Bitext Alignment

Jörg Tiedemann

[Bitext Alignment Synthesis Lectures On Human Language Technologies](#)

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Bitext Alignment Synthesis Lectures On Human Language Technologies:

  Bitext Alignment Jörg Tiedemann,2011 This book provides an overview of various techniques for the alignment of bitexts It describes general concepts and strategies that can be applied to map corresponding parts in parallel documents on various levels of granularity Bitexts are valuable linguistic resources for many different research fields and practical applications The most predominant application is machine translation in particular statistical machine translation However there are various other threads that can be followed which may be supported by the rich linguistic knowledge implicitly stored in parallel resources Bitexts have been explored in lexicography word sense disambiguation terminology extraction computer aided language learning and translation studies to name just a few The book covers the essential tasks that have to be carried out when building parallel corpora starting from the collection of translated documents up to sub sentential alignments In particular it describes various approaches to document alignment sentence alignment word alignment and tree structure alignment It also includes a list of resources and a comprehensive review of the literature on alignment techniques Table of Contents Introduction Basic Concepts and Terminology Building Parallel Corpora Sentence Alignment Word Alignment Phrase and Tree Alignment Concluding Remarks   *Information Retrieval Technology* Mohamed Vall Mohamed Salem,Khaled Shaalan,Farhad Oroumchian,Azadeh Shakery,Halim Khelalfa,2011-12-14 This book constitutes the refereed proceedings of the 7th Asia Information Retrieval Societies Conference AIRS 2011 held in Dubai United Arab Emirates in December 2011 The 31 revised full papers and 25 revised poster papers presented were carefully reviewed and selected from 132 submissions All current aspects of information retrieval in theory and practice are addressed the papers are organized in topical sections on information retrieval models and theories information retrieval applications and multimedia information retrieval user study information retrieval evaluation and interactive information retrieval Web information retrieval scalability and adversarial information retrieval machine learning for information retrieval natural language processing for information retrieval arabic script text processing and retrieval   *Multiword Units in Machine Translation and Translation Technology* Ruslan Mitkov,Johanna Monti,Gloria Corpas Pastor,Violeta Seretan,2018-07-15 The correct interpretation of Multiword Units MWUs is crucial to many applications in Natural Language Processing but is a challenging and complex task In recent years the computational treatment of MWUs has received considerable attention but there is much more to be done before we can claim that NLP and Machine Translation MT systems process MWUs successfully This volume provides a general overview of the field with particular reference to Machine Translation and Translation Technology and focuses on languages such as English Basque French Romanian German Dutch and Croatian among others The chapters of the volume illustrate a variety of topics that address this challenge such as the use of rule based approaches compound splitting techniques MWU identification methodologies in multilingual applications and MWU alignment issues   Textual Information Access Eric Gaussier,Francois Yvon,2013-02-04 This book presents statistical models that have recently been

developed within several research communities to access information contained in text collections The problems considered are linked to applications aiming at facilitating information access information extraction and retrieval text classification and clustering opinion mining comprehension aids automatic summarization machine translation visualization In order to give the reader as complete a description as possible the focus is placed on the probability models used in the applications concerned by highlighting the relationship between models and applications and by illustrating the behavior of each model on real collections Textual Information Access is organized around four themes informational retrieval and ranking models classification and clustering regression logistics kernel methods Markov fields etc multilingualism and machine translation and emerging applications such as information exploration *Computational Modeling of Narrative* Inderjeet Mani,2022-05-31 The field of narrative or story understanding and generation is one of the oldest in natural language processing NLP and artificial intelligence AI which is hardly surprising since storytelling is such a fundamental and familiar intellectual and social activity In recent years the demands of interactive entertainment and interest in the creation of engaging narratives with life like characters have provided a fresh impetus to this field This book provides an overview of the principal problems approaches and challenges faced today in modeling the narrative structure of stories The book introduces classical narratological concepts from literary theory and their mapping to computational approaches It demonstrates how research in AI and NLP has modeled character goals causality and time using formalisms from planning case based reasoning and temporal reasoning and discusses fundamental limitations in such approaches It proposes new representations for embedded narratives and fictional entities for assessing the pace of a narrative and offers an empirical theory of audience response These notions are incorporated into an annotation scheme called NarrativeML The book identifies key issues that need to be addressed including annotation methods for long literary narratives the representation of modality and habituality and characterizing the goals of narrators It also suggests a future characterized by advanced text mining of narrative structure from large scale corpora and the development of a variety of useful authoring aids This is the first book to provide a systematic foundation that integrates together narratology AI and computational linguistics It can serve as a narratology primer for computer scientists and an elucidation of computational narratology for literary theorists It is written in a highly accessible manner and is intended for use by a broad scientific audience that includes linguists computational and formal semanticists AI researchers cognitive scientists computer scientists game developers and narrative theorists Table of Contents List of Figures List of Tables Narratological Background Characters as Intentional Agents Time Plot Summary and Future Directions Sentiment Analysis and Opinion Mining Bing Liu,2022-05-31 Sentiment analysis and opinion mining is the field of study that analyzes people s opinions sentiments evaluations attitudes and emotions from written language It is one of the most active research areas in natural language processing and is also widely studied in data mining Web mining and text mining In fact this research has spread outside of computer science to the management sciences and social sciences

due to its importance to business and society as a whole The growing importance of sentiment analysis coincides with the growth of social media such as reviews forum discussions blogs micro blogs Twitter and social networks For the first time in human history we now have a huge volume of opinionated data recorded in digital form for analysis Sentiment analysis systems are being applied in almost every business and social domain because opinions are central to almost all human activities and are key influencers of our behaviors Our beliefs and perceptions of reality and the choices we make are largely conditioned on how others see and evaluate the world For this reason when we need to make a decision we often seek out the opinions of others This is true not only for individuals but also for organizations This book is a comprehensive introductory and survey text It covers all important topics and the latest developments in the field with over 400 references It is suitable for students researchers and practitioners who are interested in social media analysis in general and sentiment analysis in particular Lecturers can readily use it in class for courses on natural language processing social media analysis text mining and data mining Lecture slides are also available online Table of Contents Preface Sentiment Analysis A Fascinating Problem The Problem of Sentiment Analysis Document Sentiment Classification Sentence Subjectivity and Sentiment Classification Aspect Based Sentiment Analysis Sentiment Lexicon Generation Opinion Summarization Analysis of Comparative Opinions Opinion Search and Retrieval Opinion Spam Detection Quality of Reviews Concluding Remarks Bibliography Author Biography **Synthesis Lectures on Human Language Technologies : Data-Intensive Text Processing with MapReduce** Chris Dyer, *Synthesis lectures on human language technologies* [Anonymus AC08037419],2009 **Building and Using Comparable Corpora for Multilingual Natural Language Processing** Serge Sharoff,Reinhard Rapp,Pierre Zweigenbaum,2023-08-23 This book provides a comprehensive overview of methods to build comparable corpora and of their applications including machine translation cross lingual transfer and various kinds of multilingual natural language processing The authors begin with a brief history on the topic followed by a comparison to parallel resources and an explanation of why comparable corpora have become more widely used In particular they provide the basis for the multilingual capabilities of pre trained models such as BERT or GPT The book then focuses on building comparable corpora aligning their sentences to create a database of suitable translations and using these sentence translations to produce dictionaries and term banks Then it is explained how comparable corpora can be used to build machine translation engines and to develop a wide variety of multilingual applications Multilingual Entity Linking Chen-Tse Tsai,Shyam Upadhyay,Dan Roth,2025-02-17 This book focuses on Entity Discovery and Linking EDL which is the problem of identifying concepts and entities disambiguating them and grounding them to one or more knowledge bases KBs The authors first provide background on the topic and emphasize why it is a crucial step toward understanding natural language text As most of the content on the internet is not in English the book also discusses cross lingual EDL The authors present the challenges associated with EDL problems and explain the existing solutions The book covers the core challenges

that apply to all EDL problems as well as the additional challenges associated with cross lingual EDL problems The authors also survey relevant research papers highlight recent trends and identify areas for future research   *Semantic Relations Between Nominals* Vivi Nastase,Preslav Nakov,Diarmuid Ó Séaghdha,Stan Szpakowicz,2013-04-01 People make sense of a text by identifying the semantic relations which connect the entities or concepts described by that text A system which aspires to human like performance must also be equipped to identify and learn from semantic relations in the texts it processes Understanding even a simple sentence such as Opportunity and Curiosity find similar rocks on Mars requires recognizing relations rocks are located on Mars signalled by the word on and drawing on already known relations Opportunity and Curiosity are instances of the class of Mars rovers A language understanding system should be able to find such relations in documents and progressively build a knowledge base or even an ontology Resources of this kind assist continuous learning and other advanced language processing tasks such as text summarization question answering and machine translation The book discusses the recognition in text of semantic relations which capture interactions between base noun phrases After a brief historical background we introduce a range of relation inventories of varying granularity which have been proposed by computational linguists There is also variation in the scale at which systems operate from snippets all the way to the whole Web and in the techniques of recognizing relations in texts from full supervision through weak or distant supervision to self supervised or completely unsupervised methods A discussion of supervised learning covers available datasets feature sets which describe relation instances and successful algorithms An overview of weakly supervised and unsupervised learning zooms in on the acquisition of relations from large corpora with hardly any annotated data We show how bootstrapping from seed examples or patterns scales up to very large text collections on the Web We also present machine learning techniques in which data redundancy and variability lead to fast and reliable relation extraction

Parallel Text Processing Jean Véronis,2000-09-30 With the rising importance of multilingualism in language industries brought about by global markets and world wide information exchange parallel corpora i e corpora of texts accompanied by their translation have become key resources in the development of natural language processing tools The applications based upon parallel corpora are numerous and growing in number multilingual lexicography and terminology machine and human translation cross language information retrieval language learning etc The book s chapters have been commissioned from major figures in the field of parallel corpus building and exploitation with the aim of showing the state of the art in parallel text alignment and use ten to fifteen years after the first parallel text alignment techniques were developed Within the book the following broad themes are addressed i techniques for the alignment of parallel texts at various levels such as sentence clause and word ii the use of parallel texts in fields as diverse as translation lexicography and information retrieval iii available corpus resources and the evaluation of alignment methods The book will be of interest to researchers and advanced students of computational linguistics terminology lexicography and translation both in academia and industry

<u>Discriminative Alignment Models For Statistical Machine Translation</u> Nadi Tomeh,2012 Bitext alignment is the task of aligning a text in a source language and its translation in the target language Aligning amounts to finding the translational correspondences between textual units at different levels of granularity Many practical natural language processing applications rely on bitext alignments to access the rich linguistic knowledge present in a bitext While the most predominant application for bitexts is statistical machine translation they are also used in multilingual and monolingual lexicography word sense disambiguation terminology extraction computer aided language learning andtranslation studies to name a few Bitext alignment is an arduous task because meaning is not expressed seemingly across languages It varies along linguistic properties and cultural backgrounds of different languages and also depends on the translation strategy that have been used to produce the bitext Current practices in bitext alignment model the alignment as a hidden variable in the translation process In order to reduce the complexity of the task such approaches suppose that a word in the source sentence is aligned to one word at most in the target sentence However this over simplistic assumption results in asymmetric one to many alignments whereas alignments are typically symmetric and many to many To achieve symmetry two one to many alignments in opposite translation directions are built and combined using a heuristic In order to use these word alignments in phrase based translation systems which use phrases instead of words a heuristic is used to extract phrase pairs that are consistent with the word alignment In this dissertation we address both the problems of word alignment and phrase pairs extraction We improve the state of the art in several ways using discriminative learning techniques We present a maximum entropy MaxEnt framework for word alignment In this framework links are predicted independently from one another using a MaxEnt classifier The interaction between alignment decisions is approximated using stackingtechniques which allows us to account for a part of the structural dependencies without increasing the complexity This formulation can be seen as an alignment combination method in which the union of several input alignments is used to guide the output alignment Additionally input alignments are used to compute a rich set of feature functions Our MaxEnt aligner obtains state of the art results in terms of alignment quality as measured by thealignment error rate and translation quality as measured by BLEU on large scale Arabic English NIST 09 systems We also present a translation quality informed procedure for both extraction and evaluation of phrase pairs We reformulate the problem in the supervised framework in which we decide for each phrase pair whether we keep it or not in the translation model This offers a principled way to combine several features to make the procedure more robust to alignment difficulties We use a simple and effective method based on oracle decoding to annotate phrase pairs that are useful for translation Using machine learning techniques based on positive examples only these annotations can be used to learn phrase alignment decisions Using this approach we obtain improvements in BLEU scores for recall oriented translation models which are suitable for small training corpora *Confidence Measures for Alignment and for Machine Translation* Yong Xu,2016 In computational linguistics the relation between different languages is often studied through

automatic alignment techniques Such alignments can be established at various structural levels In particular sentential and sub sentential bitext alignments constitute an important source of information in various modern Natural Language Processing NLP applications a prominent one being Machine Translation MT Effectively computing bitext alignments however can be a challenging task Discrepancies between languages appear in various ways from discourse structures to morphological constructions Automatic alignments would at least in most cases contain noise harmful for the performance of application systems which use the alignments To deal with this situation two research directions emerge the first is to keep improving alignment techniques the second is to develop reliable confidence measures which enable application systems to selectively employ the alignments according to their needs Both alignment techniques and confidence estimation can benefit from manual alignments Manual alignments can be used as both supervision examples to train scoring models and as evaluation materials The creation of such data is however an important question in itself particularly at sub sentential levels where cross lingual correspondences can be only implicit and difficult to capture This thesis focuses on means to acquire useful sentential and sub sentential bitext alignments Chapter 1 provides a non technical description of the research motivation scope organization and introduces terminologies and notation State of the art alignment techniques are reviewed in Part I Chapter 2 and 3 describe state of the art methods for respectively sentence and word alignment Chapter 4 summarizes existing manual alignments and discusses issues related to the creation of gold alignment data The remainder of this thesis Part II presents our contributions to bitext alignment which are concentrated on three sub tasks Chapter 5 presents our contribution to gold alignment data collection For sentence level alignment we collect manual annotations for an interesting text genre literary bitexts which are very useful for evaluating sentence aligners We also propose a scheme for sentence alignment confidence annotation For sub sentential alignment we annotate one to one word links with a novel 4 way labelling scheme and design a new approachfor facilitating the collection of many to many links All the collected data is released on line Improving alignment methods remains an important research subject We pay special attention to sentence alignment which often lies at the beginning of the bitext alignment pipeline Chapter 6 presents our contributions to this task Starting by evaluating state of the art aligners and analyzing their models and results we propose two new sentence alignment methods which achieve state of the art performance on a difficult dataset The other important subject that we study is confidence estimation In Chapter 7 we propose confidence measures for sentential and sub sentential alignments Experiments show that confidence estimation of alignment links is a challenging problem and more works on enhancing the confidence measures will be useful Finally note that these contributions have been employed in a real world application the development of a bilingual reading tool aimed at facilitating the reading in a foreign language   **Foundations of Text Alignment** Dekai Wu,2016-01-05 This book provides a systematic foundational introduction to automatic alignment of parallel texts a family of essential corpus analysis techniques for computing and learning the mappings between

corresponding parts of the texts Bitext alignment lies at the heart of all data driven machine learning approaches to automatic translation and the rapid research progress on alignment during the past two decades underlies the success of statistical machine translation approaches Alignment is used across a wide range of resource acquisition applications including word sense disambiguation terminology extraction and grammar induction as well as in translation memories and biconcordances for translators assistants bilingual lexicographers and computer assisted language learners **Finite-State Text Processing** Kyle Gorman,Richard Sproat,2021-05-26 Weighted finite state transducers WFSTs are commonly used by engineers and computational linguists for processing and generating speech and text This book first provides a detailed introduction to this formalism It then introduces Pynini a Python library for compiling finite state grammars and for combining optimizing applying and searching finite state transducers This book illustrates this library s conventions and use with a series of case studies These include the compilation and application of context dependent rewrite rules the construction of morphological analyzers and generators and text generation and processing applications **Speech and Language Technologies** Ivo Ipsic,2011-06-21 This book addresses state of the art systems and achievements in various topics in the research field of speech and language technologies Book chapters are organized in different sections covering diverse problems which have to be solved in speech recognition and language understanding systems In the first section machine translation systems based on large parallel corpora using rule based and statistical based translation methods are presented The third chapter presents work on real time two way speech to speech translation systems In the second section two papers explore the use of speech technologies in language learning The third section presents a work on language modeling used for speech recognition The chapters in section Text to speech systems and emotional speech describe corpus based speech synthesis and highlight the importance of speech prosody in speech recognition In the fifth section the problem of speaker diarization is addressed The last section presents various topics in speech technology applications like audio visual speech recognition and lip reading systems Human Language Technologies ,1997

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Table of Contents Bitext Alignment Synthesis Lectures On Human Language Technologies

- Personalized Recommendations
- Bitext Alignment Synthesis Lectures On Human Language Technologies User Reviews and Ratings
- Bitext Alignment Synthesis Lectures On Human Language Technologies and Bestseller Lists

5. Accessing Bitext Alignment Synthesis Lectures On Human Language Technologies Free and Paid eBooks
   - Bitext Alignment Synthesis Lectures On Human Language Technologies Public Domain eBooks
   - Bitext Alignment Synthesis Lectures On Human Language Technologies eBook Subscription Services
   - Bitext Alignment Synthesis Lectures On Human Language Technologies Budget-Friendly Options

6. Navigating Bitext Alignment Synthesis Lectures On Human Language Technologies eBook Formats
   - ePub, PDF, MOBI, and More
   - Bitext Alignment Synthesis Lectures On Human Language Technologies Compatibility with Devices
   - Bitext Alignment Synthesis Lectures On Human Language Technologies Enhanced eBook Features

7. Enhancing Your Reading Experience
   - Adjustable Fonts and Text Sizes of Bitext Alignment Synthesis Lectures On Human Language Technologies
   - Highlighting and Note-Taking Bitext Alignment Synthesis Lectures On Human Language Technologies
   - Interactive Elements Bitext Alignment Synthesis Lectures On Human Language Technologies

8. Staying Engaged with Bitext Alignment Synthesis Lectures On Human Language Technologies
   - Joining Online Reading Communities
   - Participating in Virtual Book Clubs
   - Following Authors and Publishers Bitext Alignment Synthesis Lectures On Human Language Technologies

9. Balancing eBooks and Physical Books Bitext Alignment Synthesis Lectures On Human Language Technologies
   - Benefits of a Digital Library
   - Creating a Diverse Reading Collection Bitext Alignment Synthesis Lectures On Human Language Technologies

10. Overcoming Reading Challenges
    - Dealing with Digital Eye Strain
    - Minimizing Distractions
    - Managing Screen Time

11. Cultivating a Reading Routine Bitext Alignment Synthesis Lectures On Human Language Technologies
    - Setting Reading Goals Bitext Alignment Synthesis Lectures On Human Language Technologies
    - Carving Out Dedicated Reading Time

12. Sourcing Reliable Information of Bitext Alignment Synthesis Lectures On Human Language Technologies

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