Eva Portelance

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pronouns: she/they - elle

About

My research intersects machine learning, especially natural language processing (NLP), and cognitive science. I am interested in how machine learning methodologies can be applied to study how humans learn and think.

Academic Background

Ph.D. in Computational Linguistics   2017-2023
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*)

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).*

Book chapters

Potts, C., T. Icard, **E. Portelance**, D. Card, K. Zhou, J. Etchemendy. (2021). Philosophy of Understanding. In *On the Opportunities and Risks of Foundation Models.*, Ed. by the Center for Research on Foundation Models (CRFM) at Stanford University. arXiv:2108.07258.

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

- **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

- Reviewer for *Cognitive Science, Language Development Research, Northern European Journal of Language Technology (NEJLT), CogSci, Conference on Computational Natural Language Learning (CoNLL), Conference of the Association for Computational Linguistics (ACL)*
- Admissions reviewer at Mila   2023
- Cognitive Science Seminar Administrator   2019 - 2022
- Graduate Student Representative   AY 2019 - 2020

	• Colloquium committee	AY 2018 - 2019
	• Editor on *Formal Approaches to Slavic Linguistics 27* proceedings	2018 - 2019
	• Graduate Studies Committee	2018
	• Friday Social Committee	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)