Ben Khalifa **ElHedi**

CONTACT

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SKILLS

Machine Learning

- **Languages** : Python, SQL
- **Libraries** :
  - PyTorch
  - OpenCV
  - Streamlit , Gradio
  - Scikit-learn
  - Matplotlib
  - NumPy
  - Pandas
- **Tools** :
  - Git
  - Kaggle
  - Jupyter Notebooks
  - VSCode

Web Development

- **Languages** :
  - MongoDB
  - Express.js
  - React
  - Node.js

Other Skills

- Canva, Web Design, Video Editing
- French / English to Arabic (MSA) Translation

LANGUAGES

- Arabic (Native)
- English (Fluent)
- French (Fluent)

PROFILE

I am an engineering student at **SUP'COM** with a strong passion for **Machine Learning**,currently completing a **summer internship** in this field. I have had the opportunity to work on several projects, mainly in **Computer Vision**, which I share on my GitHub and other platforms. I am eager to **further strengthen my skills** within a professional team and to **explore other areas** of Machine Learning, such as **Agents** and **LLMs**.

PERSONAL PROJECTS

Brain Tumor Segmentation — Medical Imaging Analysis
Segmentation, Swin-UNETR, Swin Transformer, Gradio, Hugging Face

- Developed an automatic **brain tumor segmentation system** from MRI scans.
- Implemented **Swin-UNETR** (based on Swin Transformer) for accurate pixel-level predictions.
- Optimized the model, achieving a **loss of approximately 0.075** and a **validation accuracy of 88.6%**, demonstrating robustness on complex data.
- Deployed an interactive interface using **Gradio**, hosted on **Hugging Face Spaces**, enabling **real-time visualization** of results.

Anti-Spoofing Detection — Real-Time Face Verification
YOLOv8, Computer Vision, Custom Dataset, Real-Time Inference

- Developed a pipeline to detect spoofed faces (e.g., phone screens, printed photos) in real-time using YOLOv8.
- Built a custom dataset, trained a binary classifier, and deployed a real-time detection system.
- Demonstrated high accuracy in differentiating between real and fake facial inputs.

Car Counter — Road Traffic Estimation
YOLOv8, SORT Tracker, Computer Vision, Video Analytics

- Created a road traffic counter using object detection (YOLOv8) and tracking (SORT) to estimate congestion levels.
- Processed video input to track vehicles and count them across a predefined zone in real time.
- Enabled road congestion estimation with a margin of error of ±4 cars in typical urban scenarios.

EXPERIENCE

Summer Internship at Axia Solutions **2024**

- Developed a front-end application designed to create a safe and engaging digital environment for children through a reflex-based game.

EDUCATION

Preparatory Engineering Program **2021–2023**
Rank: 119 / 2500

Engineering Degree in Telecommunications **— Ongoing**
Higher School of Communication of Tunis (SUPCOM)