Alexis ROGER

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Education

PhD in Computer Science – McGill University — Montreal, Canada
Subject: Multimodal Foundation Models, with a focus on Time Series models — *09/2024 - 08/2027*

Master of Science – Université de Montréal — Montreal, Canada
Major: Computer Science; Specialization: Artificial Intelligence; GPA: 4.1 — *09/2021 - 12/2023*

Ecole Polytechnique Fédérale de Lausanne — Lausanne, Switzerland
Exchange Semester — *09/2019 - 01/2020*

Bachelor of Science – Ecole Polytechnique — Paris, France
Majors: Mathematics and Computer Science; Minor: Biology; GPA: 3.52 — *09/2017 - 06/2020*

Skills Summary

Languages:	French (native), English (C2), German (B1), Japanese (A1)
Programming Languages:	Python (advanced), C++ (advanced), C, JavaScript, Bash, Java, x86, SQL, Coq, Scala
Data Processing, ML and AI:	Pandas, Scikit, TensorFlow, PyTorch, Keras, Jupyter, PySpark, Snowflake, Databricks
Web and Cloud Technologies:	Flask, NodeJS, React, Proxmox, SaltStack, Docker, AWS
Other Tools:	Git, Latex, Vim, VSCode, Raspberry Pi, Arduino, ROS, Gazebo

Experience

Research in Time Series Foundation Models – McGill University & MILA — Montreal, Canada
– *Performing exhaustive scaling and architecture studies on Time Series Foundation Models.* — *09/2024 - present*

IT Banking Consultant – Forty2 AG — Zurich, Switzerland
– *Built novel retrieval augmented generation pipelines for local documentation querying.* — *04/2024 - 06/2024*
– *Performed various Avaloq customisations for major european banks.*

Research in Generative AI and ethics – Université de Montréal & MILA — Montreal, Canada
– *Developed SOTA vision language models based on the Pythia, GPT and Mistral models.* — *09/2022 - 03/2024*
– *Trained and released a scaling suite over both language model and vision encoder.*
– *Developed halluciantion detection and mitigation algorithms.*
– *Developed a Chatbot enabling rapid model morality and ethics evaluation.*

Technology Analyst – Morgan Stanley — Montreal, Canada
– *Developed anomaly detection algorithms and AIs to ensure no abuse of database accesses.* — *05/2022 - 08/2022*
– *Built on a Databricks cloud infrastructure with Snowflake databases.*

System Engineer – Polytechnique Montréal — Montreal, Canada
– *Directed the technical development of the extra-terrestrial Rover project of PolyOrbite.* — *04/2022 - 08/2023*
– *Coordinated a multidisciplinary team of 50 students.*
– *Participated in international competitions (Canadian International Rover Challenge and URC).*

Research in AI for cybersecurity – Université de Montréal — Montreal, Canada
– *Developed federated learning techniques based on decision trees for Internet of Things devices.* — *03/2022 - 08/2022*
– *Used to detect intrusions and botnet attacks based on network traffic and energy consumption.*

Research on classification algorithms to improve cancer detection – Stilla Technologies — Paris, France
– *Developed 6 dimensional clustering algorithms to identify rare DNA samples indicating cancer.* — *03/2021 - 07/2021*
– *Management of patient confidentiality and data privacy regulations.*

Technical consultant – Polyconseil — Paris, France
– *Main project: a Vanuatu domestic submarine cable feasibility study.* — *10/2020 - 03/2021*
– *Wrote algorithms to optimise submarine fibre-optic cable paths to minimise cost.*
– *Performed data flow and bottleneck analysis for a major telecommunications company.*

Research on Pareto optimal paths for drones swarms – Ecole Polytechnique — Paris, France
– *Optimised path planning and swarm coordination algorithms for drones.* — *02/2020 - 04/2020*

Non-conventional geopositioning for drones research project – EPFL — Lausanne, Switzerland
– *Developed self-locating algorithms for drones based exclusively on its camera's images.* — *09/2019 - 01/2020*
– *Algorithms were based on convolutional neural networks and the YOLO algorithm.*
– *Created an online flight simulator to build synthetic training data and test the algorithms.*

Publications

Random Initialization Can't Catch Up: The Advantage of Language Model Transfer for Time Series Forecasting *06/2025*
Roland Riachi, Kashif Rasul, Arjun Ashok, Prateek Humane, Alexis Roger, Andrew R. Williams, Yuriy Nevmyvaka, Irina Rish
Published in the Foundation Models for Structured Data workshop at ICML 2025.

Robin: a Suite of Multi-Scale Vision-Language Models and the CHIRP Evaluation Benchmark *09/2024*
Alexis Roger, Prateek Humane, Daniel Z. Kaplan, Kshitij Gupta, Qi Sun, George Adamopoulos, Jonathan Siu Chi Lim, Quentin Anthony, Edwin Fennell, Irina Rish – [Under review]

The Effect of Data Corruption on Multimodal Long Form Responses *07/2024*
Daniel Z Kaplan, Alexis Roger*, Mohamed Osman*, Irina Rish*
Published in Foundation Models in the Wild workshop at ICML 2024.

Towards Adversarially Robust Vision-Language Models *07/2024*
Rishika Bhagwatkar, Shravan Nayak, Reza Bayat, Alexis Roger, Daniel Z Kaplan, Pouya Bashivan, Irina Rish
Published with presentation in Trustworthy Multi-modal Foundation Models and AI Agents at ICML 2024

Training Large Multimodal Language Models with Ethical Values *08/2023*
Alexis Roger – Master thesis accepted with distinction "excellent".

Towards Ethical Multimodal Systems *05/2023*
Alexis Roger, Esma Aïmeur, Irina Rish
Published in AI meets Moral Philosophy and Moral Psychology workshop at NeurIPS 2023.

A Privacy-Preserving Federated Learning for IoT Intrusion Detection Systems *01/2023*
Riadh Ben Chaabene, Darine Ameyed, Fehmi Jaafer, Alexis Roger, Aimeur Esma, Mohamed Cheriet
Published in the International Conference on Control, Decision and Information Technologies 2023.

Aligning MAGMA by Few-Shot Learning and Finetuning *09/2022*
Jean-Charles Layoun, Alexis Roger*, Irina Rish*
Published in the Montreal AI Symposium.

A review of modern surveillance techniques and their presence in our society *03/2022*
Alexis Roger – Published on ArXiv.

Conferences

Foundation Models for Structured Data workshop (ICML 25) Vancouver, Canada
Presented a poster for the paper "Random Initialization Can't Catch Up". *07/2025*

Neural Scaling Laws: Scaling, Transfer & Multilingual Models Workshop (ICML 24) Vienna, Austria
Talk on the current vision language benchmarks, limitations and introduced the CHIRP benchmark. *07/2024*

AI & Scale Mila Workshop Montreal, Canada
Talk on scaling vision language models and the different tradeoffs between LLM and VE size. *05/2024*

AI meets Moral Philosophy and Moral Psychology workshop (NeurIPS 23) New Orleans, United States
Presented a poster for the paper "Towards Ethical Multimodal Systems". *12/2023*

Neural Scaling Laws: Scaling, Alignment & Open-Source AI Workshop (NeurIPS 23) New Orleans, United States
Talk on the ongoing work on open-source multimodal foundation models and their alignment. *12/2023*

Canadian Space Conference Montreal, Canada
Part of the organisation committee *01/2023*

Data Mining in Biomedical Informatics and Healthcare Workshop (ICMD 22) Orlando, United States
Presented "AWS-EP: A Multi-Task Prediction Approach for MBTI/Big5 Personality Tests" *11/2022*

Montreal AI Symposium Montreal, Canada
Presented a poster for the paper "Aligning MAGMA by Few-Shot Learning and Finetuning" *09/2022*

Other activities

- Teacher assistant for the course *Data Structures and Algorithms* (2023)
- Tutoring at local high school (2018-2019)
- Certified pyrotechnician (F4T2 N2)
- Won Montreal G-Research Competition (2022)
- System administrator (2019-2024)
- Diverse hackathons and data competitions