TAHA BOUHAFA

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Profile

Final-year engineering student at ENSA Tétouan, specialized in Artificial Intelligence and Big Data. Skilled in deep learning and image processing, with hands-on work in segmentation and visual modeling. Looking for a 6-month research internship starting February 2026 to work on sunglint detection and correction in coastal aerial imagery, combining deep learning with physical models to improve the VHR remote sensing data.

Education

- **ENSA Tetouan, National School of Applied Sciences** — Sept. 2023 – Present
  Engineering Cycle, Big Data and Artificial Intelligence, 5^{th} Year — *Tetouan, Morocco*
- **ENSA Tetouan, National School of Applied Sciences** — Sept. 2021 – June 2023
  Integrated Preparatory Classes — *Tetouan, Morocco*

Experience

- **Regional Investment Center Tanger-Tetouan-Al Hoceima** — June 2025 – Sept. 2025
  AI Research Internship, Development of a RAG Chatbot based on an LLM — *Tetouan, Morocco*

  Exploration and study of open-source LLMs (Mistral, DeepSeek, LLaMA) and Retrieval-Augmented Generation architectures.
  Implementation of a complete RAG pipeline with LangChain: vector indexing (FAISS, BM25) and contextual generation via FastAPI integrated with the OpenAI API.
  Creation of an interactive web interface connected to the backend for dynamic information retrieval.
  Evaluation of system performance using RAGAS metrics: context accuracy 86.5%, faithfulness 82%.

Projects

- **Semantic Segmentation of Aerial Images (U-Net3+)**

  Implementation of the U-Net3+ model for multi-class segmentation (6 categories) on high-resolution aerial images (6000×6000) from the Potsdam dataset.
  Use of multi-scale connections and deep supervision to preserve fine details and improve accuracy.

- **Visual Question Answering (VQA)**

  Development of a multimodal deep learning model capable of answering questions from images, combining visual features (ResNet50) and textual features (BERT).
  Preprocessing and management of the COCO VQA V2.0 dataset, resizing, BERT tokenization, 1000-answer vocabulary, full implementation of training and evaluation pipeline.

- **ASL Recognition – Real-Time Detection**

  Designed an American Sign Language (ASL) recognition system to detect and classify letters and gestures from videos or images.
  Developed using YOLOv8 and deployed in a lightweight web application (Flask, OpenCV).

- **Skill Radar – Analysis and Forecasting of the AI and Data Job Market**

  Extraction of skills from job postings using a Hugging Face NER model (JobBERT), forecasting skill demand using time series models (Prophet), salary estimation, and skills recommendation.
  Development of an interactive Streamlit dashboard combining NLP, web scraping, and visualization.

Skills

- **AI & Machine Learning,** Deep Learning, Computer Vision, Image Processing, Transformers, NLP, LLMs.
- **Frameworks & Libraries,** PyTorch, TensorFlow, Keras, OpenCV, scikit-image, SciPy, NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn, Hugging Face, LangChain.
- **Programming & Tools,** Python, SQL, Git/GitHub, Jupyter Notebook, FastAPI, Flask, Streamlit, MongoDB.
- **Languages,** French (fluent), English (fluent), Arabic (native).

Certifications

- Vision Language Model (VLM) Bootcamp – OpenCV University
- Generative AI with Diffusion Models – NVIDIA
- Introduction to Transformer-Based Natural Language Processing – NVIDIA
- Specialization in Machine Learning – Stanford / DeepLearning.AI