Jesse Mu

muj@stanford.edu
cs.stanford.edu/~muj

Education

2018– **Ph.D. in Computer Science, Stanford University**
– Advisor: Noah Goodman

2017–2018 **MPhil in Advanced Computer Science**, *with distinction*, **University of Cambridge**
– Advisors: Ekaterina Shutova, Helen Yannakoudakis
– Overall mark 1034/1200, ranked 2/*55*

2013–2017 **B.A. in Computer Science**, *summa cum laude*, **Boston College**
– Advisors: Joshua K. Hartshorne, Timothy J. O'Donnell

Experience

2020 **Visiting Researcher, Language and Intelligence Group, MIT**

2019–2020 **Consultant, Codecademy**
– Course advisor/designer for Deep Learning and Text Generation course

2017 **Applied Scientist Intern, Alexa AI, Amazon**
– Semi-supervised language modeling for Alexa skills automatic speech recognition (ASR)
– Reduced overall ASR word error rates by 2%, with improvements across 50% of skills

2016 **Research Assistant, Computation and Cognition Lab, Stanford University**
– Bayesian probabilistic programming frameworks for optimal experimental design

2015 **Research Assistant, Computational Intelligence Group, Technical University of Madrid**
– Identifying Parkinson's disease subtypes from large international datasets
– Collaboration with King's College London and Carlos III Institute of Health

2015 **Research Assistant, Computational Cognitive Science Group, MIT**
– Bayesian nonparametric modeling of verb syntax
– Parallelized algorithms for BayesDB, an open-source machine learning package

2014 **Software Engineering Intern, Quantopian**

Publications

2021 **Emergent Communication of Generalizations**
Jesse Mu and Noah Goodman. In *NAACL 2021 Workshop on Visually Grounded Interaction and Language* **[spotlight]**

2020 **Compositional Explanations of Neurons**
Jesse Mu and Jacob Andreas. In *Advances in Neural Information Processing Systems (NeurIPS)* **[oral (top 1.1%)]**

2020 **Learning to Refer Informatively by Amortizing Pragmatic Reasoning**

Julia White, **Jesse Mu**, and Noah Goodman. In *Proceedings of the 42nd Annual Meeting of the Cognitive Science Society (CogSci)*

2020 **Shaping Visual Representations with Language for Few-shot Classification**
Jesse Mu, Percy Liang, and Noah Goodman. In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics (ACL) (previously NeurIPS 2019 Workshop on Visually Grounded Interaction and Language)*

2019 **Learning Outside the Box: Discourse-level Features Improve Metaphor Identification**
Jesse Mu, Helen Yannakoudakis, and Ekaterina Shutova. In *Proceedings of the 2019 North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL)*

2019 **Do we need natural language? Exploring "restricted" language interfaces for complex domains**
Jesse Mu and Advait Sarkar. In *CHI '19 Extended Abstracts on Human Factors in Computing Systems*

2019 **The meta-science of adult statistical word segmentation: Part 1**
Joshua K. Hartshorne, Lauren Skorb, Sven L. Dietz, Caitlin R. Garcia, Gina L. Iozzo, Katie E. Lamirato, James R. Ledoux, **Jesse Mu**, Kara N. Murdock, Jon Ravid, Alyssa A. Savery, James E. Spizzirro, Kelsey A. Trimm, Kendall D. van Horne, and Juliani Vidal. *Collabra 5*(1):1

2017 **Evaluating hierarchies of verb argument structure with hierarchical clustering**
Jesse Mu, Joshua K. Hartshorne, and Timothy J. O'Donnell. In *Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing (EMNLP)*

2017 **Parkinson's disease subtypes identified from cluster analysis of motor and non-motor symptoms**
Jesse Mu, Kallol Ray Chaudhuri, Concha Bielza, Jesús de Pedro Cuesta, Pedro Larrañaga, and Pablo Martinez-Martin. *Frontiers in Aging Neuroscience* 9:301

Abstracts and posters

2018 **Learning and evaluating hierarchies of verb argument structure**
Jesse Mu, Joshua K. Hartshorne, and Timothy J. O'Donnell. In *Learning Language in Humans and in Machines 2018 Conference* **[poster highlights]**

2016 **The relationship between semantics and verb argument structure is highly regular: a large-scale, crowd-sourced investigation**
Joshua K. Hartshorne, **Jesse Mu**, Timothy J. O'Donnell, and Martha Palmer. In *Architectures and Mechanisms for Language Processing (AMLaP)*

2016 **Unsupervised learning of VerbNet argument structure**
Jesse Mu, Timothy J. O'Donnell, and Joshua K. Hartshorne. In *Proceedings of the 38th Annual Conference of the Cognitive Science Society (CogSci)*

Talks

2020 "Compositional explanations of neurons"
Deep Learning: Classics and Trends, Weights and Biases Deep Learning Salon

2020 "Generalization through language use: case studies in vision and pragmatics"

MIT Computational Psycholinguistics Lab

2018 "Learning and evaluating hierarchies of verb argument structure"
Stanford Computation and Cognition Lab

2017 "Evaluating hierarchies of verb argument structure with hierarchical clustering"
Harvard Language and Cognition Seminar

Honors and awards

2021 Open Philanthropy AI Fellowship
2018 Finch Family Fellowship, Stanford School of Engineering
2018 NSF Graduate Research Fellowship
2017 EMNLP 2017 Student Scholarship
2017 John J. Neuhauser Award in Computer Science, Boston College
2017 Thomas I. Gasson, S.J. Award, Boston College
2017 Phi Beta Kappa
2017 Vanier Canada Graduate Scholarship (declined)
2017 Churchill Scholarship
2016 Barry M. Goldwater Scholarship
2013 Gabelli Presidential Scholarship, Boston College

Teaching

2020 Guest Lecturer, Structure and Interpretation of Deep Networks, MIT IAP
2014–2016 Teaching Assistant, Computer Science I, Boston College

Leadership and service

Reviewing: NAACL 2021, ACL 2021, EMNLP 2021, NeurIPS 2021

2014–2017 Co-president, Boston College Computer Science Society
2014–2015 Director, *A Boston State of Mind*
2014–2015 Web Developer, Haley House
2014 English Teaching Assistant, Educational Development Group