón López-Cózar Delgado is a Professor at the Faculty of Computer Science and Telecommunications of the University of Granada, Spain. His research interests include speech recognition and understanding, dialogue management and Ambient Intelligence. He is a member of ISCA (International Speech Communication Association), SEPLN (Spanish Society on Natural Language Processing) and AIPO (Spanish Society on HCI). Integrates engineering and computing methods that are essential for designing and implementing highly effective ambient intelligence systems Contains contributions from the world's leading experts in academia and industry Gives a complete overview of the principles, paradigms and applications of human-centric ambient intelligence systems

Handbook of Virtual Humans - Nadia Magnenat-Thalmann 2005-10-31

Virtual Humans are becoming more and more

popular and used in many applications such as the entertainment industry (in both film and games) and medical applications. This comprehensive book covers all areas of this growing industry including face and body motion, body modelling, hair simulation, expressive speech simulation and facial communication, interaction with 3D objects, rendering skin and clothes and the standards for Virtual Humans. Written by a team of current and former researchers at MIRALab, University of Geneva or VRlab, EPFL, this book is the definitive guide to the area. Explains the concept of avatars and autonomous virtual actors and the main techniques to create and animate them (body and face). Presents the concepts of behavioural animation, crowd simulation, intercommunication between virtual humans, and interaction between real humans and autonomous virtual humans. Addresses the advanced topics of hair representation and cloth animation with applications in fashion design

Discusses the standards for Virtual Humans, such as MPEG-4 Face Animation and MPEG-4 Body Animation.

Spoken, Multilingual and Multimodal Dialogue Systems - Ramon Lopez Cozar Delgado 2007-01-11

Dialogue systems are a very appealing technology with an extraordinary future. Spoken, Multilingual and Multimodal Dialogues Systems: Development and Assessment addresses the great demand for information about the development of advanced dialogue systems combining speech with other modalities under a multilingual framework. It aims to give a systematic overview of dialogue systems and recent advances in the practical application of spoken dialogue systems. Spoken Dialogue Systems are computer-based systems developed to provide information and carry out simple tasks using speech as the interaction mode. Examples include travel information and reservation, weather forecast information,

directory information and product order. Multimodal Dialogue Systems aim to overcome the limitations of spoken dialogue systems which use speech as the only communication means, while Multilingual Systems allow interaction with users that speak different languages. Presents a clear snapshot of the structure of a standard dialogue system, by addressing its key components in the context of multilingual and multimodal interaction and the assessment of spoken, multilingual and multimodal systems In addition to the fundamentals of the technologies employed, the development and evaluation of these systems are described Highlights recent advances in the practical application of spoken dialogue systems This comprehensive overview is a must for graduate students and academics in the fields of speech recognition, speech synthesis, speech processing, language, and human-computer interaction technology. It will also prove to be a valuable resource to system developers working in these areas.

9th International Workshop on Spoken Dialogue System Technology - Luis Fernando D'Haro 2019-09-24

This book presents the outcomes of the 9th International Workshop on Spoken Dialogue Systems (IWSDS), "Towards creating more human-like conversational agent technologies". It compiles and provides a synopsis of current global research to push forward the state of the art in dialogue technologies, including advances in the context of the classical problems of language understanding, dialogue management and language generation, as well as cognitive topics related to the human nature of conversational phenomena, such as humor, empathy and social context understanding and awareness.

Constructive Dialogue Modelling - Kristiina Jokinen 2009-05-27

Dialogue management technology has developed rapidly over the years resulting in real-time applications like telephony directories, timetable

enquiries, and in-car applications. However, the current technology is still largely based on models that use rigid command language type interactions, and the users need to adapt their human communication strategies to the needs of the technology. As an increasing number of interactive ubiquitous applications will appear, challenges for interaction technology concern especially natural, more human-friendly communication. Recent research has focused on developing speech-based interactive systems that aim to increase the system's communicative competence. By including aspects of interaction beyond simple speech recognition and question-answer based interaction, applications with more conversational interfaces have become possible. New dialogue management technology needs to address the challenges in human-technology interaction, so that smart environments should not only enable user-controlled command interfaces but equip applications with a capability that affords easy

and friendly interactions with the user. *Dialogue Modelling: Speech Interaction and Rational Agents* provides an overview of the current dialogue technology and research trends in spoken dialogue systems, presenting a coherent perspective of AI-based cooperative interaction management. The book complements existing research regarding human-computer interfaces, speech and language technology, and communication studies in general, bringing different view-points together and integrating them into a single point of reference.

Constructive Dialogue Modelling: Presents a guide to spoken dialogue technology and current research trends. Provides an overview of human factors in dialogue systems and delivers a new metaphor for human-computer interaction and computer as agent. Explains the architecture of dialogue systems using examples from systems such as Interact and DUMAS Offers a comprehensive overview of original research into the new trends in speech dialogue

technology in light of innovations such as ubiquitous computing. This book will provide essential reading for industrial designers and interface engineers, university researchers and teachers, computer scientists, human communication researchers, speech and language technologists, cognitive engineers/cognitive scientists, as well as social and media researchers, and psychologists. Advanced students and researchers in computer science, speech and language technologies, psychology and communication research will find this text of interest.

Reinforcement Learning for Adaptive Dialogue Systems - Verena Rieser 2011-11-23

The past decade has seen a revolution in the field of spoken dialogue systems. As in other areas of Computer Science and Artificial Intelligence, data-driven methods are now being used to drive new methodologies for system development and evaluation. This book is a unique contribution to that ongoing change. A

new methodology for developing spoken dialogue systems is described in detail. The journey starts and ends with human behaviour in interaction, and explores methods for learning from the data, for building simulation environments for training and testing systems, and for evaluating the results. The detailed material covers: Spoken and Multimodal dialogue systems, Wizard-of-Oz data collection, User Simulation methods, Reinforcement Learning, and Evaluation methodologies. The book is a research guide for students and researchers with a background in Computer Science, AI, or Machine Learning. It navigates through a detailed case study in data-driven methods for development and evaluation of spoken dialogue systems. Common challenges associated with this approach are discussed and example solutions are provided. This work provides insights, lessons, and inspiration for future research and development – not only for spoken dialogue systems in particular, but for

data-driven approaches to human-machine interaction in general.

Spoken Dialogue Systems for Ambient Environments - Gary Geunbae Lee 2010-10-05
Annotation. This book constitutes the refereed proceedings of the Second International Workshop on Spoken Dialogue Systems, IWDS 2010, held in Gotemba, Japan, in October 2010. The 22 session papers presented together with 2 invited keynote talks were carefully reviewed and selected from numerous submissions. The papers deal with topics around Spoken Dialogue Systems for Ambient Environment and discuss common issues of theories, applications, evaluation, limitations, general tools and techniques.

Spoken Multimodal Human-Computer Dialogue in Mobile Environments - Wolfgang Minker 2006-03-30

This book is based on publications from the ISCA Tutorial and Research Workshop on Multi-Modal Dialogue in Mobile Environments held at Kloster

Irsee, Germany, in 2002. The workshop covered various aspects of development and evaluation of spoken multimodal dialogue systems and components with particular emphasis on mobile environments, and discussed the state-of-the-art within this area. On the development side the major aspects addressed include speech recognition, dialogue management, multimodal output generation, system architectures, full applications, and user interface issues. On the evaluation side primarily usability evaluation was addressed. A number of high quality papers from the workshop were selected to form the basis of this book. The volume is divided into three major parts which group together the overall aspects covered by the workshop. The selected papers have all been intended, reviewed and improved after the workshop to form the backbone of the book. In addition, we have supplemented each of the three parts by an invited contribution intended to serve as an overview chapter.

Reinforcement Learning for Adaptive Dialogue Systems - Verena Rieser 2014-01-28

The past decade has seen a revolution in the field of spoken dialogue systems. As in other areas of Computer Science and Artificial Intelligence, data-driven methods are now being used to drive new methodologies for system development and evaluation. This book is a unique contribution to that ongoing change. A new methodology for developing spoken dialogue systems is described in detail. The journey starts and ends with human behaviour in interaction, and explores methods for learning from the data, for building simulation environments for training and testing systems, and for evaluating the results. The detailed material covers: Spoken and Multimodal dialogue systems, Wizard-of-Oz data collection, User Simulation methods, Reinforcement Learning, and Evaluation methodologies. The book is a research guide for students and researchers with a background in Computer

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Perception in Multimodal Dialogue Systems - Elisabeth Andre 2008-06-11

The IEEE Tutorial and Research Workshop on Perception and Interactive Technologies for Multimodal Dialogue Systems (PIT 2008) is the continuation of a successful series of workshops that started with an ISCA Tutorial and Research Workshop on Multimodal Dialogue Systems in 1999. This workshop was followed by a second one focusing on mobile dialogue systems (IDS 2002), a third one exploring the role of affect in

dialogue (ADS 2004), and a fourth one focusing on perceptive interfaces (PIT 2006). Like its predecessors, PIT 2008 took place at Kloster Irsee in Bavaria. Due to the increasing interest in perceptive interfaces, we decided to hold a follow-up workshop on the themes discussed at PIT 2006, but encouraged above all papers with a focus on perception in multimodal dialogue systems. PIT 2008 received 37 papers covering the following topics (1) multimodal and spoken dialogue systems, (2) classification of dialogue acts and sound, (3) recognition of eye gaze, head poses, mimics and speech as well as combinations of modalities, (4) vocal emotion recognition, (5) human-like and social dialogue systems and (6) evaluation methods for multimodal dialogue systems. Noteworthy was the strong participation from industry at PIT 2008. Indeed, 17 of the accepted 37 papers come from industrial organizations or were written in collaboration with them. We would like to thank all authors for the effort they

made with their submissions, and the Program Committee – nearly 50 distinguished researchers from industry and academia – who worked very hard to meet tight deadlines and selected the best contributions for the final program. Special thanks goes to our invited speaker, Anton Batliner from Friedrich-Alexander-Universität Erlangen-Nürnberg.

Perspectives of Systems Informatics - Andrei Voronkov 2007-08-04

This book constitutes the thoroughly refereed post-conference proceedings of the 6th International Andrei Ershov Memorial Conference, PSI 2006, held in Akademgorodok, Novosibirsk, Russia in June 2006. The 30 revised full papers and 10 revised short papers presented together with 5 invited papers address all current aspects of theoretical computer science, programming methodology, and new information technologies.

16th International Conference on Soft Computing Models in Industrial and

Environmental Applications (SOCO 2021) -

Hugo Sanjurjo González 2021-09-22

This book of Advances in Intelligent and Soft Computing contains accepted papers presented at SOCO 2021 conference held in the beautiful and historic city of Bilbao (Spain), in September 2021. Soft computing represents a collection or set of computational techniques in machine learning, computer science, and some engineering disciplines, which investigate, simulate, and analyze very complex issues and phenomena. After a thorough peer-review process, the 16th SOCO 2021 International Program Committee selected 78 papers which are published in these conference proceedings and represents an acceptance rate of 48%. In this relevant edition, a special emphasis is put on the organization of special sessions. Seven special sessions are organized related to relevant topics as follows: applications of machine learning in computer vision; soft computing applied to autonomous robots and

renewable energy systems; optimization, modeling, and control by soft computing techniques (OMCS); challenges and new approaches toward artificial intelligence deployments in real-world scenarios; time series forecasting in industrial and environmental applications (TSF); soft computing methods in manufacturing and management systems and applied machine learning. The selection of papers was extremely rigorous in order to maintain the high quality of the conference, and we would like to thank the members of the program committees for their hard work in the reviewing process. This is a crucial process to the creation of a high standard conference, and the SOCO conference would not exist without their help.

Spoken Dialogue Systems - Kristiina Jokinen 2010

Considerable progress has been made in recent years in the development of dialogue systems that support robust and efficient human-machine

interaction using spoken language. Spoken dialogue technology allows various interactive applications to be built and used for practical purposes, and research focuses on issues that aim to increase the system's communicative competence by including aspects of error correction, cooperation, multimodality, and adaptation in context. This book gives a comprehensive view of state-of-the-art techniques that are used to build spoken dialogue systems. It provides an overview of the basic issues such as system architectures, various dialogue management methods, system evaluation, and also surveys advanced topics concerning extensions of the basic model to more conversational setups. The goal of the book is to provide an introduction to the methods, problems, and solutions that are used in dialogue system development and evaluation. It presents dialogue modelling and system development issues relevant in both academic and industrial environments and also discusses

requirements and challenges for advanced interaction management and future research. Table of Contents: Preface / Introduction to Spoken Dialogue Systems / Dialogue Management / Error Handling / Case Studies: Advanced Approaches to Dialogue Management / Advanced Issues / Methodologies and Practices of Evaluation / Future Directions / References / Author Biographies

Corpus-Based Methods in Language and Speech Processing - Steve Young 2013-03-14
Corpus-based methods will be found at the heart of many language and speech processing systems. This book provides an in-depth introduction to these technologies through chapters describing basic statistical modeling techniques for language and speech, the use of Hidden Markov Models in continuous speech recognition, the development of dialogue systems, part-of-speech tagging and partial parsing, data-oriented parsing and n-gram language modeling. The book attempts to give

both a clear overview of the main technologies used in language and speech processing, along with sufficient mathematics to understand the underlying principles. There is also an extensive bibliography to enable topics of interest to be pursued further. Overall, we believe that the book will give newcomers a solid introduction to the field and it will give existing practitioners a concise review of the principal technologies used

in state-of-the-art language and speech processing systems. Corpus-Based Methods in Language and Speech Processing is an initiative of ELSNET, the European Network in Language and Speech. In its activities, ELSNET attaches great importance to the integration of language and speech, both in research and in education. The need for and the potential of this integration are well demonstrated by this publication.