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 (4, 5) 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 (11) in Publications), which proved instrumental to the methodology of **9 publications to date** (see (6-14) in Publications).
- Improved simulation compute time **10 fold** (on average) by employing **deep neural networks** to predict probabilistic **speech simulation** results in *ArtiSynth* (see (8) 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

PUBLICATIONS

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. Arnold YS Yeung, **Francois Roewer-Despres**, Laura Rosella, and Frank Rudzicz. Machine Learning-Based Prediction of Growth in Confirmed COVID-19 Infection Cases in 114 Countries Using Metrics of Nonpharmaceutical Interventions and Cultural Dimensions: Model Development and Validation. *Journal of Medical Internet Research*, 23(4):e26628, 2021

4. **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

5. 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

6. John E Lloyd, **Francois Roewer-Despres**, and Ian Stavness. Muscle Path Wrapping on Arbitrary Surfaces. *IEEE Transactions on Biomedical Engineering*, 68(2):628–638, 2020

7. Bryan Gick, Connor Mayer, Chenhao Chiu, Erik Widing, **Francois Roewer-Despres**, Sidney Fels, and Ian Stavness. Quantal Biomechanical Effects in Speech Postures of the Lips. *Journal of Neurophysiology*, 124(3):833–843, 2020

8. **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

9. 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

10. Ian Stavness, Erik Widing, **Francois Roewer-Despres**, and Bryan Gick. Computer Simulation of the Vocal Tract in Speech Production. *Journal of the Acoustical Society of America*, 141(5):3647–3647, 2017

11. **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

12. Ian Stavness, **Francois Roewer-Despres**, and Bryan Gick. Probabilistic Simulation for Analysis of Quantal Biomechanical-Acoustic Relations. *The Journal of the Acoustical Society of America*, 140(4):3115–3115, 2016

13. Connor Mayer, **Francois Roewer-Despres**, Ian Stavness, and Bryan Gick. Does Swallowing Bootstrap Speech Learning? *Canadian Acoustics*, 44(3), 2016

14. Connor Mayer, **Francois Roewer-Despres**, Ian Stavness, and Bryan Gick. Do Innate Stereotypies Serve as a Basis for Swallowing and Learned Speech Movements? *Behavioral and Brain Sciences*, 2016. [Peer commentary on "Neonatal Imitation in Context: Sensory-Motor Development in the Perinatal Period" by Nazim Keven and Kathleen A. Akins]

15. **Francois Roewer-Despres**. Les fractales: une nouvelle source d'inspiration pédagogique, musicale et scientifique. *Canadian Young Scientist Journal*, 2014(1):6–13, 2014

CONFERENCE PRESENTATIONS

1. **Francois Roewer-Despres**, Jinyue Feng, Zining Zhu, and Frank Rudzicz. ACCORD: Closing the Commonsense Measurability Gap. May 2025. Presented at the *2025 Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics*

2. **Francois Roewer-Despres** and Janelle Berscheid. Continuous Subject-in-the-Loop Integration: Centering AI on Marginalized Communities. Presented at the *Workshop on Resistance AI at the 34th Conference on Neural Information Processing Systems (NeurIPS)*, Dec 2020

3. **Francois Roewer-Despres** and Ian Stavness. BatchSim: A General Framework for Parallel and Probabilistic Biomechanical Simulations in ArtiSynth. Presented at the *4th International Workshop on Biomechanical and Parametric Modeling of Human Anatomy*, Aug 2016

4. **Francois Roewer-Despres** and Ian Stavness. Large-Scale Simulations of Tongue-Palate Contact. Presented at the *13th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering*, Sep 2015