

WALID BAKADIR

Computer Vision & Embedded AI Engineer

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Profile

Computer Vision and Embedded AI Engineer with more than two years of experience developing, training and deploying real-time models for UAV security and assistive technologies. Experienced in Python, PyTorch, TensorFlow/Keras, YOLO and OpenCV, with hands-on deployment using TensorRT on NVIDIA Jetson and TensorFlow Lite on Raspberry Pi. Combines data preparation and model evaluation with hardware profiling, system integration and technical documentation. MSc graduate in Computer Vision and Signal Processing, seeking to contribute to efficient on-device vision and video models.

Core Competencies

Model development	Dataset preparation, annotation conversion, targeted augmentation, training, feature engineering and evaluation
On-device inference	TensorRT and TensorFlow Lite deployment; balancing accuracy, latency and memory on embedded hardware
Evaluation	Precision, recall, latency, resource monitoring, failure analysis and staged hardware verification
Vision and video	Object detection, ByteTrack tracking, persistent identities, trajectory logging and camera-LiDAR integration

Professional Experience

Embedded AI Engineer

Eindhoven, Netherlands

VTEC Lasers & Sensors

Nov 2024 – Present

Developing and deploying real-time ML capabilities for UAV perception and assistive technology, from data workflows and model evaluation to deployment, integration and system validation.

UAV Security Perception

Oct 2025 – Present

- Built repeatable Python workflows for dataset merging, annotation conversion, augmentation, training and evaluation of YOLO-based object-detection models.
- Integrated ByteTrack multi-object tracking, persistent IDs, event logging and coordinate export into the real-time perception pipeline.
- Deployed TensorRT inference on NVIDIA Jetson Nano; profiled latency, memory and CPU/GPU use to assess performance and runtime stability on real hardware.
- Developed Flask-based visualization and logging components to expose system output and support technical debugging.
- Integrated Full HD camera and 360-degree LiDAR processing; implemented SAFE/WARNING/DANGER obstacle-risk logic and MAVLink communication with Pixhawk 6C.
- Verified commands sent, flight-controller targets, controller outputs and actual responses; compared logs and motor PWM outputs during propeller-off bench tests.
- Led the perception workstream, maintained technical handover documentation in LaTeX and collaborated across software, electronics, robotics and mechanical engineering.

Assistive Exoskeleton - Movement Intention

Nov 2024 – Oct 2025

- Developed data-acquisition and preprocessing workflows for IMU and EMG signals, including filtering and temporal feature engineering.
- Trained and evaluated TensorFlow/Keras classifiers, achieving 97% prediction accuracy under evaluated conditions.
- Deployed real-time inference on Raspberry Pi 5 with TensorFlow Lite and integrated predictions with the exoskeleton controller.
- Monitored latency and failure cases, then improved runtime stability through prediction smoothing and dead-zone logic.

Machine Learning Intern

Eindhoven, Netherlands

VTEC Lasers & Sensors

Apr 2024 – Oct 2024

- Prototyped human-intention detection using IMU and EMG signals; built sensor acquisition and preprocessing workflows and assessed real-time deployment feasibility.

R&D Intern - Embedded Systems

Ibn Tofail University

Kenitra, Morocco

Mar 2020 – Jul 2020

- Designed an automated parking prototype with Arduino, weight sensors for vehicle detection and position sensors for elevator control.
- Developed an OpenCV-based coin-detection component and 3D mechanical models for prototype validation.

R&D Intern - Electronics

Renault–Dacia

Errachidia, Morocco

Mar 2019 – Jul 2019

- Used OBD-II and CAN-bus analysis to diagnose vehicle electronic systems; assisted with sensor calibration, integration and validation.

Selected Projects

Emotion Analysis of Reactions to Presidential Tweets

Python, NLP, Hugging Face Transformers

- Analysed public reactions posted after President Emmanuel Macron's tweets, applying NLP preprocessing and a Hugging Face model to classify the emotions expressed in the text.
- Structured the results to compare the distribution of emotional responses across the analysed messages.

Potato Quality Detection and Classification

Python, YOLO, Roboflow, OpenCV, USB Camera

- Prepared and annotated potato images in Roboflow and trained a YOLO model to distinguish good potatoes from defective ones.
- Tested the model on images captured with a USB camera and reviewed its predictions under different visual conditions.

Medical Image Processing Datathon - IA4Care 2024

ESEO, Dijon, France

- Contributed to preprocessing, red-blood-cell detection and model evaluation in a multidisciplinary 72-hour challenge; presented the solution and received third place.

Education

MSc, Computer Vision and Signal Processing - University of Burgundy, Dijon, France

2021 – 2024

BSc, Electronics and Computer Vision - University of Burgundy, Dijon, France

2020 – 2021

BSc, Embedded Systems for Automotive - Ibn Tofail University, Kenitra, Morocco

2018 – 2020

Technical Skills

Machine learning	PyTorch, TensorFlow, Keras, scikit-learn, CNNs, feature engineering and model evaluation
Computer vision	YOLO, OpenCV, ByteTrack, object detection, multi-object tracking and Roboflow
On-device deployment	NVIDIA Jetson Nano, TensorRT, ONNX, TensorFlow Lite and Raspberry Pi 5
Data and NLP	Pandas, NumPy, image annotation and augmentation; NLP emotion analysis with Hugging Face models
Programming	Python, C/C++, MATLAB, SQL
Software and tools	Linux, Git, Docker, Flask, FastAPI, REST APIs and LaTeX documentation
Profiling and validation	Latency, memory, CPU/GPU monitoring, runtime logging, failure investigation and hardware bench tests
Sensor integration	Camera, LiDAR, IMU, EMG, Pixhawk, MAVLink and PyMAVLink

Certifications and Languages

Certifications

Deep Learning with PyTorch

Python 3 Programming

Languages

English: fluent

French: fluent

Arabic: native

Dutch: basic, actively learning