

# Allen Schmaltz

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## Research Interests

NLP. ML. Artificial Intelligence and Medicine.

Hybrid parametric/non-parametric neural structures and methods. Retrieval-classification tasks (e.g., medical QA and fact/data verification).

Research Statement: [From Parameter Identification to Introspection, Constrained Inference, & Updatability: Toward An Actionable Understanding of Neural Networks](#)

## Academic Appointments

Department of Epidemiology, Harvard T.H. Chan School of Public Health

Postdoctoral Research Fellow, July 2019-

## Education

Ph.D., Computer Science, Harvard University, September 2013-May 2019

S.M., Computer Science, Harvard University, May 2014

## Preprints

Allen Schmaltz and Andrew Beam. 2020. **Coarse-to-Fine Memory Matching for Joint Retrieval and Classification**. arXiv preprint [arXiv:2012.02287](#).

Allen Schmaltz and Andrew Beam. 2020. **Exemplar Auditing for Multi-Label Biomedical Text Classification**. arXiv preprint [arXiv:2004.03093](#).

Allen Schmaltz. 2019. **Detecting Local Insights from Global Labels: Supervised & Zero-Shot Sequence Labeling via a Convolutional Decomposition**. arXiv preprint [arXiv:1906.01154](#).

## Publications

### *Natural Language Processing*

Allen Schmaltz. 2019. **Learning to Order & Learning to Correct**. Harvard University, Ph.D. dissertation, Computer Science.

Allen Schmaltz, Yoon Kim, Alexander Rush, and Stuart Shieber. 2017. **Adapting Sequence Models for Sentence Correction**. In *Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing*, pages 2807-2813, Copenhagen, Denmark, September. Association for Computational Linguistics. <https://www.aclweb.org/anthology/D17-1298>. ([Appendix](#)) ([.bib](#))

Allen Schmaltz, Alexander M. Rush, and Stuart Shieber. 2016. **Word Ordering Without Syntax**. In *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing*, pages 2319-2324, Austin, TX, USA, November. Association for Computational Linguistics. <https://aclweb.org/anthology/D16-1255>. (.bib)

Allen Schmaltz, Yoon Kim, Alexander M. Rush, and Stuart Shieber. 2016. **Sentence-Level Grammatical Error Identification as Sequence-to-Sequence Correction**. In *Proceedings of the 11th Workshop on Innovative Use of NLP for Building Educational Applications*, pages 242-251, San Diego, CA, USA, June. Association for Computational Linguistics. <https://www.aclweb.org/anthology/W16-0528>. (.bib)

## Medicine and Public Health

Allen Schmaltz and Andrew L. Beam. 2020. **Sharpening the Resolution on Data Matters: A Brief Roadmap for Understanding Deep Learning for Medical Data**. *The Spine Journal*. (In press).

Andrew L. Beam, Benjamin Kompa, Allen Schmaltz, Inbar Fried, Griffin Weber, Nathan P. Palmer, Xu Shi, Tianxi Cai, and Isaac S. Kohane. 2020. **Clinical Concept Embeddings Learned from Massive Sources of Multimodal Medical Data**. In *Proceedings of the Pacific Symposium on Biocomputing (PSB) 25*, pages 295-306. [arXiv:1804.01486](https://arxiv.org/abs/1804.01486).

## Public Policy

Allen Schmaltz. 2018. **On the Utility of Lay Summaries and AI Safety Disclosures: Toward Robust, Open Research Oversight**. In *Proceedings of the Second ACL Workshop on Ethics in Natural Language Processing*, pages 1-6, New Orleans, LA, USA, June. Association for Computational Linguistics. <https://aclweb.org/anthology/W18-0801>. (.bib)

## Quantitative Social Science

Wenxin Jiang, Gary King, Allen Schmaltz, and Martin A. Tanner. 2019. **Ecological Regression with Partial Identification**. *Political Analysis*. <https://doi.org/10.1017/pan.2019.19>.

## Recent Talks<sup>1</sup>

### Medicine and Public Health

**Exemplar Auditing for Multi-Label Biomedical Text Classification**. April 27, 2020. *Junior Investigators Advanced Biomedical Computation (ABC) Series*, Brigham and Women's Hospital (BWH) Program in Precision Medicine and the BWH Division of Computational Pathology. ([presentation slides](#))

### Natural Language Processing

**Word Ordering Without Syntax**. November 2016. *The Conference on Empirical Methods in Natural Language Processing*, Austin, TX. ([video](#))

## Employment

Institute for Quantitative Social Science (IQSS) at Harvard University (Cambridge, MA)

Research Assistant, Gary King's group, January 2017-May 2019

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<sup>1</sup>Selected/Representative

Rakuten Institute of Technology, Boston (MA)

Research Scientist Intern (part-time), May 2016-June 2017

Disney Research, Boston (Cambridge, MA)

Research & Development Lab Associate (part-time), Hanspeter Pfister's group, October 2014-May 2015

University of Southern California-Information Sciences Institute (Marina del Rey, CA)

Visiting Research Assistant, The Natural Language Group, Kevin Knight's group, June 2014-August 2014

Institute for Quantitative Social Science (IQSS) at Harvard University (Cambridge, MA)

Research Fellow, Mercè Crosas's Data Science group, May 2013-August 2013

Disney Research, Boston (Cambridge, MA)

Research & Development Lab Associate, Jonathan Yedidia's group, May 2012-August 2012

Berlitz Japan, Inc. (Tokyo, Japan)

English Language Instructor, October 2007-June 2008

The Landrum Company (Columbia, MO)

Web Design Intern, June 2002-January 2004

## Teaching

Harvard University

Computer Science 51: Introduction to Computer Science II

Teaching Fellow, Spring Semester 2016

Computer Science 282r: Decision-Making Under Uncertainty

Teaching Fellow, Spring Semester 2015

Computer Science 187: Computational Linguistics

Head Teaching Fellow, Spring Semester 2013 and Fall Semester 2014

Government 50: Introduction to Political Science Research Methods

Teaching Fellow, Fall Semester 2012

## Fellowships/Grants

IQSS Research Grant (\$2,000), Harvard University, 2014-2015

US Department of Education Group Projects Abroad Scholarship (for IUC), 2009-2010

Mitsubishi UFJ Foundation Scholarship (for IUC), 2009-2010

The Center for East Asian Studies Summer Fellowship (\$8,000), Stanford University, 2009

Foreign Language and Area Studies (FLAS) Fellowship with Japan Fund supplement (tuition and stipend), Stanford University, 2008-2009

## Languages

### Japanese

Inter-University Center (IUC) for Japanese Language Studies (Yokohama, Japan), September 2009-June 2010

FALCON Japanese Language Program at Cornell University (Ithaca, NY), June 2006-May 2007

### Chinese<sup>2</sup>

International Chinese Language Program (ICLP) at National Taiwan University (Taipei, Taiwan), March-June 2006

Princeton in Beijing Chinese Language Program (Beijing, China), June-August 2005

### German

Courses in high school and at Northwestern University

Language learning software (non-research)

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## Additional Education

*Ph.D. student, Department of Government, Harvard University, September 2010-August 2013*

*Completed required coursework and qualifying exams*

*Discontinued for Ph.D. in Computer Science*

M.A., East Asian Studies, Stanford University (Stanford, CA), September 2008-September 2010

B.A., Political Science, Northwestern University (Evanston, IL), 2006

## Academic Service

### Administration

Member of organizing committee, Machine Learning for Health (ML4H) workshop at the Conference on Neural Information Processing Systems (NeurIPS), 2020

Poster Session Chair for “Language Models, Text Mining, and Crowd Sourcing”, Conference on Empirical Methods in Natural Language Processing (EMNLP), Copenhagen, Denmark, 2017

### Reviewing

AAAI Conference on Artificial Intelligence (AAAI), 2018

ACM Conference on Health, Inference, and Learning (CHIL), 2020, 2021

ACM Transactions on Computing for Healthcare, 2020

Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL HLT), 2018<sup>3</sup>

Annual Meeting of the Association for Computational Linguistics (ACL), 2017, 2018, 2019

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<sup>2</sup>No longer actively maintained

<sup>3</sup>Nominated as an outstanding reviewer by the area chairs

Clinical Natural Language Processing workshop at the Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020

Conference on Empirical Methods in Natural Language Processing (EMNLP), 2018

International Joint Conference on Natural Language Processing (IJCNLP), 2017

Machine Learning for Health (ML4H) workshop at the Conference on Neural Information Processing Systems (NeurIPS), 2019, 2020

Scientific Data (Nature Research), 2020

Transactions of the Association for Computational Linguistics (TACL), 2017 (as a secondary reviewer)

Workshop on Innovative Use of NLP for Building Educational Applications (BEA), 2017, 2019

Last updated: February 9, 2021