

Michael Hahn

CONTACT	Stanford University Department of Linguistics Margaret Jacks 117 Stanford CA 94305-2150, USA	E-mail: mhahn2@stanford.edu Website: www.mhahn.info/
EDUCATION	Stanford University Ph.D. in Linguistics Dissertation: <i>Computational and Communicative Efficiency in Language</i> Committee: Judith Degen, Dan Jurafsky (co-advisors), Mike Frank	2016–2021 (expected)
	Massachusetts Institute of Technology Department of Brain and Cognitive Sciences Visiting PhD student. Advisor: Edward Gibson	2019
	University of Edinburgh School of Informatics Visiting Research Postgraduate Student. Advisor: Frank Keller	2015–2016
	University of Tübingen M.Sc. in Mathematics	2014–2015
	26th European Summer School in Logic, Language and Information	2014
	University of Tübingen B.Sc. in Mathematics	2011–2014
	University of Tübingen B.A. in Computational Linguistics	2010–2013
NON-ACADEMIC RESEARCH	Facebook AI Research (Paris, France) Research Intern. Mentor: Marco Baroni	2018
FELLOWSHIPS AND AWARDS	Jacobsson Family Graduate Fellowship, 2019–2021. CUNY Student Travel Grant, 2017. Stanford University PhD Fellowship, 2016–2019. German National Academic Foundation, 2011–2016. (<i>Studienstiftung des Deutschen Volkes</i>)	
PREPRINTS	in prep. Michael Hahn and Frank Keller. Modeling task effects in human reading with neural attention. Preprint: https://arxiv.org/abs/1808.00054 .	
REFEREED JOURNAL ARTICLES	in press. Michael Hahn, Judith Degen, and Richard Futrell. Modeling word and morpheme order in natural language as an efficient tradeoff of memory and surprisal. <i>Psychological Review</i> . Preprint: https://psyarxiv.com/nu4qz . 2020. Michael Hahn, Dan Jurafsky, and Richard Futrell. Universals of word order reflect optimization of grammars for efficient communication. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 117(5):2347–2353. 2020. Michael Hahn. Theoretical limitations of self-attention in neural sequence models. <i>Transactions of the Association for Computational Linguistics</i> , 8:156–171. 2019. Michael Hahn and Marco Baroni. Tabula nearly rasa: Probing the linguistic knowledge of character-level neural language models trained on unsegmented text. <i>Transactions of the Association for Computational Linguistics</i> , 7:467–484.	

- 2019. Michael Hahn** and Richard Futrell. Estimating predictive rate-distortion curves via neural variational inference. *Entropy*, 21(7):640.
- 2015. Michael Hahn** and Frank Richter. Henkin Semantics for Reasoning with Natural Language. *Journal of Language Modeling*, 3(2):513–568.
- 2020. John Hewitt, Michael Hahn**, Surya Ganguli, Percy Liang, and Christopher D. Manning. RNNs can generate bounded hierarchical languages with optimal memory. In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP 2020)*.
- 2019. Michael Hahn**, Frank Keller, Yonatan Bisk, and Yonatan Belinkov. Character-based surprisal as a model of human reading in the presence of errors. In *Proceedings of the 41st Annual Meeting of the Cognitive Science Society (CogSci)*, 401–407.
- 2018. Michael Hahn**, Judith Degen, Noah Goodman, Dan Jurafsky, and Richard Futrell. An information-theoretic explanation of adjective ordering preferences. In *Proceedings of the 40th Annual Meeting of the Cognitive Science Society (CogSci)*, pages 1766–1771.
- 2018. Michael Hahn**, Andreas Krebs, and Howard Straubing. Wreath products of distributive forest algebras. In *Proceedings of the 33rd Annual ACM/IEEE Symposium on Logic in Computer Science (LICS 2018)*, pages 512–520.
- 2016. Michael Hahn** and Frank Keller. Modeling human reading with neural attention. In *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing (EMNLP 2016)*, pages 85–95.
- 2015. Michael Hahn**, Andreas Krebs, Klaus-Jörn Lange, and Michael Ludwig. Visibly Counter Languages and the structure of NC^1 . In *Mathematical Foundations of Computer Science 2015 - 40th International Symposium, MFCS 2015*, pages 384–394.
- 2014. Michael Hahn**. Predication and NP structure in an omnipredicative language: The case of Khoekhoe. In Stefan Müller, editor, *Proceedings of the 21st International Conference on Head-Driven Phrase Structure Grammar*, pages 238–258. CSLI Publications.
- 2013. Michael Hahn**. Word order variation in Khoekhoe. In Stefan Müller, editor, *Proceedings of the 20th International Conference on Head-Driven Phrase Structure Grammar*, pages 48–68. Stanford, CSLI Publications.
- 2013. Niels Ott**, Ramon Ziai, **Michael Hahn**, and Detmar Meurers. CoMeT: Integrating different levels of linguistic modeling for meaning assessment. In *Proceedings of the 7th International Workshop on Semantic Evaluation (SemEval)*, pages 608–616.
- 2012. Michael Hahn**. Arabic relativization patterns: A unified HPSG analysis. In *Proceedings of the 19th International Conference on Head-Driven Phrase Structure Grammar*, pages 144–164. Stanford, CSLI Publications.
- 2012. Michael Hahn** and Detmar Meurers. Evaluating the meaning of answers to reading comprehension questions: A semantics-based approach. In *Proceedings of the 7th Workshop on Innovative Use of NLP for Building Educational Applications (BEA7)*, pages 326–336. Association for Computational Linguistics.
- 2011. Michael Hahn** and Detmar Meurers. On deriving semantic representations from dependencies: A practical approach for evaluating meaning in learner corpora. In *Proceedings of the Int. Conference on Dependency Linguistics (Depling 2011)*, pages 94–103.
- 2011. Michael Hahn**. Null conjuncts and bound pronouns in Arabic. In Stefan Müller, editor, *Proceedings of the 18th International Conference on Head-Driven Phrase Structure Grammar*, pages 60–80. Stanford, CSLI Publications.

- CONTRIBUTIONS TO EDITED VOLUMES** **2014. Michael Hahn** and Detmar Meurers. On deriving semantic representations from dependencies: A practical approach for evaluating meaning in learner corpora. In Kim Gerdes, Eva Hajicová, and Leo Wanner, editors, *Dependency Theory*, Frontiers in AI and Applications Series, pages 94–103. IOS Press, 2014.
- TEACHING AND MENTORING EXPERIENCE** **2020.** Mentor for undergraduate summer research, CSLI Summer Internship Program, CSLI, Stanford University.
- 2020.** Teaching Assistant, *Natural Language Understanding (CS 224U)*, with Christopher Potts, Stanford University.
- 2019.** Teaching Assistant, *Natural Language Processing with Deep Learning (CS 224N)*, with Christopher D. Manning, Stanford University.
- 2017–2018.** Linguistics Corpus Teaching Assistant, with Christopher D. Manning, Stanford University.
- 2018.** Web-based Experimental Methods Workshop, Stanford University.
- 2012.** Teaching Assistant, *Grammar Formalisms in Computational Linguistics*, with Detmar Meurers, University of Tübingen.
- INVITED TALKS** **2021.** *Word Order as an Efficient Tradeoff of Memory and Surprisal*, Colloquium, Department of Linguistics, UT Austin, February 2021.
- 2021.** *An Information-Theoretic Explanation of Adjective Ordering Preferences*, TEx-Mod2020: Theoretical and Experimental Approaches to Modification. Tübingen, Germany, January 2021.
- 2020.** *A Neural Noisy-Channel Model of Structural Forgetting*, TedLab, MIT, November 2020.
- 2020.** *Word Order Universals Optimize Communicative Efficiency*, Cognitive Lexicon Laboratory, University of Toronto, August 2020.
- 2019.** *Crosslinguistic Word Orders Optimize Efficiency of Human Communication and Processing*, Harvard NLP, Harvard University, July 2019.
- 2018.** *Explaining Syntactic Universals by Optimizing Grammars*. TedLab, MIT, November 2018.
- CONTRIBUTED PRESENTATIONS** **2020.** *Theoretical Limitations of Self-Attention in Neural Sequence Models*, 58th Annual Meeting of the Association for Computational Linguistics, July 2020.
- 2020.** *Tabula nearly rasa: Probing the linguistic knowledge of character-level neural language models trained on unsegmented text* (work with Marco Baroni), 58th Annual Meeting of the Association for Computational Linguistics, July 2020.
- 2020.** *Lexical Effects in Structural Forgetting: Evidence for Experience-Based Accounts and a Neural Network Model* (work with Richard Futrell and Edward Gibson), 33rd Annual CUNY Conference on Human Sentence Processing 2020, March 2020.
- 2019.** *Character-based Surprisal as a Model of Human Reading in the Presence of Errors* (work with Frank Keller, Yonatan Bisk, Yonatan Belinkov), CogSci 2019, July 2019.
- 2019.** *Crosslinguistic word orders enable an efficient tradeoff of memory and surprisal* (work with Judith Degen, Richard Futrell), 32nd Annual CUNY Conference on Human Sentence Processing, University of Colorado Boulder, March 2019.
- 2019.** *Testing Functional Explanations of Word Order Universals* (work with Richard Futrell), 32nd Annual CUNY Conference on Human Sentence Processing, University of Colorado Boulder, USA, March 2019.

- 2018.** *Testing Functional Explanations of Word Order Universals.* CAMP 2018, USC, Los Angeles, USA, November 2018.
- 2018.** Poster: *An Information-Theoretic Explanation of Adjective Ordering Preferences.* (work with Judith Degen, Noah Goodman, Dan Jurafsky, and Richard Futrell), CogSci 2018, Madison, Wisconsin, USA, July 2018.
- 2018.** *Wreath Products of Distributive Forest Algebras.* (work with Andreas Krebs and Howard Straubing), LICS 2018, Oxford, UK, July 2018.
- 2018.** Poster: *Mutual Information Impacts Adjective Ordering Across Languages.* (work with Judith Degen, Dan Jurafsky, Noah Goodman, Richard Futrell), 31st Annual CUNY Conference on Human Sentence Processing, UC Davis, USA, March 2018.
- 2018.** Poster: *Exploring Adjective Ordering Preferences via Artificial Language Learning.* (work with Judith Degen, Richard Futrell), 31st Annual CUNY Conference on Human Sentence Processing, UC Davis, USA, March 2018.
- 2017.** *Exploring Adjective Ordering Preferences via Artificial Language Learning.* (work with Judith Degen, Richard Futrell), California Meeting on Psycholinguistics, 2017, UCLA, Los Angeles, USA, November 2017.
- 2017.** *Modeling Task Effects in Reading with Neural Attention.* (work with Frank Keller), 30th Annual CUNY Conference on Human Sentence Processing, MIT, March 2017.
- 2016.** *Modeling Human Reading with Neural Attention.* (work with Frank Keller), EMNLP 2016: Conference on Empirical Methods in Natural Language Processing, Austin, Texas, November 2016.
- 2014.** *Predication and NP Structure in an Omnipredicative Language: The Case of Khoekhoe.* 21st International Conference on Head-Driven Phrase Structure Grammar, Buffalo, US, August 2014.
- 2013.** *Word Order Variation in Khoekhoe.* 20th International Conference on Head-Driven Phrase Structure Grammar, Berlin, Germany, August 2013.
- 2012.** *Arabic Relativization Patterns: A Unified HPSG Analysis.* 19th International Conference on Head-Driven Phrase Structure Grammar, Daejeon, South Korea, July 2012.
- 2012.** (with Detmar Meurers) *Evaluating the Meaning of Answers to Reading Comprehension Questions: A Semantics-Based Approach.* 7th Workshop on Innovative Use of NLP for Building Educational Applications (BEA7), Montreal, Canada, July 2012.
- 2011.** *Null Conjunctions and Bound Pronouns in Arabic.* 18th International Conference on Head-Driven Phrase Structure Grammar, Seattle, USA, August 2011.
- 2011.** (with Detmar Meurers) *On deriving semantic representations from dependencies.* International Conference on Dependency Linguistics, Barcelona, Spain, August 2011.
- 2010.** *Agreement and Complex Predicates in Modern Standard Arabic.* [Generative Grammatik des Nordens](#), Berlin, Germany, July 2010.
- 2009.** *Nichtlokale Abhängigkeiten im Hocharabischen/Nonlocal Dependencies in Modern Standard Arabic.* [Workshop on Grammar Theory and Grammar Implementation](#), Berlin, Germany, May 2009.

SERVICE

Reviewing

Journals

Cognition (2020)

Glossa (2019, 2020)

Neuropsychologia (2019)

PeerJ (2019)

Conferences

ACL (2021)
EACL (2021)
CogSci (2020, 2021)
CoNLL(2020)
MFCS (2019)
STACS (2015)

Institutional Service

CSLI Summer Internship Admissions Committee, Stanford CSLI, 2020.
QP Fest Committee, Stanford Linguistics Department, 2019.
Social Committee, Stanford Linguistics Department, 2016–2017.
EMNLP Student Volunteer, 2016.