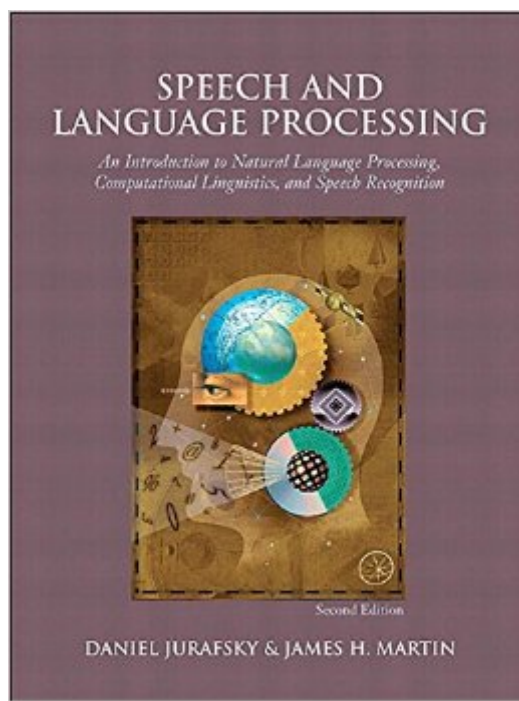


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# Speech And Language Processing



## Synopsis

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. For undergraduate or advanced undergraduate courses in Classical Natural Language Processing, Statistical Natural Language Processing, Speech Recognition, Computational Linguistics, and Human Language Processing. An explosion of Web-based language techniques, merging of distinct fields, availability of phone-based dialogue systems, and much more make this an exciting time in speech and language processing. The first of its kind to thoroughly cover language technology at all levels and with all modern technologies this text takes an empirical approach to the subject, based on applying statistical and other machine-learning algorithms to large corporations. The authors cover areas that traditionally are taught in different courses, to describe a unified vision of speech and language processing. Emphasis is on practical applications and scientific evaluation. An accompanying Website contains teaching materials for instructors, with pointers to language processing resources on the Web. The Second Edition offers a significant amount of new and extended material. Supplements: Click on the "Resources" tab to View Downloadable Files: Solutions Power Point Lecture Slides - Chapters 1-5, 8-10, 12-13 and 24 Now Available! For additional resource visit the author website: <http://www.cs.colorado.edu/~martin/slp.html>

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## Customer Reviews

The authors have the challenge of covering a vast area, and they do a good job of highlighting the hard problems within individual sub-fields, such as machine translation. The availability of an accompanying Web site is a strong plus, as is the extensive bibliography, which also includes links to freely available software and resources. Now for the negatives. While I would still buy and recommend this book, you will need to supplement it with other material; in addition to the accurate "broad and shallow" comment made by another reviewer, I would add that much of the material, as presented, is aimed at the comprehension level of a computer-science PhD and doesn't really meet the definition of a textbook for either undergraduate or graduate students. It is not that the material is intrinsically difficult: one recurring problem in the book is the vast number of forward references, where a topic is introduced very briefly but not explained until 20-50 pages later. In most cases, if you don't understand a passage in the text, I would advise that you keep skimming ahead - you may be rewarded because in several cases, the book covers a particular approach for 2-3 pages before telling you that its underlying assumptions are flawed, and that modern methods for addressing the problem use alternative approaches. In other cases, the authors try to explain topics that might deserve entire chapters in about ten lines - a poster child is the explanation on page 736 of how Support Vector Machines can be used for multiclass problems. To someone who is familiar with SVMs, this material is unnecessary, while those who are not will not be enlightened by knowing that SVMs are "binary approaches based on the discovery of separating hyperplanes".

I give J&M five stars and they deserve it, and here's why. If you want learn to write natural language software, no other single book is as good as " at least I've not found it. In fact, I bet they invented the genre. Pulling this together is not easy, and they do a creditable job. I know a lot more than I did before I read this book, and I've been writing linguistic software for over 30 years. As a linguist writing software (as opposed to the other way around), one can feel just a tad under siege these days. Google advertises that they don't have a single linguist on staff, and MS is ubiquitously quoted for saying that the quality of their software decreases for every linguist they hire | J&M, I'm happy to say, are above the fray. (What is supervised machine learning?

Oh yeah, that's where your input was created by a linguist. Supervised or not, you're just playing number games on the foundation of a theoretical framework invented by linguists.) They provide a balanced account with historical perspective. I like them. They're cool. So on to picking nits... which is way more fun. What I really wanted is to read this book and then be able to sit down and write my own Python implementation of the forward/backward algorithm to train an HMM. I bobbed along through the book, perhaps experiencing a little bit of fuzziness around those probabilities, and came full stop at a not quite ksi right smack in the middle of my HMM forward/backward section. I'd done a practice run by training a neural net in Andrew Ng's machine learning course with Coursera. But I stared pretty hard for 3-4 hours at pages 189 and 190. And I mean I get it basically | Alpha and beta represent the accumulated wisdom coming from the front and from the back | And then you take a kind of average to go from not quite ksi to ksi.

Daniel Jurafsky and James Martin have assembled an incredible mass of information about natural language processing. The authors note that speech and language processing have largely non-overlapping histories that have relatively recently begun to grow together. They have written this book to meet the need for a well-integrated discussion, historical and technical, of both fields. In twenty-five chapters, the book covers the breadth of computational linguistics with an overall logical organization. Five chapter groupings organize material on Words, Speech, Syntax, Semantics and Pragmatics, and Applications. The four Applications chapters address Information Extraction, Question Answering and Summarization, Dialogue and Conversational Agents, and Machine Translation. The book covers a lot of ground, and a fifty-page bibliography directs readers to vast expanses beyond the book's horizon. The aging content problem present in all such books is addressed through the book's web site and numerous links to other sites, tools, and demonstrations. There is a lot of stuff. While it is an achievement to assemble such a collection of relevant information, the book could be more useful than it is. An experienced editor could rearrange content into a more readable flow of information and increase the clarity of some of the authors' examples and explanations. As is, the book is a useful reference for researchers and practitioners already working in the field. A more clear presentation would lower the experience requirement and make its store of information available to students and non-specialists as well.

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