Mariem Samet

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PROFILE

A final year engineering student, passionate about embedded systems and artificial intelligence, with a strong interest in designing innovative and high-performance solutions in the automotive technology sector. Currently seeking a end-of-study internship to apply and deepen my technical skills in a challenging environment.

PROFESSIONAL EXPERIENCE

KPIT, *Internship* 07/2025 – 08/2025 | Sfax, Tunisia
CAN bus Virtualization with AUTOSAR signal-level simulation

- Designed and developed a high-fidelity software simulator in C++ to emulate a real CAN bus, enabling real-time communication between virtual ECUs by processing Database (DBC) files.
- Engineered a RESTful API (using httplib) to allow Functional Mock-up Units (FMUs) to interact with the simulator, maintaining a single, continuously updated ASC log file in real-time.

Technologies: C++, AUTOSAR, CAN Bus Communication, RESTful API, Real-Time Simulation, CANalyzer

ESSE Laboratory, *Internship* 06/2024 | Sfax, Tunisia
Inverted Pendulum Control via Reinforcement Learning

- Designed and implemented a reinforcement learning algorithm to control an inverted pendulum
- Leveraged the ESP32 microcontroller to manage motor control and encoder feedback for real-time stability adjustments.

Technologies: Reinforcement Learning (Q-learning), Python, OpenAI Gym, C , ESP32, PWM.

PROJECTS

Automotive AI Intelligent System for Security and Comfort, *End-of-Year Project*

- Designed and implemented an intelligent system on a Raspberry Pi 4, integrating four distinct AI safety models: facial recognition for driver identification, seatbelt detection, child-left-behind alert, and driver drowsiness detection.
- Deployed embedded AI models (YOLOv8, TensorFlow, MediaPipe) directly on the Raspberry Pi to perform real-time computer vision analysis and object detection.
- Developed offline graphical and voice user interfaces to provide seamless, hands-free user interaction and system feedback without requiring an internet connection.

Technologies: Raspberry Pi 4, Embedded AI, YOLOv8, TensorFlow, MediaPipe, Python, OpenCV, Real-time Computer Vision

SmartBin : Smart Recycling System

- Designed and trained a Convolutional Neural Network (CNN) using TensorFlow/Keras to accurately classify waste into six distinct categories.
- Implemented the full machine learning pipeline, including image preprocessing, data augmentation, model training, and performance evaluation to achieve high classification accuracy.

Technologies: Deep Learning, CNN, TensorFlow/Keras, Image Processing, Data Augmentation, Python, OpenCV

Intelligent Conversational Assistant with RAG

- Architected a hybrid AI assistant by strategically combining local (Mistral 7B) and cloud-based (OpenAI) LLMs with a Retrieval-Augmented Generation (RAG) system to deliver accurate, secure, and contextually up-to-date responses.
- Implemented a vector database for efficient semantic search and developed an intelligent orchestrator to manage the trade-offs between cost, latency, and response quality.

Technologies: RAG, LLM Orchestration, Mistral 7B, OpenAI API, Vector Databases, Python, LangChain

EDUCATION

National School of Electronics and Telecommunications of Sfax (ENET'Com), 2023 – Present | Sfax,Tunisia
Engineering Degree in Electronics of Communication Systems Engineering

Preparatory Engineering Institute of Sfax, 2021 – 2023 | Sfax, Tunisia
Preparatory Cycle for Engineering Studies Physics - Chemistry

CERTIFICATES

Microsoft Azure AI Fundamentals

Samsung Innovation Campus AI

LANGUAGES

- Arabic
- French
- English