KHALID ESSAHNOUNY
State Engineer in Electrical & Electronic Engineering | Embedded Systems & IoT

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PROFILE

⊞ **State Engineer in Electrical & Electronics Engineering – Open to Work / Immediately Available**

☑ Seeking a new professional opportunity, I am a State Engineer specializing in Electrical Systems and Embedded Systems. I possess solid experience in Electronic & Electrical Systems, IoT, Automotive, and the development of Smart Solutions. Curious, rigorous, and autonomous, I am Open to Work and ready to invest myself in concrete projects within a company.

EXPERIENCES PROFESSIONNELLES

T2S Group | INTER PFE
February 2025 – July 2025

▶ **Thesis Topic: D**esign of a Portable, Remotely Monitored Test Bench for Electrical and Climate Parameters of the Signa ™ Explorer MRI.

▶ **Role:** Embedded System Developer in the field of: Radiology | Magnetic Resonance Imaging (MRI)

▶ **P O W E R E L E C T R O N I C S E N G I N E E R**

▶ **Problem Statement**
Electrical and climate-related failures in MRI machines lead to costly downtime and loss of availability. Traditional control methods are limited in reactivity and efficiency, hence the need for a modern integrated remote monitoring device.

▶ **Proposed Solution**
- ☑ Portable Diagnostic Unit
- ☑ Multi-Channel Alert System
- ☑ Central Server
- ☑ User Interfaces
- ☑ Storage & Security

C2EZ | TECHNICAL INTERNSHIP - PFA
June 2024 – August 2024

▶ Electronics Technician specialized in repairing electronic boards.

▶ **Medical Autoclave Timing System:** Designed a timing system for a medical autoclave using Arduino, ensuring safe instrument cleaning with disinfectant gas and preventing room access during the process, featuring an intuitive user interface.

RESELEC S.A.R.L | INTERNSHIP
June 2023 – July 2023

▶ Industrial Maintenance Technician – Electric motors and rotating equipment.

IMACAB Group INGELEC | INTERNSHIP
August 2023 – Septembre 2023

▶ Electrical Equipment Maintenance Technician.
- ☑ Built a project report entitled: "Categories of Electrical Cables"

▶ **Electrical Engineer**

FORMATION

▶ **2020 – 2025 | State Engineering Diploma**
- ☑ Faculty of Sciences and Techniques, Settat

▶ **2020 – 2022 | University Diploma in Sciences and Techniques**
- ☑ Faculté des Sciences et Technique , Settat

▶ **2019 – 2020 Baccalaureate in Physical Sciences**
- ☑ High School Moussa Ibn Noussair

CENTRE INTERETS

▶ **Intelligence Artificielle - IA**
▶ **Internet des Objets - IoT**
▶ **Smart Grids**

▶ **Telecommunications and Networks**
▶ **Cybersecurity**
▶ **Automotive – AI Driven Car**

LANGUAGES

▶ **Arabe (Native)**   ▶ **French (Fluent)**   ▶ **English (Intermediate)**

PROJETS ACADEMIQUE

- Design and Realization of an IoT-Based Smart Grid **Connected Socket.**

- **ADAS System** (Driver Assistance) with 3D animation and real-time Image Processing, developed in Matlab/Simulink.
.
- An IoT System Controlled by Voice Commands, entitled "**Voice-Controlled IoT Devices Using Esp32 and Google Assistant**"

- **AI-Driven Self-Driving Car Project:** Advanced Autonomous Car System using Python, Webots, Lidar, Cameras, RRT*, and Machine Learning for Lane Keeping, Collision Avoidance, and Road Sign Recognition.
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COMPETENCES

FPGA (INTEL/TerasIC Boards) – Hardware Description Languages (VHDL, Verilog) – Microcontrollers (STM32, ESP32, Arduino, PIC16F, Raspberry Pi) – Electronic Board Design, Development and Programming – Electronic Board Repair and Diagnostics – Power Electronics (Rectifiers, Inverters, PWM, Choppers) – DC and Asynchronous Motor Control – AC Motor Control (V/f, Vector Control) – Study and Control of Thyristor Rectifiers (SCR) – Study of AC/DC, DC/DC, DC/AC Converters – Passive and Active Filter Design (LC, EMI) – Thyristor Trigger Circuit Design – Power Circuit Simulation (LTspice, PSpice, MATLAB/Simulink) – Loss and Efficiency Calculations – Power Component Selection (MOSFET, IGBT, SCR) – Power Transistor Driver Design – Electronic CAD (KiCad, Proteus, Altium, EAGLE) – Sensor and Transducer Integration – Analog and Digital Signal Conditioning and Processing – Programmable Logic Controllers (PLC: Ladder, Grafcet) – SCADA Systems (WinCC, InTouch) – Human- Machine Interfaces (HMI) – Industrial Instrumentation – PID Control Systems – Testing and Validation with Oscilloscope, Logic Analyzer, Multimeter – Serial and Embedded Communication Protocols (CAN, I2C, SPI, UART, Modbus, RS485) – IoT
Protocols (MQTT, HTTP..) – Embedded IP Networks (IPv4, IPv6, TCP/IP, Ethernet) – AUTOSAR (Automotive Software Architecture) – Real-Time Operating Systems (FreeRTOS) – Embedded Linux Development (Shell, Makefile, Cross-Compilation) – Version Control (Git, GitHub) – Project Management Methods (V-Model, Agile-Scrum).

SOFT SKILLS

Autonomous – Public Relations – Teamwork – Leadership – Effective Communication – Critical Thinking – rigorous – Strong Analytical – Problem-Solving – Debugging Skills

COMPETENCES INFORMATIQUE

Assembleur – C / C++ – Python – Java – Visual Basic – Flutter – Android Studio – Webots – NetBeans / Eclipse – VirtualBox (VM) – ARM Cortex Processors – Xrelais – **KiCad** – Altium Designer – LTspice – Dev-C++ – MS Project – ISIS Proteus – Quartus II – Zephyr RTOS – MATLAB / Simulink – CANalyzer / CANoe– Wireshark – Docker – Git / GitHub – Jenkins – VHDL – Verilog – Quartus Prime – ModelSim – FreeRTOS – JTAG Debuggers – MQTT Protocol – TCP/IP – PLC Devloper

CERTIFICATS

- Neural Networks and Deep Learning & Supervised Machine Learning: **DeepLearning.AI**

- Regression and Classification **DeepLearning.AI** | Tools of the Trade ,Linux and SQL

- :**Google** Linux and SQL: **Google Career Certificates** | C Language # : **HackerRank**

- Agile and Scrum Business Analyst: **Institute of Management, Technology and Finance**

- Machine learning : Traitement du langage naturel avec Python : **LinkedIn**

- Learning Solidworkd: For Students and Engineers : **CADCIM Technologies**