Eva Portelance

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pronouns: she/they - elle

About

My research intersects AI and cognitive science. I am interested in studying how both machines and humans learn to understand language and reason about complex problems.

Note: I had a work interruption from May 2022 to January 2023 for maternity leave.

Academic Background

Ph.D. in Computational Linguistics   2017-2022
Stanford University, Stanford, California
- Ph.D. research on neural network approaches to NLP and cognitive science. Co-advised by professor Dan Jurafsky and professor Michael C. Frank. *Dissertation title*: Neural Network Approaches to the Study of Word Learning.

- Member of the Stanford NLP Group and the Language and Cognition Lab.

B.A. (Hons.) in Linguistics, Computer Science (minor)   2014 - 2017
McGill University, Montreal, Quebec

D.E.C. in Textile Design   2010 - 2013
CÉGEP du Vieux Montréal, Montreal, Quebec

Current Employment

Postdoctoral Fellow   2023 - present
Mila - Québec Artificial Intelligence Institute / McGill University
- Postdoctoral researcher under the supervision of Professors Timothy J. O'Donnell and Siva Reddy. Member of the Montréal Computational and Quantitative Linguistics Laboratory (MCQLL) and the McGill NLP group.
- Instructor for McGill University's Computational Linguistics course.

Publications

Manuscripts under review
    Portelance, E., M. Jasbi. (2023). The roles of neural networks in language acquisition. *PsyArXiv*:b6978. (Manuscript under review at *Language and Linguistics Compass*)

    Portelance, E., M. C. Frank, D. Jurafsky. (2023). Learning the meanings of function words from grounded language using a Visual Question Answering model. *arXiv*:2308.08628. (Manuscript under review at *Cognitive Science*)

    Bommasani, R., ... **E. Portelance**, ... P. Liang. (2021). On the Opportunities and Risks of Foundation Models *arXiv*:2108.07258. (Manuscript under review at *Journal of Machine Learning Research*)

Refereed journal papers
    Portelance, E., Y. Duan, M. C. Frank, G. Lupyan. (2023). Predicting age of acquisition for children's early vocabulary in five languages using language model surprisal. *Cognitive Science*.

    Portelance, E. and A. Piper. (2016). How Cultural Capital Works: Prizewinners, Bestsellers, and the Time of Reading. *Post-45*.

Refereed conference proceedings

Chen, X. and **E. Portelance** (2023). Grammar induction pretraining for language modeling in low resource contexts. *Proceedings of the BabyLM Challenge at the 27th Conference on Computational Natural Language Learning(CoNLL).*

Portelance, E., M. C. Frank, D. Jurafsky, A. Sordoni, R. Laroche. (2021). The Emergence of the Shape Bias Results from Communicative Efficiency. *Proceedings of the 25th Conference on Computational Natural Language Learning (CoNLL).*

Portelance, E., J. Degen, M. C. Frank. (2020). Predicting Age of Acquisition in Early Word Learning Using Recurrent Neural Networks. *Proceedings of CogSci 2020.*

Portelance, E. (2020). Genuine Verb stranding VP-ellipsis in Lithuanian. *Proceedings of the 50th Annual Meeting of the North East Linguistic Society (NELS 50).*

Technical reports

Portelance, E., A. Bruno, L. Bergen, T. J. O'Donnell. (2019). Grammar Induction for Minimalist Grammars using Variational Bayesian Inference. *arXiv*:1710.11350

Harasim, D., A. Bruno, **E. Portelance**, T. J. O'Donnell. (2018). A generalised parsing framework for Abstract Grammars. *arXiv*:1710.11301

Talks

Invited talks

Portelance, E. (2024). *AI and Cognitive Science: Neural network models for studying people.* Presentation for Tea Talks, Mila -Quebec AI Institute, Montreal.

Portelance, E. (2021). *Learning Strategies for the Emergence of Language in Iterated Learning.* Presentation at the Montreal Computational & Quantitative Linguistics Lab (MCQLL), McGill University, Montreal.

Portelance, E. (2020). *Emergent communication in multi-agent neural networks.* Presentation at the Reinforcement Learning Group, Microsoft Research (Redmond, Cambridge, New York, Montreal), Virtual.

Portelance, E. (2019). *Verb stranding ellipsis in Lithuanian: verbal identity and head movement.* Presentation at the Syntax & Semantics circle, University of California, Berkeley.

Conference presentations

Portelance, E., M. C. Frank, D. Jurafsky, A. Sordoni, R. Laroche. (2021). *The Emergence of the Shape Bias Results from Communicative Efficiency.* Presentation at the Conference on Empirical Methods in Natural Language Processing (EMNLP)/ Conference on Natural Language Learning (CoNLL), Punta Cana, DR.

Portelance, E., J. Degen, M. C. Frank. (2020). *Predicting Age of Acquisition in Early Word Learning Using Recurrent Neural Networks.* Presentation at CogSci, Virtual.

Portelance, E., J. Degen, M. C. Frank. (2020). *Using neural network language models to predict age of acquisition for early vocabulary.* Presentation at the International Conference for Infant Studies, Virtual.

Portelance, E., G. Kachergis, M.C. Frank. (2019). *Comparing memory-based and neural network models of early syntactic development.* Poster presentation at the Boston University Conference on Language Development, Boston, MA.

Portelance, E. (2019). *Genuine Verb stranding VP-ellipsis in Lithuanian.* Presentation at the 50th Annual Meeting of the North East Linguistic Society, Cambridge, MA.

Portelance, E., A. Bruno, D. Harasim, L. Bergen, T. J. O'Donnell. (2018). *A Framework for Lexicalized Grammar Induction Using Variational Bayesian Inference.* Poster presentation at the Learning Language in Humans and Machines conference, Paris.

Portelance, E. (2018). *On the move: Free word order in Lithuanian.* Presentation at the Association for the Advancement of Baltic Studies Conference. Stanford.

Portelance, E., A. Bruno, and T. J. O'Donnell. (2017). *Unsupervised induction of natural language dependency structures.* Poster presentation at the Montreal AI Symposium, Montreal.

Portelance, E. and A. Piper. (2017). *Understanding Narrative: Computational approaches to detecting narrative frames.* Poster presentation at the Digital Humanities Conference. Montreal.

Honors and Awards	*Post-graduate*	
	• Microsoft Research Fellowship	2023-2024
	Graduate	
	• SSHRC Doctoral Fellowship	2018 - 2022
	• Stanford Alumni Community Impact Award	2021
	• Diverse Intelligences Summer Institute Fellowship	2018
	• Joseph-Armand Bombardier Canada Graduate Scholarship (declined)	2017
	• Rhodes Scholarship Finalist	2017
	Undergraduate	
	• Dean's Honour List, McGill University	2015, 2016, 2017
	• U2 Academic Achievement Award, McGill Linguistics Department	2016
	• Arts Research Internship Award, McGill University	2016
	• Internship Award *txtLab@McGill*	2015, 2016
	• Regroupement des fondations collégiales de Montréal Scholarship	2013
	• Highest Academic Achievement Award, CÉGEP du Vieux Montréal 2012, 2013	

Other Research Employment	*Scientist-in-Residence*	2023
	NextAI	
	• Research consultant for nine AI-based startups across Canada.	
	Research Assistant	2019 - 2022
	The Stanford Natural Language Processing Group	
	• Research group headed by Professors Chris Manning, Dan Jurafsky, Percy Liang, Chris Potts, Tatsunori Hashimoto, and Monica S. Lam. Part of the Stanford AI Lab.	

Research Assistant   2018 - 2022
Stanford Language and Cognition Lab

- Computational and experimental research lab run by Professor Michael C. Frank.

Research Intern   2020
Reinforcement Learning Team, Microsoft Research Montreal

- Mentored by Dr. Romain Laroche and Dr. Alessandro Sordoni.

Teaching and Mentoring

McGill University

Instructor for *Computational Linguistics*   Fall 2023

– Cross-coded graduate and undergraduate course in Linguistics and Computer Science

– Covers language models, neural network approaches to linguistic studies, probabilistic inference, formal language theory, and applied approaches to grammar induction.

Stanford University

Consultant for *Software and Services for Data Science (SSDS)*   2019 - 2022

– Held weekly walk-in hours for programming and statistics consultations for all members of the Stanford community.

– Prepared and taught workshops on code reproduciblility, code reusability, and an introduction to functional programming.

Mentor for the Symbolic Systems undergraduate RA Program   2021

– Advised RAs and taught them about the research process from start to finish.

Mentor for CS Undergraduate Mentoring Program   AY 2020-2021

– Mentored female students in Computer Science considering graduate school and careers in research and development.

TA for *Introduction to Linguistics* with Katherine Hilton   Fall 2020

– Prepared and taught weekly labs with hands-on exercises and group activities for two class subgroups.

TA for *Introduction to Psycholinguistics* with Judith Degen   Fall 2019

– Prepared and taught guest lectures on language acquisition and research methodologies: corpus, experimental, and computational model studies.

Corpus TA   AY 2018 - 2019

– Managed all NLP corpora available at Stanford and consulted with students and researchers about their access, best usage cases, and licensing.

McGill University (undergraduate)

TA for *Syntax 1* with Junko Shimoyama   Winter 2016

Academic Service	• Current reviewer for *Conference of the Association for Computational Linguistics (ACL)*, *Conference on Computational Natural Language Learning (CoNLL)*, *Cognitive Science*, *Northern European Journal of Language Technology (NEJLT)*, *Language Development Research*, *CogSci*	
	• Admissions reviewer at Mila	2023
	• Cognitive Science Seminar Administrator at Stanford	2019 - 2022
	• Graduate Student Representative at Stanford	AY 2019 - 2020
	• Colloquium committee at Stanford	AY 2018 - 2019
	• Editor on *Formal Approaches to Slavic Linguistics 27* proceedings	2018 - 2019
	• Graduate Studies Committee at Stanford	2018
	• Friday Social Committee at Stanford	AY 2017 - 2018

Workshops	• Workshop on Computational Grammar Induction, McGill University	2019
	• Diverse Intelligences Summer Institute, St. Andrews University	2018

In the Media

Quotes on research in the news

Leffer, L. (2024, February 1). A Camera-Wearing Baby Taught an AI to Learn Words. *Scientific American.*

Leffer, L. (2023, November 21). When It Comes to AI Models, Bigger Isn't Always Better. *Scientific American.*

Whang, O. (2023, May 30). The Race to Make A.I. Smaller (and Smarter). *The New York Times.*

Hu, J. C. (2017, August 28). The Overwhelming Gender Bias in 'New York Times' Book Reviews. *Pacific Standard.*

Languages

English (native), French (native), Lithuanian (intermediate), Spanish (intermediate), Russian (beginner/for research)