Achraf Azize

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Education

PhD Candidate - Scool (Inria) - University of Lille — Lille, FR
Interests: Differential Privacy; Multi-armed bandits; Reinforcement learning; Online learning — *Oct. 2021 – Present*

ENS Paris Saclay: Master's Degree MVA — Gif-Sur-Yvette, FR
Master of Research in Mathematics, Computer Vision and Machine Learning — *Sep. 2020 – Aug 2021*

Ecole Polytechnique: French Engineering School — Palaiseau, FR
Major in Applied Mathematics and Computer Science, Minor in Physics — *Aug. 2017 – Aug 2021*

Moulay Youssef: Preparatory Classes in Science — Rabat, MA
Undergraduate course in Sciences leading to the entrance to the French Grandes Écoles — *Sep. 2015 – May 2017*

Publications

1. **Achraf Azize**, Marc Jourdan, Aymen Al Marjani, and Debabrota Basu. On the complexity of differentially private best-arm identification with fixed confidence. Advances in Neural Information Processing Systems (NeurIPS), 2023.
2. **Achraf Azize** and Debabrota Basu. Interactive and concentrated differential privacy for bandits. In Sixteenth European Workshop on Reinforcement Learning, 2023.
3. **Achraf Azize** and Debabrota Basu, Rényi differentially private bandits. In PPAI@AAAI, 2023.
4. **Achraf Azize** and Debabrota Basu. When privacy meets partial information: A refined analysis of differentially private bandits. Advances in Neural Information Processing Systems (NeurIPS), 2022.

Work Experience

Teaching Assistant — Oct 2021 – Present
ENS Paris-Saclay, Ecole Centrale de Lille — *Lille, FR*

- Graphs in Machine Learning, ENS Paris-Saclay (MVA Masters), 2021-2022 and 2022-2023, with Daniele Calandriello. Course link.
- Python Practicals, Ecole Centrale de Lille (SDIA Masters), 2022-2023, Course link.

Research Intern — April 2021 – September 2021
InstaDeep — *Paris, FR*

- Multi-Object Manipulation using Relational Reinforcement Learning and Graph Attention Networks
- Achieved zero-shot generalization by successfully stacking objects into a previously unseen number of blocks and configurations

Report available here

Machine Learning Research Intern — April 2020 – August 2020
DataLab Groupe Crédit Agricole — *Paris, FR*

- Developed an Interpretability toolbox (Python), fully integrated into the DataLab's AutoML solution (MLBox)
- Conducted a Benchmark on deep learning applied to tabular data (financial data) by defining the use case, searching for representative datasets, and limiting the search space with some appropriate hypothesis
- Successfully integrated a complete deep learning pipeline into the MLBox
- Developed an end-to-end AutoDL Script, based on Microsoft NNI framework, that finds automatically the optimal neural architecture for a tabular dataset, within some search space, considering the time and computational budget

Code and scripts available here.

Development Intern — June 2019 – August 2019
PerfectStay — *Paris, FR*

- Reverse engineered a Pricing Program (iVector), used by PerfecStay to calculate the prices of staying in a hotel
- Designed a new way of interaction between the pricing program and the hotel information databases (SQL), to optimize the calculation speed
- Developed a new Script in Go, that emulates with high accuracy (99%) the results of iVector, in 4 times less time (from 12 hours to 3 hours)

Projects

Conservative Exploration in Reinforcement Learning | *Python, PyTorch* February 2021

- Proposed the first online model free algorithm that solves conservative exploration in the policy optimization problem
- Showed that this new algorithm yields a sub-linear regret for both discrete and continuous parameter spaces

Paper available here

Maze Solving Using Curriculum Learning | *Python, PyTorch, GCP* January 2021

- Solved the hard exploration problem in a maze environment using Curriculum Learning while using a Soft Actor Critic method with Hindsight Experience Replay (SAC-HER) as a baseline.

Code and report available here

Awards and Honors

French Government Major-Excellence Scholarship (Top seven in Morocco)
Member of the Moroccan Mathematics Olympiad Team (Top 12)
Ranked 2nd in the Concours National Commun (CNC)