Célia Wafa AYAD

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https://cwayad.github.io

EDUCATION

École polytechnique

Oct. 2020 – Sep. 2023

PhD candidate in Machine Learning (in collaboration with Société Générale, funded by: ANRT) — supervised by Prof. Jesse READ and Benjamin Bosch.
"Machine Learning Explainability"

- Topic includes: explaining models predictions with feature importance attribution methods, Bayesian modelling, Multi-output Models, Uncertainty Quantification and Causality.
- Lecture subjects include: Probabilistic graphical models (MSc MVA at ENS Paris Saclay), Gaussian Processes, Deep Learning, Statistical Methods for Big Data and Learning with trees.
- Undertaking research work to solve advanced statistical and mathematical problems, contributing to and understanding the current statistical research for machine learning explainability literature and communicating technical solutions clearly in written and oral forms.

Université Paris Cité (Descartes)

Oct. 2016 – Sept. 2017

MSc Machine Learning for Data Science

- Main Subjects: Supervised and unsupervised Machine Learning, Deep Learning, Mixture models, Co-clustering, Data mining, Game Theory and Reinforcement Learning.
- Built up a very well founded applied and theoretical knowledge of Machine Learning. It ensures complete understanding of the basis and comprehension of the advanced issues in Machine Learning.

Université Paris Saclay

Oct. 2015 – Sept. 2016

MSc Virtual Reality and Smart Systems (First Class Honours)

- Main Subjects: Computer Vision, Signal Processing, Automation, Control Theory, and AI.
- Built up a very well founded applied and theoretical knowledge of Computer Vision and Signal Processing. It ensures complete understanding of the basis and comprehension of the advanced issues in Computer Vision, Signal Processing and Automation.

Université des Sciences et de la Technologie (USTHB)

Oct. 2014 – Sept. 2015

MSc Artificial Intelligence

- Main Subjects: Statistical Pattern Recognition, Neural Networks and Optimization.
- Built up a very well founded applied and theoretical knowledge of Artificial Intelligence. It ensures complete understanding of the basis and comprehension of the advanced issues in Artificial Intelligence.

Oct. 2011 – June 2014

BSc Mathematics and Computer Science

- Main Subjects: Scientific Computation; Probabilities, Algebra, Calculus and Graph Operations.
- These subjects provide me with a good basis to analyse data and understand statistical models. This degree equiped me with the skill to systematically break up and solve problems.

Sept. 2010 – July 2011

Baccalaureate of Science

- Subjects included: Mathematics, Physics, Chemistry, Biology and Philosophy.

WORK EXPERIENCE

Jan. 2021 – Present — Graduate Teaching Assistant (GTA) and Tutor
Laboratoire d'Informatique (LIX) at École polytechnique, Institut Polytechnique de Paris
- GTA course: INF581 : Advanced Machine Learning and Autonomous Agents.
- Closely collaborating with and participating in the supervision of two Bachelor students.

Oct 2020 – Present — Doctoral Researcher in the Model Risk Management team at Société Générale
Under the supervision of Benjamin Bosch and Thomas Bonnier.
- Conducting research in the areas of Machine Learning Explanability.
- Sharing my research findings within the group.

Mar. 2018 – Sept. 2020 — Data Scientist at DOCAPOSTE
- Worked within teams such as Conversational AI at SAP and Machine Learning Squad at Société Générale.
- Designed, implemented and presented a customer appetite scoring model. My contribution helped the marketing team at Société Générale to better target potential users of the Paylib-entre-amis service.
- Performed forecasting on client's money transfers with time series, from feature engineering to fine tuning statistical and deep learning models.
- Participated in various NLP POCs (textmatching, topic modeling, classification, clustering).
- Improved the accuracy of SFR's chatbot logs for intent classification by 4%. The chatbot was originally developped by the Conversational AI team at SAP.
- Participated in the development of the LEIA library within DOCAPOSTE.

Sept.2017 – Feb. 2018 — Data Scientist at CGI
- Worked in a team to build and maintain the matching system of job-offers and Resumes to help RH to quickly identify best competences to job offers. This included extracting data from several sources, loading it to a data warehouse and then processing it.
- Further developed ability to work under pressure and facilitated frictionless communication in a team.

July 2012 – June 2015 — Machine Learning Intern at IBM
- Implemented a digital assistant in Python for IBM European events recommending digital assets to Watson Summit attendees.
- Proposed and worked on a content based recommender system leveraging machine learning techniques to better exploit digital assets.

ACHIEVEMENTS

Invited Talks
- Presentation of a Poster "Explainability of Multi-output Models" at IDA22, INRIA, July 2022.
- "Different Approaches towards Explainable Machine Learning", Women in Data Science (WIDS) Paris, June 2021.
- "Phrase Generation in distributional Semantics" at IBM Research Zurich, Sept. 2017.
- Presentation of a Poster "Machine Learning for Asset Recommendation" at WIC Conference American University of Beirut (AUB), Fully funded ACM Scholarship, August 2017.

Summer Academies
- Oxford Machine Learning School, Health Track a 1 week academy at Oxford University, 2022.
- Formation Fidle: Introduction to Deep Learning 30 hours of online learning by CNRS, 2022.
- Theory of Deep Learning a 1 week online academy organised at Isaac Newton Institute, 2021.
- Data Science Summer School a 1 week academy at École polytechnique, 2021.

Memberships
- Alumni of Women in Data Science (WiDS) Ambassador Program, 2020-2021.
- Alumni of Arab Women In Computing (ArabWIC), 2014-2017.
- Alumni of Openminds Club, USTHB, 2012-2015.

Scholarships
- ACM Scholarship, the 5th International conference of ArabWIC, Lebanon, 2017.
- NYUAD Scholarship, NYUAD Hackathon for Social Good, UAE, 2014.

PUBLICATIONS

Published Preprints

- C. W. Aayd & T. Bonnier & B. Bosch & J. Read, "Shapley chains: Extending Shapley values to Classifier chains", published in proceedings of Discovery Science 2022.

Submissions

- C. W. Aayd & T. Bonnier & B. Bosch & J. Read, "Feature Importance Depends on Properties of the Data: Towards Choosing the Correct Explanations for Your Data and Random Forest", submitted to ECML PKDD 2023.
- C. W. Aayd & T. Bonnier & B. Bosch & L. Martino & J. Read, "Measuring Uncertainty In Local Indirect Feature Contributions to Predict Interdependent Labels", submitted to ICDM 2023.
- C. W. Aayd & T. Bonnier & B. Bosch & J. Read & S. Parbhoo, "Which Explanation Makes Sense? A Critical Evaluation of Local Explanations for Assessing Cervical Cancer Risk Factors", submitted to MLHC 2023.
- C. W. Aayd & T. Bonnier & B. Bosch & J. Read & S. Parbhoo, "BMA-LIME: Quantifying Uncertainty In Local Explanations", submitted to Neurips 2023.
- O.Pallanca & C. W. Aayd & J. Read, "Paradoxical Insomnia: Unifying Multiple Definitions Via Machine Learning Explainability Methods", to be submitted in 2023.

PERSONAL SKILLS

Languages Amazigh (mother tongue), English (Fluent), French (Fluent), Arabic (Fluent).

Computer Proficient use of Python (and framworks such as PyTorch), `R`, Spark, MATLAB, SQL, C and Java.

Certifications Deep Learning Certification, Stanford University & deeplearning.ai.
Databricks Certified Associate Developer for Apache Spark.

Communication

- Quick adaptation in new environments.
- International and multilingual communication (highly international environment at École Polytechnique).
- Public speaking.

Organisational / Managerial

- Leadership, experienced organiser and self-confident (after planning and running numerous big scale events, such as WiDS Paris 2020).