Paul Daoudi | PhD Student

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Education

First semester of Master MVA (Mathématiques, Vision, Apprentissage) — **Paris, France**
Ecole Normale Superieure Paris Saclay — *2020–2021*
Convex Optimization, Computer Vision, Sequential Learning (Reinforcement Learning and Bandits), Deep Learning

Engineering school — **Lille, France**
Ecole Centrale de Lille — *2016–2020*
Machine Learning, Statistics, Convex Optimization, Financial Markets, Project Management

Master of Science - Applied Mathematics — **Lille, France**
Université Lille 1 — *2019–2020*
Master 2 done simultaneously with my engineering studies on Functional Analysis, Topology, Stochastic Processes and Measure Theory

Classe préparatoire aux Grandes Ecoles — **Toulouse, France**
*Lycée Saliege - PCSI/PC** — *2014–2016*
Mathematics, Physics, Chemistry, French and English

Experience

Huawei Research - Noah's Ark Team — **Paris, France**
PhD Student — *2021-Now*
Explore novel approaches to enhance the sample effiency of Deep Reinforcement Learning agents by introducing external information. It led me to four projects: Offline, Policy-Guided, Sim-to-Real and Multi-Task Reinforcement Learning.

Huawei Research - Noah's Ark Team — **Paris, France**
AI Research Engineer — *4 months 2020-2021*
Implementation of a Python library for state-of-the-art Reinforcement Learning algorithms
Study of Safe Reinforcement Learning

IBM Research - Watson Health Imaging — **Tel Aviv, Israel**
Data Scientist Intern — *6 months 2018-2019*
Elaboration of a Multi-Task Neural Network to detect breast cancer from mammograms, which outperformed the team's current model
Creation of python modules to explain the different models of our team (Grad-CAM, Saliency Maps, ...)

Airbus - Central Research and Technologies (CRT) — **Bristol, England**
Data Scientist Intern — *6 months 2018-2019*
Implementation of a multi-threaded DQN, a Reinforcement Learning algorithm using Tensorflow in Python, and assist the team in implementing other methods such as AlphaGo and A3C
Creation of a web demonstrator using VueJS and Python Flask to present state-of-the-art methods on Explainable Machine Learning models

Metigate (Start up) — **Paris, France**
Data Scientist Intern — *4 months 2017-2018*
Data gathering and preprocessing of market sales and weather data
Building of a one-week forecasting model for market sales using Python based on multiple drivers: market historical sales, market trend, seasonality, weather reports
Input it to production every week

Ecole Centrale de Lille — **Lille, France**
Researcher Assistant — *6 months 2017-2018*
Studying, understanding and testing the Differentiable Neural Computer

Buddiz.io — **Lille, France**
School project — *10 months 2016-2017*
Building a part of the Front-End side of the mobile application with Angular JS

Publications

A Trust Region Approach for Few-Shot Sim-to-Real Reinforcement Learning: Submitted to the 12th International Conference on Learning Representations (ICLR 2024)

Improving a Proportional Integral Controller with Reinforcement Learning on a Throttle Valve Benchmark: Ready to be submitted to IEEE Conference on Decision and Control (CDC 2024)

Enhancing Reinforcement Learning Agents with Local Guides: Proc. of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2023)

Density Estimation for Conservative Q-Learning: Generalizable Policy Learning in the Physical World Workshop (ICLR 2022)

Conservative Exploration for Policy Optimization via Off-Policy Evaluation: MVA Project

Beyond Optimistic Approaches on Reinforcement Mearning: Master Thesis

Additional formations

Summer School - Eastern European Machine Learning 2023: Generative Models, Causality, NLP and LLMs, GNNs, Computer Vision

Seminar - Interpolation of Measures 2023: Optimal Transport: theory and applications

Summer School - Data and Learning for Control 2021: Direct and Indirect methods for Optimal Control, Gain Scheduling, Lyapunov stability, Statistics

Technical skills

Mathematical Skills: Convex Optimization, Statistics, Probabilistic Graphical Models, Game Theory

Research interests: Reinforcement Learning, Transfer Learning, Optimal Transport, Few Shot Learning

Library/Framework used: Python (Pytorch, Tensorflow, MindSpore, Pandas, Sklearn, Ray, Hydra, Mayavi), Docker, Java, JavaScript, VueJS, AngularJS, SQL

Soft skills

Curious, Autodidact: Dedicated part of my personal time to develop basic knowledge in mathematics, physics and more recently history

Proactive: Created a Journal Club at Huawei where one researcher presents a paper of his choice

Motivated, Perseverant, Independant: Main qualities developed during the PhD

Languages

French: Mothertongue

English: Advanced

Hebrew: Basic

Interests

- Tennis
- Chess
- Triathlon
- Charleston