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

horoiste@mila.quebec
(514) 707-6726
shoroi.github.io
@shoroi
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

Data handling/analysis
(e.g. numpy, scipy, pandas)
Visualisation
(e.g. matplotlib, seaborn)
Machine Learning
(e.g. sklearn)
Deep Learning
(e.g. pytorch, tensorflow)
Jupyter, Colab
Office, LaTeX
SLURM

Languages

English
French
Romanian

HONOURS & AWARDS

- 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 & Mila - Quebec AI Institute
Ph.D. Applied mathematics
4/4.3 GPA

05/2020 - 04/2021
Université de Montréal & Mila - Quebec AI Institute
M.Sc. Applied mathematics
4.225/4.3 GPA - Unfinished, fast track to Ph.D.

09/2017 - 04/2020
Université de Montréal
B.Sc. Pure and applied mathematics

WORK EXPERIENCE

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

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), 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), 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 — bioRXiv

On the Inadequacy of CKA as a Measure of Similarity in Deep Learning

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

2022 — Poster presentation, GTRL workshop at ICLR 2022 — Paper

Top-down optimization recovers biological coding principles of single-neuron adaptation in RNNs

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

2022 — Poster presentation, CoSyNe 2022

Visualizing High-Dimensional Trajectories on the Loss-Landscape of ANNs

S. Horoi*, J. Huang*, G. Wolf, S. Krishnaswamy (*Equal contribution)

2020 — Poster presentation, DLIG workshop at NeurIPS 2020 — Talk