

Allen Schmaltz, Ph.D.

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Reexpress AI, Inc.

CEO and Co-founder (with Danielle Rasooly, Ph.D.), January 2022-present

Research Interests

My current work in Artificial Intelligence focuses on three themes, all in the context of large-scale deep neural networks:

INTROSPECTION: Inductive (architecture) biases amenable to decomposing networks into human-understandable parts

UPDATABILITY: Hybrid parametric/non-parametric neural structures and methods for *local, end-user* modification of networks

UNCERTAINTY: Statistical methods and HCI interfaces for uncertainty quantification

Research

Artificial Intelligence

Allen Schmaltz and Danielle Rasooly. 2022. **Introspection, Updatability, and Uncertainty Quantification with Transformers: Concrete Methods for AI Safety.**

December 2022, *ML Safety Workshop*, 36th Conference on Neural Information Processing Systems (NeurIPS 2022).

Allen Schmaltz and Danielle Rasooly. 2022. **Approximate Conditional Coverage via Neural Model Approximations.** arXiv preprint [arXiv:2205.14310](https://arxiv.org/abs/2205.14310).

Spotlight talk, July 2022, *Workshop on Distribution-Free Uncertainty Quantification at the Thirty-ninth International Conference on Machine Learning (ICML 2022)*, Baltimore, Maryland.

Allen Schmaltz. 2021. **Detecting Local Insights from Global Labels: Supervised & Zero-Shot Sequence Labeling via a Convolutional Decomposition.** *Computational Linguistics*.

https://doi.org/10.1162/coli_a_00416. [Online Appendix](#). [Code](#). [FAQ](#). *The 2021 Conference on Empirical Methods in Natural Language Processing*: [Presentation video](#); [Slides](#); [Poster](#).

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*. <https://doi.org/10.1016/j.spinee.2020.08.012>.

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>.

Working Papers

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

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

Recent Talks¹

Artificial Intelligence

Detecting Local Insights from Global Labels: Supervised & Zero-Shot Sequence Labeling via a Convolutional Decomposition. November 7, 2021. *The 2021 Conference on Empirical Methods in Natural Language Processing* (virtual). ([presentation video](#); [slides](#); [poster](#)).

¹Selected/Representative. Additional talks with public presentation materials that may be of general interest are available at https://scholar.harvard.edu/allen_schmaltz/recent-talks.

Coarse-to-Fine Memory Matching for Joint Retrieval and Classification. April 5, 2021. *UMass BioNLP group seminar: Data meets Healthcare*, University of Massachusetts (Amherst and Lowell). ([presentation slides](#))

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. ([presentation video](#))

Academic Appointments

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

Postdoctoral Research Fellow, July 2019-June 2022

Education

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

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

Employment

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

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

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

Chinese²

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

²No longer actively maintained

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), 2018³

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

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

Conference on Neural Information Processing Systems (NeurIPS), Workshop Proposals, 2022

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

Blog

[Resolute Resolutions](#)

Last updated: November 5, 2022

³Nominated as an outstanding reviewer by the area chairs