

Ryan Cotterell

CONTACT INFORMATION	Department of Computer Science Johns Hopkins University Hackerman 321 3400 North Charles Street Baltimore, Maryland 21218, USA	<i>mobile:</i> (213) 905-2260 <i>email:</i> ryan.cotterell@jhu.edu <i>www:</i> ryancotterell.github.io
EDUCATION	Johns Hopkins University Ph.D. in Computer Science Advisors: Jason Eisner and David Yarowsky	Spring 2019 (Expected)
	Ludwig-Maximilians-Universität München Visiting Ph.D. Student Advisor: Hinrich Schütze	2014-2016
	Johns Hopkins University M.S.E. in Computer Science Advisor: Chris Callison-Burch GPA: 4.0	Spring 2017
	Johns Hopkins University B.A. in Cognitive Science Minor: Linguistics Advisor: Colin Wilson GPA: 3.87 (<i>General Honors</i>) Major GPA: 4.0 (<i>Departmental Honors</i>)	Spring 2013
	Faculty of Liberal Arts and Sciences of St. Petersburg State University Study Abroad, St. Petersburg, Russia	Fall 2009
	Friends School Baltimore, Maryland	Spring 2007
EMPLOYMENT	Google Research , New York, NY Software Engineering Intern Hosts: Brian Roark and Vlad Schogol	June-September 2017
	Human Language Technology Center of Excellence , Baltimore, MD Participant in the Summer Camp for Applied Language Exploration (SCALE) Supervisor: Benjamin Van Durme	June-August 2012
TEACHING	Teaching Assistant Johns Hopkins University Course: Machine Learning (600.475) Professor: Mark Dredze <i>I held discussion sessions with students to prepare them for homework problem sets.</i>	Fall 2016
	Teaching Assistant Johns Hopkins University Course: Automata and Computation Theory (600.271) Professor: Stephen Checkoway <i>I managed three course assistants and held weekly office hours.</i>	Spring 2014

Teaching Assistant

Johns Hopkins University

Fall 2013

Course: Natural Language Processing (600.465)

Professor: Jason Eisner

I led weekly discussion sections to cement concepts and improve problem solving skills. I supervised three course assistants in grading the assignments.

GRANTS

PURA (Provost Undergraduate Research Award)

Awarding body: Johns Hopkins University

Amount: \$1,000

Awarded to investigate phonological opacity in Portuguese and Turkish.

AWARDS

Outstanding Paper at ACL	2017
Outstanding Paper at EACL	2017
Runner-up for Best Short Paper at NAACL	2016
Honorable Mention for Best Short Paper at EMNLP	2015
National Defense Science and Engineering Fellowship (NDSEG)	2016-2018
DAAD Long-term Research Grant, Germany	2015-2016
Fulbright Research Grant, Germany	2014-2015
George M.L. Sommerman Engineering Graduate Teaching Assistant Award Finalist	2014
Computer Science Department Outstanding Teaching Assistant	2014
Cognitive Science Undergraduate Research Award	2013

PUBLICATIONS

Refereed Journal Papers

1. Ryan Cotterell and Hinrich Schütze. 2017. [Joint semantic synthesis and morphological analysis of the derived word](#). *Transactions of the Association for Computational Linguistics (TACL)* 5. <https://arxiv.org/abs/1701.00946>.
2. Ryan Cotterell, Nanyun Peng, and Jason Eisner. 2015. [Modeling word forms using latent underlying morphs and phonology](#). *Transactions of the Association for Computational Linguistics (TACL)* 3:433–447. <https://tacl2013.cs.columbia.edu/ojs/index.php/tacl/article/view/480>.

Refereed Conference Papers

3. Ryan Cotterell and Georg Heigold. 2017. [Cross-lingual character-level neural morphological tagging](#). In *Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Association for Computational Linguistics, Copenhagen, Denmark. <https://ryancotterell.github.io/papers/cotterell+heigold.emnlp17.pdf>.
4. Ryan Cotterell, Katerina Vylomova, Huda Khayrallah, Christo Kirov, and David Yarowsky. 2017. [Paradigm completion for derivational morphology](#). In *Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Association for Computational Linguistics, Copenhagen, Denmark. <https://ryancotterell.github.io/papers/cotterell+al.emnlp17.pdf>.
5. Francis Ferraro, Adam Poliak, Ryan Cotterell, and Benjamin Van Durme. 2017. [Frame-based continuous lexical semantics through exponential family tensor factorization and semantic proto-roles](#). In *Proceedings of the Sixth Joint Conference on Lexical and Computational Semantics (*SEM)*. Association for Computational Linguistics, Vancouver, Canada. <https://arxiv.org/abs/1706.09562>.
6. Ryan Cotterell and Jason Eisner. 2017. [Probabilistic typology: Deep generative models of vowel inventories](#). In *Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (ACL)*. Association for Computational Linguistics, Vancouver, Canada. **Outstanding Paper Award**. <https://arxiv.org/abs/1705.01684>.

7. Katharina Kann, Ryan Cotterell, and Hinrich Schütze. 2017. [One-shot neural cross-lingual transfer for paradigm completion](#). In *Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (ACL)*. Association for Computational Linguistics, Vancouver, Canada. <https://arxiv.org/abs/1704.00052>.
8. Ryan Cotterell, Adam Poliak, Benjamin Van Durme, and Jason Eisner. 2017. [Explaining and generalizing skip-gram through exponential family principal component analysis](#). In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL)*. Association for Computational Linguistics, Valencia, Spain, pages 175–181. <http://www.aclweb.org/anthology/E17-2028>.
9. Ryan Cotterell, John Sylak-Glassman, and Christo Kirov. 2017. [Neural graphical models over strings for principal parts morphological paradigm completion](#). In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL)*. Association for Computational Linguistics, Valencia, Spain, pages 759–765. **Outstanding Paper Award**. <http://www.aclweb.org/anthology/E17-2120>.
10. Arun Kumar, Ryan Cotterell, Lluís Padró, and Antoni Oliver. 2017. [Morphological analysis of the Dravidian language family](#). In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL)*. Association for Computational Linguistics, Valencia, Spain, pages 217–222. <http://www.aclweb.org/anthology/E17-2035>.
11. Christo Kirov, John Sylak-Glassman, Rebecca Knowles, Ryan Cotterell, and Matt Post. 2017. [A rich morphological tagger for english: Exploring the cross-linguistic tradeoff between morphology and syntax](#). In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL)*. Association for Computational Linguistics, Valencia, Spain, pages 112–117. <http://www.aclweb.org/anthology/E17-2018>.
12. Ekaterina Vylomova, Ryan Cotterell, Timothy Baldwin, and Trevor Cohn. 2017. [Context-aware prediction of derivational word-forms](#). In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL)*. Association for Computational Linguistics, Valencia, Spain, pages 118–124. <http://www.aclweb.org/anthology/E17-2019>.
13. Katharina Kann, Ryan Cotterell, and Hinrich Schütze. 2017. [Neural multi-source morphological reinflection](#). In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL)*. Association for Computational Linguistics, Valencia, Spain, pages 514–524. <http://aclweb.org/anthology/E/E17/E17-1049.pdf>.
14. Ryan Cotterell, Arun Kumar, and Hinrich Schütze. 2016. [Morphological segmentation inside-out](#). In *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Association for Computational Linguistics, Austin, Texas, pages 2325–2330. <https://aclweb.org/anthology/D16-1256>.
15. Katharina Kann, Ryan Cotterell, and Hinrich Schütze. 2016. [Neural morphological analysis: Encoding-decoding canonical segments](#). In *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Association for Computational Linguistics, Austin, Texas, pages 961–967. <https://aclweb.org/anthology/D16-1097>.
16. Tim Vieira*, Ryan Cotterell*, and Jason Eisner. 2016. [Speed-accuracy tradeoffs in tagging with variable-order CRFs and structured sparsity](#). In *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Association for Computational Linguistics, Austin, Texas, pages 1973–1978. <https://aclweb.org/anthology/D16-1206>.
17. Ryan Cotterell, Hinrich Schütze, and Jason Eisner. 2016. [Morphological smoothing and extrapolation of word embeddings](#). In *Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (ACL)*. Association for Computational Linguistics, Berlin, Germany, pages 1651–1660. <http://www.aclweb.org/anthology/P16-1156>.

18. Ryan Cotterell, Tim Vieira, and Hinrich Schütze. 2016. [A joint model of orthography and morphological segmentation](#). In *Proceedings of the 2016 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*. Association for Computational Linguistics, San Diego, California, pages 664–669. **Runner-up for Best Paper**. <http://www.aclweb.org/anthology/N16-1080>.
19. Pushpendre Rastogi, Ryan Cotterell, and Jason Eisner. 2016. [Weighting finite-state transductions with neural context](#). In *Proceedings of the 2016 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*. Association for Computational Linguistics, San Diego, California, pages 623–633. <http://www.aclweb.org/anthology/N16-1076>.
20. John Sylak-Glassman and Ryan Cotterell. 2015. [Contrastive morphological typology and logical hierarchies](#). In Jessica Kantarovich, Tran Truong, and Orest Xherija, editors, *Proceedings of the 52nd Meeting of the Chicago Linguistic Society (CLS52)*, Chicago Linguistic Society. <https://ryancotterell.github.io/papers/sylak-glassman+cotterell.cls16.pdf>.
21. Nanyun Peng, Ryan Cotterell, and Jason Eisner. 2015. [Dual decomposition inference for graphical models over strings](#). In *Proceedings of the 2015 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Association for Computational Linguistics, Lisbon, Portugal, pages 917–927. <http://aclweb.org/anthology/D15-1108>.
22. Thomas Müller, Ryan Cotterell, Alexander Fraser, and Hinrich Schütze. 2015. [Joint lemmatization and morphological tagging with LEMMING](#). In *Proceedings of the 2015 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Association for Computational Linguistics, Lisbon, Portugal, pages 2268–2274. **Honorable Mention for Best Paper**. <http://aclweb.org/anthology/D15-1272>.
23. Ryan Cotterell, Thomas Müller, Alexander Fraser, and Hinrich Schütze. 2015. [Labeled morphological segmentation with semi-Markov models](#). In *Proceedings of the Nineteenth Conference on Computational Natural Language Learning (CoNLL)*. Association for Computational Linguistics, Beijing, China, pages 164–174. <http://www.aclweb.org/anthology/K15-1017>.
24. Ryan Cotterell and Jason Eisner. 2015. [Penalized expectation propagation for graphical models over strings](#). In *Proceedings of the 2015 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*. Association for Computational Linguistics, Denver, Colorado, pages 932–942. <http://www.aclweb.org/anthology/N15-1094>.
25. Ryan Cotterell and Hinrich Schütze. 2015. [Morphological word embeddings](#). In *Proceedings of the 2015 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*. Association for Computational Linguistics, Denver, Colorado, pages 1287–1292. <http://www.aclweb.org/anthology/N15-1140>.
26. Ryan Cotterell, Nanyun Peng, and Jason Eisner. 2014. [Stochastic contextual edit distance and probabilistic FSTs](#). In *Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics (ACL)*. Association for Computational Linguistics, Baltimore, Maryland, pages 625–630. <http://www.aclweb.org/anthology/P14-2102>.
27. Ryan Cotterell and Chris Callison-Burch. 2014. [A multi-dialect, multi-genre corpus of informal written Arabic](#). In Nicoletta Calzolari (Conference Chair), Khalid Choukri, Thierry Declerck, Hrafn Loftsson, Bente Maegaard, Joseph Mariani, Asuncion Moreno, Jan Odijk, and Stelios Piperidis, editors, *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC)*. European Language Resources Association (ELRA), Reykjavik, Iceland. <https://ryancotterell.github.io/papers/cotterell+callison-burch.lrec14.pdf>.

Refereed Workshop Papers

28. Gaurav Kumar, Yuan Cao, Ryan Cotterell, Chris Callison-Burch, Daniel Povey, and Sanjeev Khudanpur. 2014. [Translations of the CALLHOME Egyptian Arabic corpus for conversational speech translation](https://ryancotterell.github.io/papers/kumar+al.iwslt14.pdf). In *Proceedings of the International Workshop on Spoken Language Translation (IWSLT)*. Association for Computational Linguistics, Lake Tahoe, USA. <https://ryancotterell.github.io/papers/kumar+al.iwslt14.pdf>.
29. Ryan Cotterell, Adithya Renduchintala, Naomi Saphra, and Chris Callison-Burch. 2014. [An Algerian Arabic-French code-switched corpus](https://ryancotterell.github.io/papers/cotterell+al.osact14.pdf). In *Workshop on Free/Open-Source Arabic Corpora and Corpora Processing Tools (OSACT)*. European Language Resources Association, Reykjavik, Iceland. <https://ryancotterell.github.io/papers/cotterell+al.osact14.pdf>.

Unrefereed Publications

30. Ryan Cotterell, Christo Kirov, John Sylak-Glassman, Géraldine Walther, Ekaterina Vylomova, Patrick Xia, Manaal Faruqui, Sandra Kübler, David Yarowsky, Jason Eisner, and Mans Hulden. 2017. [The CoNLL-SIGMORPHON 2017 shared task: Universal morphological reinflection in 52 languages](https://arxiv.org/abs/1706.09031). In *Proceedings of the CoNLL-SIGMORPHON 2017 Shared Task: Universal Morphological Reinflection*. Association for Computational Linguistics, Vancouver, Canada. <https://arxiv.org/abs/1706.09031>.
31. Ryan Cotterell, Christo Kirov, John Sylak-Glassman, David Yarowsky, Jason Eisner, and Mans Hulden. 2016. [The SIGMORPHON 2016 shared task—morphological reinflection](http://anthology.aclweb.org/W16-2002). In *Proceedings of the 14th SIGMORPHON Workshop on Computational Research in Phonetics, Phonology, and Morphology*. Association for Computational Linguistics, Berlin, Germany, pages 10–22. <http://anthology.aclweb.org/W16-2002>.
32. Chandler May, Ryan Cotterell, and Benjamin Van Durme. 2016. [Analysis of morphology in topic modeling](http://arxiv.org/abs/1608.03995). *CoRR* abs/1608.03995. <http://arxiv.org/abs/1608.03995>

Technical Reports

33. David Etter, Francis Ferraro, Ryan Cotterell, Olivia Buzek, and Benjamin Van Durme. 2013. [Nerit: Named entity recognition for informal text](https://ryancotterell.github.io/papers/etter+al.tr13.pdf). Technical Report 11, Human Language Technology Center of Excellence, Johns Hopkins University. <https://ryancotterell.github.io/papers/etter+al.tr13.pdf>.

INVITED TALKS

1. Neural Weighted Finite-State Machines Location: First Workshop on Subword and Character Level Models in NLP, held at EMNLP 2017
Tutorial Talk
2. Neural Graphical Models over Strings May, 2017
Location: Universität Heidelberg
Host: Stefan Riezler
3. Neural String-Valued Graphical Models January, 2017
Location: Schloss Dagstuhl
From Characters to Understanding Natural Language (Dagstuhl Seminar 17042)
4. Graphical Models over Strings October, 2016
Location: University of Alberta
Host: Greg Kondrak
5. Graphical Models over Strings September, 2016
Location: Johns Hopkins University
CLSP Seminar
6. Modeling Word Forms Using Latent Underlying Morphs and Phonology July, 2016
Location: Universität Tübingen
Host: Gerhard Jäger

7. Modeling Word Forms Using Latent Underlying Morphs and Phonology February, 2016
Location: Xerox Research Centre Europe
Host: Xavier Carreras
8. Modeling Word Forms Using Latent Underlying Morphs and Phonology September, 2015
Location: Priberam Labs
Host: André Martins
9. A Probabilistic Approach to Synchronic Phonology November, 2014
Institut für Phonetik und Sprachverarbeitung, LMU München
Host: Jonathan Harrington

SHARED TASK ORGANIZER

1. CoNLL-SIGMORPHON-2017 Shared Task: Universal Morphological Reinflection
2. SIGMORPHON 2016 Shared Task: Morphological Reinflection

SERVICE

Journal Reviewer: *Computational Linguistics* (2017, 2015), *Computer Speech and Language* (2017)
Conference Reviewer: ACL (2017, 2016), EMNLP (2017, 2016), NAACL (2016), EACL (2017), COLING (2016), AAAI (2016 secondary)
Workshop Reviewer: ICML Workshop on Deep Structured Prediction (2017), Subword and character level models in NLP (2017), Ethics in NLP (2017), SIGMORPHON (2016), Multilingual and Cross-lingual Methods in NLP (2016)
Other: SIGMORPHON Officer At-Large, CLSP Happy Hour Coordinator

REFERENCES

Jason Eisner (jason@cs.jhu.edu), Johns Hopkins University
David Yarowsky (yarowsky@jhu.edu), Johns Hopkins University
Colin Wilson (wilson@cogsci.jhu.edu), Johns Hopkins University

SKILLS

Programming Languages: Python, Cython, Java, Perl, Ocaml, Lisp, C, C++, R, Scala, L^AT_EX

Deep Learning Frameworks: PyTorch, Theano, TensorFlow

Natural Languages: English, German, Spanish, Russian, Portuguese

Graduate Coursework in Computer Science: Natural Language Processing, Speech Processing, Graphical Models, Artificial Intelligence, Programming Language Theory, Software Engineering, Representation Learning, Big Data, Causality (audit)

Graduate Coursework in Mathematics and Statistics: Nonlinear Optimization I, Stochastic Optimization, Convex Optimization, Neural Networks, Real Analysis I, Real Analysis II (Measure Theory), Bayesian Statistics

Graduate Coursework in Linguistics: Syntax I, Semantics I, Event Semantics (audit), Phonology I, Phonology II, Morpho-Phonology, Psycholinguistics