ABBAHADDOU YASSINE

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RESEARCH EXPERIENCE

Ecole Polytechnique, Laboratoire d'Informatique de l'X   July 2022 - Present
PHD candidate
Supervisors : Michalis Vazirgiannis, Fragkiskos D. Malliaros , Johannes F. Lutzeyer

Ecole Polytechnique is the premier engineering University of France.

· PhD in Graph/Geometric machine learning.

New York University   July 2023 - Present
Visiting PHD Student
Supervisor : Amine Aboussalah

Harnessing Information Geometry for Learning Dynamical Systems on Graph Neural Networks.

Ecole Polytechnique, Laboratoire d'Informatique de l'X   January 2022 - June 2022
Research Engineer

Graph/Geometric machine learning.

NAVER LABS EUROPE   April 2021 - October 2021
Research Intern
Supervisor : Jean-Michel Renders

· NAVER LABS Europe is the biggest industrial research centre in Artificial Intelligence in France. NAVER LABS is the R&D subsidiary of NAVER, Korea's leading internet company and the part of NAVER responsible for creating future technology.

· Evaluating the robustness of click models to policy distributional shift.
· Deep exposure models for unbiased recommendation.
· Learning to rank by optimizing the Normalized Discounted Cumulative Gain (NDCG) measure.

National Institute for Research in Digital Science and Technology (INRIA)   October 2020 - April 2021
Research Assistant,
Supervisor: Fragkiskos D. Malliaros

· Inria is a French national research institution focusing on computer science and applied mathematics.
· Extension of deep learning algorithms to nonEuclidean data represented as Multilayer Networks (graphs).
· Application to the problem of graph-based multi-omics data integration in bioinformatics

National Center for Scientific Research (CNRS)   October 2018 - June 2019
Research Assistant,
Supervisor : Ludovic Goudenège & Gautier Viaud

· The French National Centre for Scientific Research is among the world's leading research institutions.
· The study of Partial Differential Equation mixed with free boundary problems.
· Deep Learning algorithms for stochastic control problems on finite horizon in high-dimension.

Hedge Fund of La Française Group   March 2020 - August 2020
Research Intern

· Optimal Control Algorithms for Long/Short Equity Trades in Variance Swap Pairs Strategies.

Societe Generale Corporate and Investment Banking   September 2019 - February 2020
Exotic Equity Derivatives Trading/Research Intern

· Calibration of Stochastic Volatility models for pricing Exotic Equity Derivatives, e.g. Autocalls.
· Dynamic Hedging Optimization: An Optimal Control Approach.

EDUCATION

PHD Student - Ecole Polytechnique   *July 2022 - Present*
PhD in Graph/Geometric machine learning.

MVA Master (Mathematics, Vision, Learning) - ENS Paris Saclay   *September 2021 - December 2022*
Master's degree in Mathematics, Machine Learning and Computer Vision.
Highest honors

Relevant Courses : Deep Learning, Natural Language Processing, Object Recognition & Computer Vision, Large-Scale Distributed Optimization, Probabilistic Graphical Models, Reinforcement Learning.

Ecole CentraleSupelec Paris-Saclay   *September 2017 - December 2022*
Master of Science, Applied mathematics & Engineering.
High honors

CentraleSupélec is among the best three French engineering schools. Students are recruited based on a very difficult national contest.

Relevant Courses : Stochastic calculus, Probability, Statistics Machine learning, Partial differential equations, Financial risks modeling, Algorithmic and programming.

CPGE MOULAY YOUSSEF , MPSI - MP   *September 2015 - September 2017*
An intensive program in Mathematics, Physics, Engineering science and Computer science.

PUBLICATIONS

Y. ABBAHADDOU, S. ENNADIR, J. Lutzeyer, and M. Vazirgiannis. Bounding the expected robustness of graph neural networks subject to node feature attacks. Submitted to *The Twelfth International Conference on Learning Representations, 2023.*

S. ENNADIR, **Y. ABBAHADDOU**, M. Vazirgiannis, and H. Bostrom. A simple and yet fairly effective defense for graph neural networks. In *The Second Workshop on New Frontiers in Adversarial Machine Learning, 2023.*

Y. ABBAHADDOU, J. Lutzeyer, and M. Vazirgiannis. Graph neural networks on discriminative graphs of words. In *NeurIPS 2023 Workshop: New Frontiers in Graph Learning, 2023.*

WORKING PAPERS

Exploring Global Centrality-Based Normalization in Graph Shift Operators. With *Prof. Johannes F. Lutzeyer, Prof. Fragkiskos D. Malliaros* and *Prof. Michalis Vazirgiannis.*

Post-Hoc Robustness Enhancement in Graph Neural Networks with Conditional Random Fields. With *Prof. Johannes F. Lutzeyer, Prof. Fragkiskos D. Malliaros* and *Prof. Michalis Vazirgiannis.*

Curvature-Guided Learning: Applying Ricci Curvature in Information Geometry to Enhance Graph Autoencoders. With *Prof. Johannes F. Lutzeyer, Prof. Fragkiskos D. Malliaros* and *Prof. Michalis Vazirgiannis.*

A New Perspective on Graph Equivalence: k-Hop Similarity and GNN Invariance. With *Prof. Amine Aboussalah.*

Towards Balanced GNNs for Financial Networks: Leveraging Information Geometry to Tackle Quantity and Topology Imbalance. With *Prof. Amine Aboussalah.*

Systemic Risk Reduction via Information Geometry-Based Graph Rewiring. With *Cheng Chi* and *Prof. Amine Aboussalah.*

SUPERVISION

Kexin Xu. *Incorporating Solvent Information in Graph Diffusion Models for Protein Docking.* First Year Master Student, Research Intern from *Shanghai Jiao Tong University*

TEACHING

INF554 Course - Ecole Polytechnique *Machine and Deep learning.*

SKILLS AND LANGUAGES

Languages	French, English, Arabic
Skills	Python, R, JAVA, Matlab, SQL, VBA

ACHIEVEMENTS & AWARDS

Top 1% students in Morocco (Concours National Commun ranking 2017).

French Government's Major-Excellence Scholarship (37,830 €).

Merit Scholarship of the CIUP (5,000 €).

ICML Grant (1,700 $)

EXTRA-CIRRUCULAR

Sport: Football, Mixed Martial Arts

Interest: Photography