Jason Naradowsky

Associate Research Scientist
Human Language Technology Center of Excellence
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Research Interests

Machine Reading, Imitation Learning, Graphical Models, Joint inference, Machine Translation, Morphologically-rich Languages, Language Acquisition, Generative Audio Models, Computational Creativity

Education

2008–2014 **PhD in Computer Science**, *University of Massachusetts Amherst.*
Advisor: David A. Smith
Certificate in Cognitive Science

2011–2014 **PhD in Computer Science**, *Macquarie University.*
Advisor: Mark Johnson

2008 **MSc, Artificial Intelligence**, *University of Edinburgh.*
Thesis: Improving Morphology Induction with Phonological Rules
Advisor: Sharon Goldwater

2007 **MS, Computational Linguistics**, *State University of New York at Buffalo.*
Thesis: The Effect of Frequencies and Unseen Events on Parser Portability
Advisor: Doug Roland

2006 **MA, Human Computer Interaction**, *State University of New York at Oswego.*
Thesis: Neural Networks for Automated Design Evaluation
Advisor: Craig Graci

2001-2005 **BS, Computer Science**, *State University of New York at Oswego.*

2001-2005 **BA, Linguistics**, *State University of New York at Oswego.*
Specialization: Artificial Intelligence, with Honors
Thesis: Baroque Music Generation using Genetic Algorithms with Theory-based Crossover
Minor: Cognitive Science

Summer Schools

2007 Linguistic Society of America Summer Institute 2007
Stanford University, Palo Alto, CA

Doctoral Thesis

Title	*Learning with Joint Inference and Latent Linguistic Structure in Graphical Models*
Supervisors	David A. Smith and Mark Johnson
Committee 1	Ben Marlin, Andrew McCallum, Joe Pater, and Kristina Toutanova
Committee 2	Tiberio Caetano, Ben Marlin, Luke Zettlemoyer
Description	Developed a modeling framework for constructing joint factor graph models of NLP problems, and described how latent combinatorially-constrained syntactic representations can be marginalized over during training to produce task-specific syntactic distributions without the need for treebanks.

Research Experience

2017–current   **Associate Research Scientist**
Human Language Technology Center of Excellence
Johns Hopkins University, Baltimore, Maryland

2016–2017   **Senior Research Associate**
Supervisor: Anna Korhonen
University of Cambridge, Cambridge, England

2016   **Senior Research Associate**
2014–2016   **Research Associate**
Supervisor: Sebastian Riedel
University College London, London, England

2012   **Visiting Researcher**
Nara Institute of Science and Technology (NAIST), Nara, Japan
Advisor: Yuji Matsumoto

2010   **Research Intern**
Microsoft Research, Redmond, WA
Advisor: Kristina Toutanova

2008-2011   **Research Assistant**
Computer Science Department, University of Massachusetts Amherst
Advisors: Andrew McCallum and David A. Smith

2008   **Google Summer of Code 2008**
Project: Dependency Parsing in the Natural Language Toolkit
Advisors: Sebastian Riedel and Jason Baldridge

2005-2006   **Research Assistant**
Psychology Department, State University of New York at Oswego
Advisors: Lin Qiu and Songmei Han

Teaching Experience

Fall 2009   Grader, Computer Science Department, University of Massachusetts Amherst
Class: CMPSCI 585: Introduction to Natural Language Processing
Instructor: David A. Smith

Advising

Masters Students

Chris Loy, University College London, 2016
Thesis: Deep Hierarchical Architectures for Polyphonic Music Transcription

James Goodman, Co-advised with Andreas Vlachos, University College London, 2015
Thesis: Semantic Parsing from English to AMR using Imitation Learning

Undergraduate Committee

Elias Zeidan, Marlboro College, 2013

Tutorials

Matrix and Tensor Factorization Methods for Natural Language Processing
Presented at ACL 2015

Invited Talks

[1] *Eliminating Misinformation in Machine Reading with Aggregation*
Kurohashi-Kawahara-ken, Kyoto University, May 12th, 2017

[1] *Distantly Supervised Event Extraction with Pointer Networks*
Komachi-ken, Tokyo Metropolitan University, June 9th, 2016

[2] *Computers that Read: Uncovering the Structure of Language with Deep Learning*
Presented with Pontus Stenetorp
Artificial Intelligent Association, Osaka University, June 6th, 2016

[3] *Distantly Supervised Event Extraction with Pointer Networks*
Matsumoto-ken, NAIST, June 3rd, 2016

[4] *Artificial Intelligence: A Rationalist Perspective on the Past and Future of AI*
PechaKucha, presented with Sebastian Riedel
Embassy of Japan, London, March 23rd, 2016

[5] *Deep Sequence Models, Multimodality & Conversational Agents*
Miyake-ken, Osaka University, Nov 5th, 2015

[6] *Learning Latent Syntactic Representations with Joint Models*
Xerox Research Center, Grenoble, April 16th, 2015

[7] *Learning Latent Syntactic Representations with Joint Models*
Cambridge University, March 13th, 2015

Publications

Journal Publications

[1] Daniela Gerz, Ivan Vulić, Eduardo Ponti, Jason Naradowsky, Roi Reichart, and Anna Korhonen. Language modeling for morphologically rich languages: Character-aware modeling for word-level prediction. *Transactions of the Association for Computational*

Linguistics, 2018.

Refereed Conference Proceedings

[1] Rachel Rudinger, Jason Naradowsky, Brian Leonard, and Benjamin Van Durme. Gender bias in coreference resolution. In *NAACL*, 2018.

[2] Lawrence Wolf-Sonkin, Jason Naradowsky, Sebastian J. Mielke, and Ryan Cotterell. A structured variational autoencoder for contextual morphological inflection. In *Association for Computational Linguistics (ACL)*, 2018.

[3] Matko Bosnjak, Tim Rocktäschel, Jason Naradowsky, and Sebastian Riedel. Programming with a differentiable forth interpreter. In *International Conference on Machine Learning (ICML)*, 2017.

[4] Lucas Sterckx, Jason Naradowsky, Bill Byrne, Thomas Demeester, and Chris Develder. Break it down for me: A study in automated lyric annotation. In *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2017.

[5] James Goodman, Andreas Vlachos, and Jason Naradowsky. Noise reduction and targeted exploration in imitation learning for abstract meaning representation parsing. In *Association for Computational Linguistics (ACL)*, 2016.

[6] James Goodman, Andreas Vlachos, and Jason Naradowsky. Ucl+sheffield at semeval-2016 task 8: Imitation learning for amr parsing with an alpha-bound. In *Proceedings of the 10th International Workshop on Semantic Evaluation*, 2016.

[7] Jason Naradowsky, Sebastian Riedel, and David Smith. Improving nlp through marginalization of hidden syntactic structure. In *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2012.

[8] Jason Naradowsky, Tim Vieira, and David A. Smith. Grammarless parsing for joint inference. In *24th International Conference on Computational Linguistics (COLING)*, Mumbai, India, 2012.

[9] John Lee, Jason Naradowsky, and David Smith. A discriminative model for joint morphological disambiguation and dependency parsing. In *Association for Computational Linguistics (ACL)*, 2011.

[10] Jason Naradowsky and Kristina Toutanova. Unsupervised bilingual morpheme segmentation and alignment with context-rich hidden semi-markov models. In *Association for Computational Linguistics (ACL)*, 2011.

[11] David Mimno, Hanna Wallach, Jason Naradowsky, David Smith, and Andrew Mc-Callum. Polylingual topic models. In *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2009.

[12] Jason Naradowsky and Sharon Goldwater. Improving morphology induction by learning spelling rules. In *International Joint Conference on AI (IJCAI)*, pages 1531–1537, 2009.

Workshop Proceedings

[1] Adam Poliak, Jason Naradowsky, Aparajita Haldar, Rachel Rudinger, and Benjamin Van Durme. Hypothesis only baselines in natural language inference. In

*Proceedings of the 7th Joint Conference on Lexical and Computational Semantics, *SEM s2018*, New Orleans, Louisiana, June 2018. Association for Computational Linguistics.

[2] Jason Naradowsky and Sebastian Riedel. Modeling exclusion with a differentiable factor graph constraint. In *Workshop on Deep Structured Prediction, International Conference on Machine Learning (ICML)*, 2017.

[3] Matko Bošnjak, Tim Rocktäschel, Jason Naradowsky, and Sebastian Riedel. A neural forth abstract machine. In *Neural Abstract Machines & Program Induction (NAMPI)*, Barcelona, 2016.

[4] Matko Bošnjak, Tim Rocktäschel, Jason Naradowsky, and Sebastian Riedel. A neural forth abstract machine. In *RNN Symposium*, Barcelona, 2016.

[5] Jason Naradowsky, Joe Pater, and David Smith. Feature induction for online constraint-based phonology acquisition. In *The Northeast Computational Phonology Workshop (NECPhon)*, New Haven, Connecticut, 2011.

[6] Jason Naradowsky, Joe Pater, David Smith, and Robert Staubs. Learning hidden metrical structure with a log-linear model of grammar. In *Computational Modelling of Sound Pattern Acquisition*, pages 59–60, Edmonton, 2010.

[7] David Mimno, Hanna Wallach, Limin Yao, and Jason Naradowsky. Polylingual topic models. In *The Learning Workshop (Snowbird)*, Clearwater, Florida, 2009.

Demo Proceedings

[1] Sameer Singh, Tim Rocktäschel, Luke Hewitt, Jason Naradowsky, and Sebastian Riedel. WOLFE: An NLP-friendly Declarative Machine Learning Stack. In *Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*, 2015.

Professional Service

Program Committee

2018 ACL, CoNLL, EMNLP, NAACL

2017 ACL, CoNLL, EACL, EMNLP, EthNLP, 1stDeepStructWS, LGNL

2016 ACL, AKBC, COLING, EMNLP

2015 ACL, AKBC

2014 ACL, EMNLP

2013 ACL, IJCNLP

2012 ACL, ACL-SRW, EACL, EMNLP

2011 ACL, CoNLL, EMNLP, IJCNLP

2010 EMNLP, NESCAI

Standing Reviewer

2016- Transactions of the American Association for Computational Linguistics (TACL)

Journal Reviewer

2015 Transactions on Audio, Speech and Language Processing (T-ASL)

2016   AI4Exams, with Yusuke Miyao & Sebastian Riedel

Awards and Achievements

2018   Best Paper Award, *SEM

2015   Daiwa Foundation Small Grant Award

2014   Best Reviewer, ACL 2014

2012   East Asia and Pacific Summer Institute (EAPSI) Fellowship
National Science Foundation

2012   Best Reviewer, EMNLP 2012

2011   Cotutelle International Macquarie University Research Scholarship (iMQRES)
Macquarie University

2011   Institute for Computational and Experimental Study of Language (ICESL) Seed Grant
University of Massachusetts Amherst

2005   Oebele Van Dyk Outstanding Senior in Computer Science Award
State University of New York at Oswego

2001-2005   Presidential Scholarship
State University of New York at Oswego

Personal Details

Citizenship: USA
Date of Birth: July 9th, 1983
Languages: English (native), Latin (reading), Japanese (beginner)
Programming Languages: Scala, Java, Python, Ruby, LISP, Clojure
Notable Packages: PyTorch, TensorFlow