

# Sean Robertson

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## EDUCATION

2022-2024	Postdoctoral Fellow, University of Toronto, Canada
2016-2023	PhD Computer Science, University of Toronto, Canada
2013-2015	MSc Computer Science, University of Toronto, Canada
2008-2013	Bachelor of Computer Science, Minor in Psychology, Hons., Co-op, University of Waterloo, Canada

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## HONOURS

2023-2024	Faculty Affiliate Researcher, Vector Institute
2022-2024	Postdoctoral Fellowship, Data Sciences Institute (DSI)
2018-2019, 2021-2022	Postgraduate Affiliation, Vector Institute
2017-2020	Canadian Graduate Scholarship - Doctoral (CGS-D), Natural Sciences and Engineering Research Council of Canada (NSERC)
2016	Ontario Graduate Scholarship, Government of Ontario and the University of Toronto
2014-2015	Canadian Graduate Scholarship - Master's (CGS-M), Natural Sciences and Engineering Research Council of Canada (NSERC)
2013-2015	Wolfond Scholarship Program for Wireless Information Technology, University of Toronto
2011-2012	Undergraduate Student Research Award, NSERC

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## RESEARCH INTERESTS AND EXPERIENCE

Current	Topics: Speech recognition, enhancement.
Post-doc	Topics: Accent-robust speech recognition; ASR pre-training; low-resource ASR; evaluation.

PhD	<p>Topics: Speech recognition; deep learning; multi-scale speech processing; digital signal processing; reinforcement learning; variational inference.</p> <p>Courses taken: Spoken Language Processing (A+); Information Visualization (A+); Learning Discrete Latent Structure (A+); and Numerical Methods for Optimization Problems (A+).</p>
Master's	<p>Topics: Computer-assisted pronunciation training; phonology; pedagogy; machine learning; experimental design; experimental statistics; and mobile human-computer interaction.</p> <p>Courses taken: Fundamentals of Cryptography (A+); Natural Language Computing (A+); Human-Computer Interaction (A+); and Computational Linguistics (A+).</p>
Undergraduate	<p>Research assistantships topics: probabilistic modeling; basic ("maker") circuit board design; digital signal processing; and concurrent database scaling.</p>

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## REFEREED FULL PAPERS AND CONFERENCE PROCEEDINGS

- Ong, M., **Robertson, S.**, Peckham, L., de Aberasturi, A.J.J., Arkhangorodsky, P., Huo, R., Sakhardande, A., Hallap, M., Nagy, N., Dunbar, E. (2025). *The Faetar Speech Recognition Benchmark*. Interspeech. To appear
- **Robertson, S.**, Penn, G., Dunbar, E. (2024). *Quantifying the Role of Textual Predictability in Automatic Speech Recognition*. Interspeech. 4029-4033
- **Robertson, S.**, Munteanu, C., Penn, G. (2020). *FAB: The French Absolute Beginner Corpus for Pronunciation Training*. Language Resources and Evaluation Conference (LREC). 6613-6620
- **Robertson, S.**, Penn, G., Wang, Y. (2019). *Improving Speech Recognition with Drop-in Replacements for f-bank Features*. Conference on Statistical Language And Speech Processing (SLSP). 210-222
- **Robertson, S.**, Munteanu, C., Penn, G. (2018). *Designing Pronunciation Learning Tools: The Case for Interactivity against Over-Engineering*. Conference on Human Factors in Computing Systems (CHI). 356:1-356:13.
- **Robertson, S.**, Munteanu, C., Penn, G. (2016). *Pronunciation Error Detection for New Language Learners*. Interspeech, 2691-2695.
- Rudzicz, F., Frydenlund, A., **Robertson, S.**, Thaine, P. (2016). *Acoustic-Articulatory Relationships and Inversion in Sum-Product and Deep-Belief Networks*. Speech Communication, 79, 61-73.

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## WORKSHOP PROCEEDINGS AND NON-REFEREED PAPERS

- **Robertson, S.** and Dunbar, E. (2023) *Bigger is not Always Better: The Effect of Context Size on Speech Pre-Training*. arXiv preprint, [arXiv:2312.01515](https://arxiv.org/abs/2312.01515)

- **Robertson, S.**, Penn, G., Wang, Y. (2019) *Exploring Spectro-Temporal Features in End-to-End Convolutional Neural Networks*. arXiv preprint, [arXiv:1901.00072](#).
- **Robertson, S.**, Munteanu, C., Penn, G. (2016). *Language Learning Dialogue systems: Lessons in Proving Yourself*. Designing Speech and Multimodal Interactions for Mobile, Wearable, and Pervasive Applications, CHI.
- Minhas, U. F., Liu, R., Aboulmaga, A., Salem, K., Ng, J., **Robertson, S.** (2012). *Elastic Scale-Out for Partition-Based Database Systems*. IEEE 28th International Conference on Data Engineering Workshops (ICDEW), 281-288.

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## TEACHING EXPERIENCE

2024	Spoken Language Processing - Co-instructor A graduate seminar course, co-instructed with Gerald Penn. Responsible for developing materials for and the delivery of lectures on so-called “foundational models” (or “representation learning”). Guided students on research projects.
2020,2021,2024	Natural Language Computing - Co-instructor In 2024, co-taught with Gerald Penn and Raeid Saqr. In 2021, with Frank Rudzicz and Serena Jeblee. In 2020, with Frank Rudzicz. In addition to lecturing, managed TAs, course materials, assignments, and exams.
2014,2016-2019,2021-2022	Computational Linguistics - Teaching Assistant Pre- and post-assignment tutorials; assignment revisions; marking; occasional stand-in teaching.
2022	Spoken Language Processing - Teaching Assistant Aided graduate students in research project formulation and evaluated their outcomes.
2014,2017	Introduction to Computer Science - Teaching Assistant Overseeing first-year labs.

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## PROFESSIONAL EXPERIENCE

2025-pres	Research Scientist at Otter.ai.
2024-2025	Senior Researcher at Huawei Canada.
2022	Vector Institute Conversational AI Project Teaching Assistant.
2020	AI Engineer for Sun Life Financial.
2014-2018	Contracted work for Speax Inc.

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## SERVICE

- Reviews for Journals: *Speech Communication* (2018-2019, 2021-2022)
- Reviews for Conferences: *UIST* (2021, 2024), *CHI* (2024), *CoNLL* (2023), *AISTATS* (2022-2024), *ICMI* (2021, 2022 - Best Reviewer Award), *INTERSPEECH* (2021-2023), *CUI* (2021), *EMNLP* (2019), *CHI - LBW* (2018)

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## REFERENCES

- Prof. Gerald Penn (current and past supervisor), Department of Computer Science, University of Toronto. gpenn@cs.toronto.edu
- Prof. Frank Rudzicz (committee member and CSC401 co-instructor), Department of Computer Science, University of Toronto. frank@spoclab.com
- Prof. Cosmin Munteanu (past supervisor), Department of Computer Science, University of Toronto. cosmin@taglab.ca