ABBAHADDOU YASSINE

+33666408799 ⋄ abbahaddou.yassine@gmail.com

abbahaddou.github.io

RESEARCH EXPERIENCE

Ecole Polytechnique, CS Department July 2022 - Present
PhD candidate
Supervisors : Fragkiskos D. Malliaros , Johannes F. Lutzeyer, Michalis Vazirgiannis
· PhD in Graph/Geometric machine learning.

New York University, Finance and Risk Engineering Department May 2024 - August 2024
Visiting PhD Student
Supervisor : Prof. Amine Mohamed Aboussalah
· Dynamic Mode Decomposition-Based Metric for Evaluating Generative Models on Time Series.
· Graph Augmentation with Gaussian Mixture Models for Enhanced GNN Generalization.

Ecole Polytechnique, CS Department January 2022 - June 2022
Research Engineer
· Graph 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

Ecole Polytechnique *July 2022 - Present*
PhD in Graph 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 and Bachelor 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), 2024.*

S. Ennadir, **Y. Abbahaddou**, M. Vazirgiannis, and H. Bostrom. A simple and yet fairly effective defense for graph neural networks. In *The Thirty-Eighth AAAI Conference on Artificial Intelligence, 2024.*

Y. Abbahaddou, F. Malliaros, J. Lutzeyer, and M. Vazirgiannis. Centrality Graph Shift Operators for Graph Neural Networks. arXiv: 2411.04655, 2024.

Y. Abbahaddou, F. Malliaros, J. Lutzeyer, and M. Vazirgiannis. Post-Hoc Robustness Enhancement in Graph Neural Networks with Conditional Random Fields. arXiv: 2411.05399, 2024.

Y. Abbahaddou, S. Ennadir, F. Malliaros, J. Lutzeyer, A. M. Aboussalah, and M. Vazirgiannis. Gaussian Mixture Models Based Augmentation Enhances GNN Generalization. arXiv: arXiv:2411.08638, 2024.

Y. Abbahaddou, A. M. Aboussalah. Grassmannian Geometry Meets Dynamic Mode Decomposition in DMD-GEN: A New Metric for Mode Collapse in Time Series Generative Models. Under Review. **Y. Abbahaddou**, F. Malliaros, J. Lutzeyer, and M. Vazirgiannis. ADMP-GNN: Adaptive Depth Message Passing GNN. Under Review.

S. Ennadir, **Y. Abbahaddou**, M. Vazirgiannis, and H. Bostrom. A simple and yet fairly effective defense for graph neural networks. In *ICML 2023 Workshop AdvML-Frontiers.*

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.*

ON-GOING PROJECTS

Graph Transformers for Accurate and Efficient Node Classification.
Graph Diffusion via In-context Learning.

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

Centrality Graph Shift Operators for Graph Neural Networks. *November 2024 at Learning on Graphs Paris Meetup.*
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).
French Government's Major-Excellence Scholarship (37,830 €) [Given to the top 40 Students].
Merit Scholarship of the CIUP (5,000 €).
Research Grant from Institut Louis Bachelier (5,000 €).
NYU Visiting Research Scholarship (10,000 $).
Participated in the Regional Mathematical Olympiad, Morocco.

EXTRA-CIRRUCULAR

Sport: Football, Mixed Martial Arts.
Interest: Photography.