



# DHIA HMILA

## Senior Data Scientist at AXA France

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## PROFESSIONAL EXPERIENCE

### Senior Data Scientist

#### Data Science Team, AXA France

June 2021 - Present

Nanterre, France

- Automated the indexing of 70% of AXA's incoming documents by developing a retrainable document classification AI System (exposed as an API).
- Developed text extraction AI Systems using computer vision to read documents (Driver's license, National ID card, etc.). The models processed over 6M documents in batches using PySpark Jobs
- Developed a range of reusable python packages for document processing (OCR, object detection, etc.) The packages are designed using the strategy pattern to quickly experiment with different algorithms / models.
- Created a YAML-based templating system to streamline the creation of Azure ML pipelines.
- Built reusable Azure ML Pipelines (Continuous Training) to automatically retrain AI Systems and publish to Model Registry.
- Designed Azure DevOps CI/CD/CT pipeline templates to be used in the Team's projects.
- Led the hiring process, onboarding new team members and facilitating efficient knowledge transfer.
- Coordinated the annotation process with annotators and SMEs (subject matter experts) to ensure consistent datasets across various projects.
- Led AXA's 'Python COP' initiative, organizing a series of monthly programming talks and events on topics such as testing, web scraping, packaging, code quality, etc.
- Teached a series of training sessions/courses on Python, Data Manipulation (pandas & pyspark), Software Engineering best practices for over 30 AXA collaborators.

### Graduate Data Scientist

#### Data, Fraud, Waste & Abuse Team, AXA France

May 2020 - June 2021

Nanterre, France

- Engineered an advanced AI-driven Fraud, Waste, and Abuse Detection Tool with a wide-ranging impact across multiple scopes, including Claims, Health Providers, Beneficiaries, and more. This innovative tool played a pivotal role in achieving savings exceeding 150k euros in 2022.
- Designed and trained various fraud detection models for fraudulent patterns as part of the FWA detection tool.

### Data Scientist

#### Shift Technology

April 2019 - March 2020

Paris, France

- Applied Natural Language Processing (NLP) techniques to cluster Claim managers' notes, leveraging advanced visualization methods to uncover and identify emerging fraud patterns.
- Built new AI Models for Shift's fraud detection solution & Deployed their solution for a new customer.

## ABOUT

I am a passionate Data Scientist and programming enthusiast who has tackled challenges in fraud/anomaly detection and document classification. I am also an active contributor on GitHub.

## EDUCATION

### Engineering double degree

ENSTA ParisTech

ENIT

2016 - 2019

France - Tunisia

Specialized in Artificial Intelligence

### Preparatory School

IPEIT

Esprit Prépa

2014 - 2015

France - Tunisia

Specialized in Mathematics & Physics Ranked 10th in the entrance exam for engineering schools among 3,000 candidates.

## SKILLS

### Machine Learning

mlflow scikit-learn Tensorflow pytorch  
trax pyod transformers huggingface  
pytorch-lightning

### Computer Vision

OpenCV torchvision Vision Transformers  
VGG16 YOLO Feature Matching tesseract  
easy-ocr paddleOCR

### Natural Language Processing

nlTK spaCy Gensim torchtext langchain

### Data Wrangling

pandas pyspark SQL ETL

Research Internship

U2IS - ENSTA Paris

May 2018 - August 2018 Palaiseau, France

- Created a synthetic image dataset by building a simulation of an agent in an in-house environment and using Raytracing to render realistic images.
- Studied Catastrophic Forgetting in Incremental Learning of Principal Components of generated Images

PROJECTS

mlflower: Lightweight orchestration tool for mlflow projects

mlflow orchestration experiment-tracking

November 2023 - Present

Tool to extend mlflow projects with inbuilt multi step workflow orchestration

pysira: publish resumes in different formats

Github Actions Jinja2 Templates jsonschema

February 2023 - Present

CLI tool to export 'jsonresume' files to different formats (HTML, TeX, PDF, etc.) and languages.

- Created a CI/CD pipeline (Github Actions) to publish resumes in different themes, formats and languages
- This resume was created using pysira: hmiladhia.github.io, hmiladhia.github.io/cv.pdf, hmiladhia.github.io/fr/kendall or hmiladhia.github.io/resume.pdf

nbmanips: Split, merge and convert IPython Notebooks

Jupyter Databricks Zeppelin

May 2021 - Present

An open-source package containing a collection of tools to manipulate Notebooks via a python or CLI.

- Developed a python package/CLI to manipulate (Split, Merge, ...) Jupyter Notebooks
- Used CI/CD piplines (Github Actions) to Lint, Test and publish the package to Pypi

Spot-Language: Programming Language Detection

Classification Flask NLP Lime

January 2020

Spot-Language is a classification model to detect the language used in code snippets.

- Assembled a training dataset using public repositories on GitHub.
- Built an ML experiment to train an NLP model for language classification.
- Improved model interpretability using Lime.
- Deployed a demo Web Application of the ML model using flask.

Programming Languages

Python Rust JavaScript C/C++ C#

MLOps

Github Workflows Azure Pipelines Git Linux Docker Kubernetes

Cloud

Azure ML Databricks Heroku

Web Scrapping

selenium requests BeautifulSoup4

Web




















HTML CSS JavaScript fastapi flask Dash

LANGUAGES

Arabic  
English  
French  
German



CERTIFICATES

 Machine Learning Engineering for Production (MLOps)	DeepLearning.AI	 2022 2022
 Natural Language Processing	DeepLearning.AI	 2024 2024
 Cloud-Native Development with Open-Shift and Kubernetes Specialization	DeepLearning.AI	 2023 2023
 Rust Fundamentals	Duke University	 2024 2024
 Rust for DevOps	Duke University	 2024 2024
 Rust for LLMOps (Large Language Model Operations)	Duke University	 2024 2024
 DevOps, DataOps, MLOps	Duke University	 2024 2024
 MLOps Tools: MLflow and Hugging Face	Duke University	 2023 2023
 Introduction to Large Language Models	Google Cloud	 2023 2023
 TOEIC Listening and Reading Test (Score 985/990)	ETS Global	 2018 2018