Francois Roewer-Despres

Website & Contact: https://francois-rd.github.io

Education

Ph.D. – Computer Science Sep 2021 – Present (**expected: Spring 2026**)
University of Toronto (Vector Institute) **GPA:** 4.0/4.0

M.Sc. – Computer Science Sep 2018 – Aug 2021
University of Toronto (Vector Institute) **GPA:** 4.0/4.0

B.Sc. (Double Honours) – Computer Science & Economics Sep 2013 – Apr 2018
University of Saskatchewan – Minor in **Statistics** **GPA:** 98/100

Skills

Technical – Large Language Models, Natural Language Processing, Dialogue Systems, AI Safety

Programming – Python, PyTorch, Google Cloud Platform, HuggingFace, vLLM, LangChain, Coma

Research – Analytical Thinking, Statistics, Technical Writing, Leadership, Organization Skills

Languages – English (fluent), French (fluent), German (intermediate)

Industry Experience

Machine Learning Associate – FastLane Internship Sep 2024 – Dec 2024
Vector Institute & Medirex Systems, Inc.

- Developed **GenAI** pipeline using Google Cloud Platform for simplifying jargon-heavy **clinical notes** into **patient-oriented summaries** to **drive patient engagement** through their hospital journey.
- **Communicated** technical results into **actionable business insights** & KPIs for executives. Developed value-aligned **design document** between all stakeholders.
- **Mentored** and **managed** junior MLA intern throughout the project.

Research Experience

Ph.D. Graduate Researcher – OGS funded Aug 2021 – Present
Vector Institute & University of Toronto

- Created `ACCORD`, a **counterfactual reasoning** dataset to measure overreliance of **large language models (LLMs)** on inductive biases during **multi-hop reasoning** (see (1) in Publications).
  - · Received **Outstanding Paper Award** – awarded to the **top 10 papers** – at NAACL 2025.
- **Collaborated** with cardiologist on developing a question-aware **medical dialogue** understanding model to predict cardiovascular patient readmission rates from **doctor-patient conversations**.
- Built `coma` (https://coma.readthedocs.io), a **Python** library that removes boilerplate for building configurable command-based programs. Accelerated development on **8 research projects** to date.

M.Sc. Graduate Researcher – VSAI & NSERC CGS-M funded Sep 2018 – Aug 2021
Vector Institute & University of Toronto

- Built the `Dialogue Learning Environment` (DLE), analogous to the `Atari Learning Environment` (ALE), where LLMs learn **dialogue games** using **reinforcement learning (RL)**. DLE incentivizes development of generalist **dialogue LLMs** that are proficient in many different tasks simultaneously.
- **Winner** (out of ∼20 submissions) of 2019 **ACM SIGAI Student Essay Contest** by proposing a framework that incentivizes **collaborative development** between all stakeholders of AI systems (e.g., **LLMs**) in high-impact domains (see (3, 4) in Publications).

B.Sc. Research Assistant – NSERC USRA funded 2015 – 2017 (May – Aug)
University of Saskatchewan

- Introduced probabilistic simulation capabilities to *ArtiSynth* (www.artisynth.org), a **Java** toolkit for **speech and vocal tract** simulations, using **Monte Carlo sampling** (see (7) in Publications), which proved instrumental to the methodology of **9 publications to date** (e.g., (5, 6) in Publications).
- Improved simulation compute time **10 fold** (on average) by employing **deep neural networks** to predict probabilistic **speech simulation** results in *ArtiSynth* (see (5) in Publications).
- **Mentored** and **managed** new research assistants (**1 per year**) by liaisoning with supervisor, prioritizing *ArtiSynth* **project development** directions, and giving tutorial presentations on *ArtiSynth*.

Selected Scholarships and Awards – 8 of 20

Outstanding Paper Award – NAACL 2025 May 2025
2025 Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics

Ontario Graduate Scholarship (OGS) Jul 2022
University of Toronto & Province of Ontario Value: $15000 total

Vector Scholarship in Artificial Intelligence (VSAI) Jan 2019
Vector Institute Value: $17500 total

Governor General's Academic Medal (Undergraduate Level) Jun 2018
University of Saskatchewan Value: Medal of Honour

Canada Graduate Scholarship, Master's (CGS-M) Apr 2018
Natural Sciences and Engineering Research Council of Canada (NSERC) Value: $17500 total

Undergraduate Student Research Award (USRA) – 3 times 2015, 2016, 2017
Natural Sciences and Engineering Research Council of Canada (NSERC) Value: $4500/year

Selected Publications – 7 of 15

1. **Francois Roewer-Despres**, Jinyue Feng, Zining Zhu, and Frank Rudzicz. ACCORD: Closing the Commonsense Measurability Gap. *Proceedings of the 2025 Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics*, 2025
2. **Francois Roewer-Despres**, Arnold YS Yeung, and Ilan Kogan. Towards Detection and Remediation of Phonemic Confusion. *18th SIGMORPHON Workshop on Computational Research in Phonetics, Phonology, and Morphology*, 2021
3. **Francois Roewer-Despres** and Janelle Berscheid. Continuous Subject-in-the-Loop Integration: Centering AI on Marginalized Communities. In *Workshop on Resistance AI at the 34th Conference on Neural Information Processing Systems (NeurIPS)*, 2020
4. Janelle Berscheid and **Francois Roewer-Despres**. Beyond Transparency: A Proposed Framework for Accountability in Decision-Making AI Systems. *AI Matters*, 5(2):13–22, 2019
5. **Francois Roewer-Despres**, Najeeb Khan, and Ian Stavness. Towards Finite Element Simulation Using Deep Learning. In *15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering*, 2018
6. Bryan Gick, Blake Allen, **Francois Roewer-Despres**, and Ian Stavness. Speaking Tongues are Actively Braced. *Journal of Speech, Language, and Hearing Research*, 60(3):494–506, 2017
7. **Francois Roewer-Despres** and Ian Stavness. BatchSim: A General Framework for Parallel and Probabilistic Biomechanical Simulations in ArtiSynth. In *4th International Workshop on Biomechanical and Parametric Modeling of Human Anatomy*, Aug 2016