

# The MIT Press

## Journals

[Sign In / Register](#)
[Books](#)
[Journals](#)
[Digital](#)
[Resources](#)
[About](#)
[Contact](#)


Home | Computational Linguistics | List Article navigation  
of Issues | Volume 27 , No. 2 |  
Probabilistic Top-Down Parsing and  
Language Modeling



# Probabilistic Top-Down Parsing and Language Modeling

Brian Roark

Posted Online March 13, 2006

<https://doi.org/10.1162/089120101750300526>

© 2001 Association for Computational Linguistics

Computational Linguistics  
Volume 27 | Issue 2 | June 2001  
p.249-276

 **Download Options** >

**Abstract** **Authors**

This paper describes the functioning of a broad-coverage probabilistic top-down parser, and its application to the problem of language modeling for speech recognition. The paper first introduces key notions in language modeling and probabilistic parsing, and briefly reviews some previous approaches to using syntactic structure for language modeling. A lexicalized probabilistic top-down parser is then presented, which performs very well, in terms of both the accuracy

Quarterly (March,  
June, September,  
December)

160pp. per issue

6 3/4 x 10

Founded: 1974

2018 Impact

Factor: 1.319

2018 Google

Scholar h5-index:  
32

ISSN: 0891-2017

E-ISSN: 1530-9312

**Journal  
Resources**

Editorial Info

Abstracting and  
Indexing

Release Schedule

Advertising Info

## Author Resources

- Submission Guidelines
- Publication Agreement
- Author Reprints

## Reader Resources

- Rights and Permissions
- Most Read
- Most Cited

of returned parses and the efficiency with which they are found, relative to the best broad-coverage statistical parsers. A new language model that utilizes probabilistic top-down parsing is then outlined, and empirical results show that it improves upon previous work in test corpus perplexity. Interpolation with a trigram model yields an exceptional improvement relative to the improvement observed by other models, demonstrating the degree to which the information captured by our parsing model is orthogonal to that captured by a trigram model. A small recognition experiment also demonstrates the utility of the model.

## Forthcoming

More About Computational Linguistics ▼

Metrics ▼



**99** Total

citations

**4** Recent

citations

**17** Field Citation

Ratio

**n/a** Relative

Citation Ratio

Open Access ▼



Computational Linguistics Computational Linguistics is Open Access. All content is freely available in

## Most Read

[See More](#)

**Lexicon-Based Methods for Sentiment Analysis** (14087 times)  
Maite Taboada et al.  
Computational Linguistics  
Volume: 37, Issue: 2, pp. 267-307

**Computational Linguistics and Deep Learning** (10542 times)  
Christopher D. Manning  
Computational Linguistics  
Volume: 41, Issue: 4, pp. 701-707

**Near-Synonymy and Lexical Choice** (3675 times)  
Philip Edmonds et al.  
Computational Linguistics  
Volume: 28, Issue: 2, pp. 105-144

(Note that the Most Read numbers are based on the number of full text downloads over the last 12 months.)

## Most Cited

[See More](#)

**Lexicon-Based Methods for Sentiment Analysis** (436 times)  
Maite Taboada et al.  
Computational Linguistics  
Volume: 37, Issue: 2, pp. 267-307







**A Systematic Comparison of Various Statistical Alignment Models** (174 times)  
Franz Josef Och et al.  
Computational Linguistics  
Volume: 29, Issue: 1, pp. 19-51

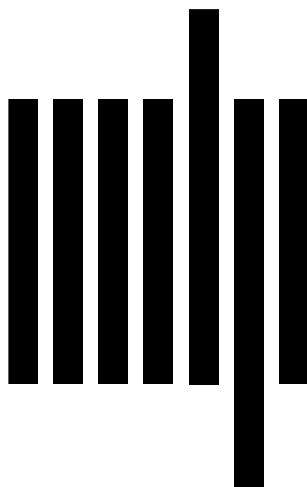
**Opinion Word Expansion and Target Extraction through Double Propagation** (147 times)  
Guang Qiu et al.  
Computational Linguistics  
Volume: 37, Issue: 1, pp. 9-27

(Note that the Most Cited numbers are based on Crossref's [Cited-by service](#) and reflect citation information for the past 24 months.)

electronic format (Full text HTML, PDF, and PDF Plus) to readers across the globe. All articles are published under a [CC BY-NC-ND 4.0 license](#). For more information on allowed uses, please view the [CC license](#).  
[Support OA at MITP](#)

 **Download** >  
**Options**

- Sign up for Alerts 
- Favorite 
- Download Citation 
- RSS TOC 
- RSS Citation 
- Submit your article
- [Support OA at MITP](#) 



Journals

Terms & Conditions

Privacy Statement

Contact Us

Books

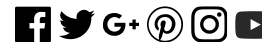
US

UK

Connect

One Rogers Street  
 Cambridge MA  
 02142-1209

Suite 2, 1 Duchess  
 Street London,  
 W1W 6AN, UK



© 2018 The MIT Press  
 Technology Partner:  
[Atypon Systems, Inc.](#)  
[CrossRef Member](#)  
[COUNTER Member](#)  
 The MIT Press colophon is registered in the U.S. Patent and Trademark Office.  
[Site Help](#)