STEFAN HOROI

I am an applied maths Ph.D. student working on machine learning and data mining problems. I am passionate about data analysis, visualization and the interpretation and communication of scientific results. I would love to work in a dynamic and multidisciplinary team where my expertise and skills could help solve complex real world problems across any domain that can benefit people and society as a whole.

CONTACT

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- ○ @shoroi
- in Stefan Horoi

AREAS OF EXPERTISE

Deep learning | Dimensionality reduction
Explainable ML | Artificial neural networks
Mathematical modelling | Manifold learning
Supervised and unsupervised learning
Topological data analysis | Computer vision
Graph and geometric data analysis

SKILLS

Programming
Python ●●●●●
Matlab, Mathematica ●●●○○
R, SAS ●●●○○
SQL, C++, Java, Bash ●●○○○

Software & Tools
Machine Learning ●●●●●
Deep Learning ●●●●●
(e.g. pytorch, tensorflow)
Data handling/analysis ●●●●●
Data visualisation ●●●●●
Jupyter, Colab ●●●●○
Office, LaTeX ●●●●○
Experiment Tracking ●●●●○
(e.g. ClearML, WandB)
SLURM ●●●○○
Git, Docker ●●●●○

Languages
English ●●●●●
French ●●●●●

HONOURS & AWARDS

- 🏆 2023 - Winner HEC MTL Data Challenge
- 🏆 2022 - NSERC CGS D Scholarship
- 🏆 2022 - UdeM Scholarship A (Ph.D. fast track)
- 🏆 2021 - FRQNT M.Sc. Research Scholarship
- 🏆 2020 - Schulich Leader (UdeM, 1 of 25 science laureates in all of Canada)
- 🏆 2020 - NSERC CGS M Scholarship

🎓 EDUCATION

05/2021 - Present
📍 Université de Montréal (UdeM) & Mila - Quebec AI Institute
4.1/4.3 GPA
Ph.D. Applied mathematics

05/2020 - 04/2021
📍 UdeM & Mila
4.225/4.3 GPA - Unfinished, fast track to Ph.D.
M.Sc. Applied mathematics

09/2017 - 04/2020
📍 UdeM
3.8/4.3 GPA
B.Sc. Pure and applied mathematics

⚙ WORK EXPERIENCE

06/2023 - 12/2023
📍 Mila - Quebec AI Institute
Internship mentor
Mentored 2 Mila M.Sc. students during their ML internships:
- Transport Canada - Develop an NLP model to extract market information on specific commodity groups
- E-SMART Control - Real time unknown object detection on the edge

09/2022 - 01/2023
📍 Horoma AI
Scientist in Residence / Deep Learning Intern
Implemented and trained diffusion models to solve an image super resolution task.

05/2020 - 04/2022
📍 Université de Montréal
Teaching assistant
Theoretical Foundations of Data Science; Stochastic Processes; Intro to Intrinsic Structures of Data

01/2018 - 01/2020
📍 SEUR Project, UdeM
Project manager - STEM outreach

04/2018 - 08/2018
📍 SynergX Technologies Inc.
R&D intern in mathematical modelling and machine vision

📄 PUBLICATIONS, PREPRINTS & PRESENTATIONS

Reliability of CKA as a Similarity Measure in Deep Learning

👥 M. Davari*, **S. Horoi***, A. Natik, G. Lajoie, G. Wolf, E. Belilovsky (*Equal contribution)

📅 2023 📄 Published as a conference paper at the 11th International Conference on Learning Representations (ICLR 2023) 🔗 Paper

Exploring the Geometry and Topology of Neural Network Loss Landscapes

👥 **S. Horoi***, J. Huang*, B. Rieck, G. Lajoie, G. Wolf, S. Krishnaswamy (*Equal contribution)

📅 2022 📄 Proceedings of the 20th Symposium on Intelligent Data Analysis (IDA 2022), Springer's LNCS vol. 13205 🔗 Paper, arXiv, Code

Low-dimensional dynamics of encoding and learning in recurrent neural networks

👥 **S. Horoi**, V. Geadah, G. Wolf, G. Lajoie

📅 2020 📄 Proceedings of the 33rd Canadian Conference on Artificial Intelligence (CAIAC 2020), Springer's LNCS vol. 12109 🔗 Paper, Talk

Goal-driven optimization of single-neuron properties in artificial networks reveals regularization role of neural diversity and adaptation

👥 V. Geadah, **S. Horoi**, G. Kerg, G. Wolf, G. Lajoie

📅 2022 📄 Preprint & Poster presentation at CoSyNe 2022 🔗 bioRXiv