




Hatim Mrabet

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Education

École CentraleSupélec- Engineering Degree

Paris, FR

Master of Science: Mathematics and Data Science

2021–2025

Coursework: Advanced Probabilities, Optimization, Statistics, Partial Differential Equations, Machine Learning, Artificial Intelligence, Algorithms and Data Structures, Object-Oriented Software Engineering.

ENS Paris-Saclay - Master MVA

Paris, FR

Master of Science: Mathematics, Vision and Learning

2024–2025

Research-oriented master program.

Coursework: Introduction to Statistical Learning, Theoretical Foundations of Deep Learning, Convex Optimization, Machine Learning for Time Series, Geometric Data Analysis, Learning Applied to Text and Graph Data.

Projects

Research project : Image segmentation of the Optic Nerve Sheath (few shots learning problem)

- Employed Deep Learning techniques (**ResNet and Unet**) for image segmentation and feature extraction.
- Utilized clustering methods (**HDBSCAN and Kmeans++**) for image classification.
- Used **Transfer learning** by training the decoder of a pretrained Unet on our dataset

Detection of a Cup by a Ball Launching Robot

- Employed the **Faster R-CNN** model to detect the cup using a stereo camera (ZED 3).
- Utilized image processing techniques for the extraction of 3D coordinates.

Paintings Generator using GANs

- Developed and implemented GAN models, including a U-Net-based discriminator and a U-Net decoder-based discriminator.
- Trained models with CutMix augmentation and consistency regularization to improve feature learning.
- Evaluated and compared model performance across various datasets.

Movies Recommendation System using Bandit Algorithms

- Cleaned and preprocessed a movie ratings dataset, extracting features to enrich the data.
- Developed and compared contextual bandit algorithms based on UCB and G-optimal design for exploration, evaluating performance with varying feature sets and model arms.
- Implemented and assessed three multi-armed bandit models (UCB, Thompson Sampling, EXP3) across different setups by varying the number of arms.

Experience

Inria

Lille, FR

Research Intern

Apr 2024–Aug 2024

- Joining the **SCOO**L team to work on Dyjest project, supervised by Ms. Émilie Kaufmann, a researcher expert in multi-armed bandit problems, and Mr. Mehdi Douch.
- Fine-tuning a word embedding model using contrastive learning techniques, inspired by SimCLR frameworks, to improve food classification models.
- Developing a Machine Learning model to predict the Symptoms of IBS, given the diet followed by the patient.
- Developing a bandit algorithm to propose the most adequate and efficient diet that must be followed by the patient to reduce the symptoms of IBS.

BNP Paribas

Paris, FR

Data Science Intern

Jul 2023–Jan 2024

- Developed machine learning pipeline for BII (Biodiversity Intactness Index) estimation. Tested regression models (**Linear regression, CatBoost, RandomForest**) for species abundance and regional similarity prediction.
- Constructed housing unit dataset and developed Machine Learning models (**Linear Regression, XGBoost, RandomForest**) for predicting energy performance diagnosis (DPE) based on unit features.

Skills

Technical Skills: Python(Tensorflow,PyTorch,Keras,Scikit-learn...),SQL,Java,Matlab.

Tools: VSCode, Eclipse, Git, Jupyter,Latex, Domino.

Languages: English (Fluent) | French (Fluent) | Arabic (Native)

Certificates

Coursera certificates : NLP Specialization, Deep Neural Networks with PyTorch .

Sep 2023

Kaggle certificates : Feature engineering, Data visualization .

July 2023