AMBROISE ODONNAT

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PROFESSIONAL EXPERIENCE

11/2023 - Present, Predoctorale Student, *Huawei Noah's Ark Lab*, Paris, France.
Fundamental research on transformers, transfer learning, and time series.
Outcome: Preprint on a novel transformer architecture for time series forecasting and preprint on unsupervised accuracy estimation under distribution shifts.
Supervisors: Dr. Ievgen Redko

04/2023 - 09/2023, Research Intern, *Huawei Noah's Ark Lab*, Paris, France.
Studied failures of common self-training methods under distribution shifts and proposed a novel confidence measure to improve them.
Outcome: Paper accepted as a poster to AISTATS 2024 in Valencia.
Supervisors: Dr. Vasilii Feofanov, Dr. Ievgen Redko and Prof. Gabriel Peyré

01/2022 - 07/2022, Research Intern, *Polytechnique Montréal*, Montréal, Canada.
Developed a Deep Learning pipeline to detect epileptic spikes on MEG and EEG data.
Outcome: Oral presentation and Best Flash Talk Award at the QBIN Conference.
Supervisors: Prof. Julien Cohen-Adad and Prof. Sylvain Baillet

07/2021 - 01/2022, Research Intern, *Air France-KLM*, Paris, France.
Developed a Dynamic Pricing model for tickets and built a passenger simulation (PODS) to evaluate its performance.
Supervisors: Julien Bruno and Antoine Winckels

EDUCATION

2022 – 2023, M.Sc Degree MVA, *ENS Paris-Saclay*, Paris, France.
World's leading university in Mathematics. GPA: 4.0/4.0. Main courses: Convex, Distributed & Large-Scale Optimisation, Optimal Transport, Generative Models, Kernel Methods, Graphs in Machine Learning, Graph Neural Networks, Object Recognition, RL, Sequential Learning, Speech & NLP.
Advisor: Prof. Gabriel Peyré. **Mention**: Summa Cum Laude.

2019 - 2023, Engineer's Degree, *École des Ponts ParisTech*, Paris, France.
Top-tier French engineering school. GPA: 3.9/4.0. Main courses: Computer Vision, Machine Learning, Operations Research, Optimisation, Programming, Statistics, Stochastic.
Advisor: Dr. Guillaume Dalle. **Mention**: Summa Cum Laude.

2017 - 2019, Preparatory Classes (CPGE), *Lycée Henri IV*, Paris, France.
Top-tier French Preparatory Classes. Main courses: Mathematics, Physics, Philosophy.

PUBLICATIONS

[1] Romain Ilbert*, **Ambroise Odonnat***, et al. Unlocking the Potential of Transformers in Time Series Forecasting with Sharpness-Aware Minimization and Channel-Wise Attention. Preprint, 2024.

[2] Renchunzi Xie, **Ambroise Odonnat**, et al. Characterising Gradients for Unsupervised Accuracy Estimation under Distribution Shift. Preprint, 2024.

[3] **Ambroise Odonnat**, Vasilii Feofanov, and Ievgen Redko. Leveraging Ensemble Diversity for Robust Self-Training in the presence of Sample Selection Bias. *Proceedings of the* 27^{th} *International Conference on Artificial Intelligence and Statistics (AISTATS) 2024, Valencia, Spain.*

[4] **Ambroise Odonnat**, ..., Sylvain Baillet, Roy W. Dudley, and Julien Cohen-Adad. Detection of interictal epileptiform discharges on EEG and MEG. *QBIN Conference 2022,* ***Best Flash Talk****.*

TALKS

Machine Learning & Signal Processing, *ENS Lyon*, March 2024.
Leveraging Ensemble Diversity for Robust Self-Training in the presence of Sample Selection Bias. Presentation page here.

QBIN Scientific Day, *University of Sherbrooke*, June 2022.
Detection of interictal epileptiform discharges on EEG and MEG. Slides here.
Best Flash Talk Award

GRANTS & AWARDS

2022 - 2023, *Chair Saint-Gobain/ École des Ponts ParisTech*, Merit Scholarship.
Total amount: €5*k*

2022, *Tanenbaum Open Science Institute (TOSI)*, McGill University, Research Grant.
Grant to promote Open Science for the project "An open-source software to automatically detect epileptic spikes on EEG and MEG signals with AI" at the NeuroPoly Lab.
Total amount: $15k CAD

2022, *Quebec Bio-Imaging Network (QBIN)*, Best Flash Talk Award.

TEACHING EXPERIENCE

Teaching Assistant, *École des Ponts ParisTech*, Machine Learning, 2024.
Mathematics and Physics Tutor, *High School and Preparatory Classes*, 2019-2021

PROJECTS

Optimal Transport Kernel Embedding for Sets. Report - Github.

Protein Cellular Component Ontology Prediction. Report - Github.

Boundary Loss for Ultrasound Segmentation. Report - Github.

Differential Privacy in Reinforcement Learning. Report - Github.

Kaggle Bird Classification. Report - Github.

Deep Learning Homography Estimation. Report.

SKILLS

Technical Skills	Python, Pytorch, Git, C++, Julia, R
Soft Skills	Communication, Curiosity, Autonomy, Adaptability, Team-work
Languages	French (Native), English (C1), German (B2)

EXTRA-CURRICULAR ACTIVITIES

Concours Général Latin-French translation (2017): most prestigious French academic competition
Model of the United Nations in Rome (2015): Speech towards the General Assembly $\sim$ 2000 persons
Sport: Fencing (10 years), Football and Volleyball University Team, Climbing

REFERENCES

Prof. Sylvain Baillet. BIC, Montréal Neurological Institute, McGill University $*$ sylvain.baillet@mcgill.ca

Julien Bruno. Research Engineer, Air France - KLM $*$ jubruno@airfrance.fr

Prof. Julien Cohen-Adad. NeuroPoly co-director, Mila, Polytechnique Montréal $*$ jcohen@polymtl.ca

Dr. Guillaume Dalle. IdePHICS, SPOC, INDY, EPFL $*$ guillaume.dalle.@epfl.ch

Prof. Samira Ebrahimi Kahou. Mila, ÉTS, McGill University $*$ samira.ebrahimi.kahou@gmail.com

Dr. Vasilii Feofanov Huawei Noah's Ark Lab $*$ vasilii.feofanov@huawei.com

Prof. Amaury Hayat. CERMICS, Ecole des Ponts ParisTech $*$ amaury.hayat@gmail.com

Prof. Gabriel Peyré. DMA - ENS Ulm, CNRS $*$ gabriel.peyre@ens.fr

Dr. Ievgen Redko Huawei Noah's Ark Lab $*$ ievgen.redko@huawei.com