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Profile

PhD student at INRIA Lille, my research interests lay at the intersection of fairness and federated learning.

Education

Program	Institution/Board	%/CGPA	Year
PhD (Fairness in Federated Learning)	INRIA *Lille, France*		2023-
MSc (Machine Learning)	Mohamed Bin Zayed University of AI *Abu Dhabi, UAE*	**3.80/4**	2021-2023
BSc (Data science)	Mohammed VI Polytechnic University *Benguerir, Morocco*	**17/20**	2018-2021

Work Experience

1. *Research visit at The CISPA Helmholtz Center for Information Security in Saarbrucken, Germany*

○ Working on heterogeneous federated learning: non-IID local objectives./Byzantine workers issues

2. *Economic activity detection in Morocco using satellite images*

Intern at P-Curiosity lab at UM6P

○ Trained a deep learning model to classify satellite images of Moroccan's regions to one of 5 economic activity classes.

Publications

○ FLECS-CGD: A Federated Learning Second-Order Framework via Compression and Sketching with Compressed Gradient Differences (*Accepted to NIPS Workshop*)

Course Work

MSc Core and elective course

○ Machine learning: Introductory course to different learning algorithms and their applications

○ Advanced Machine learning: Advanced course covering concepts such as statistical complexity of ML models and reinforcement leaning

○ Optimization: Course covering different concepts in optimization theory: zero, first and higher orders along with convergence proofs for different known optimization methods

Course Projects

1. *Personalized learning with the existence of harmful workers*   **MSc Thesis**

○ Designed a mechansim to find the best adaptive weights to apply the SGD step in federated learning

2. *Line-search based Accelerated Gradient Method for Composite Objective Function*   **2nd Semester**
MSc   *MSc*

- Surveyed work in accelerated method for composite functions, Ran experiments with a recent method in different settings and provided potential proof for the estimate sequence lower bound.

3. *Solar Cell Defect Classification via Electroluminescent Images*   **1st semester**
MSc   *MSc*

- Used different feature extraction techniques along with different classifers to classify solar cells as defective or non defective

4. *Web application for news recommendation*
(BSc)   *BSc*

- Implemented a relational database to store users data, and display customised news articles from different sources according to user preferences and reading habits.

Technical Skills

- Programming Language: C, C++, Matlab, Python
- Database System: phpMyAdmin, Mysql
- DL libraries: Pythorch
- Web Technology: Php, Django
- Operating Systems: Windows, Linux
- Tools: Latex, Anaconda, Microsoft Office

Extra-curricular

- Reviewer for NIPS Conference
- Mentor in MBZUAI Executive Program (Facilitating workshops and discussions around AI implementation with key decision-makers from leading UAE organizations.)
- Currently president of the chess club at MBZUAI
- Was president of the chess club at UM6P

Achievements/Awards

- Graduated bachelor's as top of class
- Receiver of Moroccan government excellence scholarship
- Receiver of MBZUAI excellence scholarship

Others

- Interests: Chess, Sports, Reading
- Languages: Arabic, French, English