

# Ahmed BELGACEM *Artificial Intelligence Research Engineer*

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AI Engineer with strong **research and development** experience, especially in **deep learning** and **computer vision**. I've worked extensively on **fine-grained classification**, **diffusion models**, **edge computing**, and **medical imaging**, contributing to both cutting-edge experimentation and real-world deployment. With a solid foundation in software engineering, I bring a practical, systems-oriented mindset to AI development.

## PROFESSIONAL EXPERIENCE

**Deep Learning Research Scientist** 03/2024 – present | Mons, Belgium  
*Multitel - Research and Innovation Institute*

Contribution to the threat detection component of the RUDIS research project aimed at developing optionally unmanned military vehicles.

- Conceived a robust fine-grained classifier for military and civilian vehicles. The classifier leverages Multitask learning to differentiate vehicles at a detailed level and is optimized for resource-constrained environments.
- Currently developing a solution to address class imbalance in fine-grained classification by leveraging diffusion models, aiming to generate balanced training data and improve model performance on underrepresented categories.

**Deep Learning Research Engineer - Intern** 04/2023 – 10/2023 | Lyon, France  
*Diagnoly*

Development of an Edge AI system for real-time fetal ultrasound image analysis.

- Refactored, analyzed and profiled the existing solution to diagnose latency and overheating issues.
- Developed, optimized and deployed a deep multi-task model for classification and bounding box regression to considerably improve time-to-prediction and performance.
- **Pytorch** for modelisation, **Yolo** as base model, **Onnx** for Intermediate Representation, **TensorRT** for deployment, inference.

**Software Engineer - Intern** 03/2021 – 07/2021 | Tunis, Tunisia  
*Vneuron*

Development of a sanction screening software that reduces trade based money laundring's risk by checking a SWIFT transaction's compliance against different sanction lists.

- Designed a lexical search pipeline that uses **Elasticsearch** for indexing and conceived a relevance score calculation method.
- Developed a web platform using **Springboot** and **Angular**.
- Conceived a proof of concept for the semantic search pipeline using **sbert**.

**Software Engineer - Working Student** 06/2019 – 10/2019 | Tunis, Tunisia  
*Democracy International*

Web development for Democracy International's Tunisian local office.

- Built the organization's website and blog, trained the editors on the use of the blog.
- Maintained and debugged an electoral mapping data visualization platform.

## EDUCATION

**Big Data, Artificial Intelligence Masters Degree** 2021 – 2023  
*Université Paris Dauphine - PSL*

**Relevant Coursework:** Machine Learning, Deep Learning, Python, Reinforcement Learning, NLP, Data Analysis, Monte Carlo Tree Search, Time Series, Optimisation, Graph Neural Network, Computer Vision, Data Visualization, Cloud Computing.

**Software Engineering Masters Degree** 2016 – 2021  
*National Institute of Applied Sciences and Technology (INSAT)*

**Relevant Coursework:** Data Structures and Algorithms, Information Retrieval, Databases, Graph Theory, Software Quality, Design Patterns, Big Data, UML, Linux, Git, Python, Java, C, C++, Javascript, SQL.

## SKILLS

**Programming** (Python, SQL)

**Machine Learning and Deep Learning** (Pytorch, ONNX, TensorRT, Scikit-Learn, XGBoost)

**Tools** (Git, Linux, Docker)

## LANGUAGES

**French**  
Bilingual proficiency

**English**  
Full professional proficiency

**Arabic**  
Native proficiency

## PROJECTS

**Graph Neural Network: Building a Spotify Playlist Track Recommender**

**Data visualization: Development and deployment of a data visualization dashboard using the Panel framework.**

**Python: Creation and distribution of TunAugmentor a Python library for Image Data Augmentation.**

**Deep Learning: Development of an Image classification model for the Kenyan Sign Language with Keras.**