ABBAHADDOU YASSINE

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abbahaddou.github.io

RESEARCH EXPERIENCE

New York Univesisty May 2024 - Present
Visiting PHD student
· Harnessing Information Geometry for Learning Dynamical Systems on Graph Neural Networks

Ecole Polytechnique, Laboratoire d'Informatique de l'X July 2022 - Present
PHD candidate
Supervisors : Michalis Vazirgiannis, Fragkiskos D. Malliaros , Johannes F. Lutzeyer
· PhD in Graph/Geometric machine learning.

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
· Evaluating the robustness of click models to policy distributional shift.
· Deep exposure models for unbiased recommendation.

INRIA Saclay October 2020 - April 2021
Research Assistant,
Supervisor : Fragkiskos D. Malliaros
· 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

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

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

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. In *The Twelfth International Conference on Learning Representations (ICLR), 2023*.

Y. ABBAHADDOU, F. Malliaros, J. Lutzeyer, and M. Vazirgiannis. Centrality Graph Shift Operators for Graph Neural Networks. Submitted to *The Thirty-eighth Annual Conference on Neural Information Processing Systems (Neurips 2024)*.

Y. ABBAHADDOU, K.Nitjaphanich, A. M. Aboussalah. Coherent Time Series Generative Models Using Dynamic Mode Decomposition. Submitted to *The Thirty-eighth Annual Conference on Neural Information Processing Systems (Neurips 2024)*.

Y. ABBAHADDOU, F. Malliaros, J. Lutzeyer, and M. Vazirgiannis. Post-Hoc Robustness Enhancement in Graph Neural Networks with Conditional Random Fields. Submitted to *The Thirty-eighth Annual Conference on Neural Information Processing Systems (Neurips 2024)*.

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

Towards Balanced GNNs for Financial Networks: Leveraging Information Geometry to Tackle Quantity and Topology Imbalance.

Systemic Risk Reduction via Information Geometry-Based Graph Rewiring.

A New Perspective on Graph Equivalence: k-Hop Similarity and GNN Invariance.

TEACHING

INF554 Course - Ecole Polytechnique *Machine and Deep learning*.
INF581A Course - Ecole Polytechnique *Advanced Deep learning*.

SKILLS AND LANGUAGES

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

TALKS

GNNs & Robustness. *April 2024 at Technology Innovation Institute (TII)*.
Theoretically Upper-Bounding the Adversarial Robustness of GNNs. *31th March 2024 at Morocco AI*.
Deep exposure models for unbiased recommendation. *October 2021 at Naver Labs Europe*

ACHIEVEMENTS & AWARDS

Top 1% students in Morocco (Concours National Commun ranking 2017) [Ranked 52-nd].
French Government's Major-Excellence Scholarship (37,830 €) [Given to the top 40 Students].
Merit Scholarship of the CIUP (5,000 €).
ICML Grant (1,700 $).

EXTRA-CIRRUCULAR

Sport: Football, Mixed Martial Arts
Interest: Photography