Ahmed Belkhiri

Embedded Software Engineer

belkhiri.ahmedd@gmail.com | 25/06/2001 | ahmed-belkhiri
AHMED-BELKHIRI | Portfolio

PROFESSIONAL EXPERIENCE

Embedded Software Engineer 03/2024 – present | Ariana, Tunisia
MARE CUSTOS
- Designing and developing drivers for **STM32 micorcontrollers**.
- Integrating the **micro-ROS** and **FreeRTOS** into the **firmware** on **IAR Workbench** framework.

Robotic Engineer 02/2024 – present | Toulouse, France
SHANON TECHNOLOGIES
- Constructing mechanical systems.
- Creating **schematic blocks** for robotics projects.
- Developing software applications for designed projects.

Computer Vision Intern 06/2023 – 09/2023 | Ariana, Tunisia
HYDATIS
- Created a **face detection** system, a critical component for face recognition technology.
- Engineered an **anti-spoofing** system, incorporating innovative techniques such as **3D depth detection**.
- Developed a user-friendly **Python interface** to streamline project implementation and usage.

Research and Development Intern 07/2022 – 09/2022 | Ariana, Tunisia
MARE CUSTOS
- Built an autonomous robot for pipeline inspection using **SOLIDWORKS**.
- Controlled the robot with a **PID controller** algorithm.

Robotic Instructor 05/2022 – 05/2024 | Manouba, Tunisia
DISCOVERY CLUB JUNIOR — Part Time
- Instructed students in **C/C++** programming and supervised multiple student projects.
- Supervised participation in national and international junior robotics competitions.

PROJECTS

Face Tracker 07/2023 – 08/2023
- Developed a face tracking script using the **MediaPipe** library to detect faces.
- Programmed **STM32** for motor control and established local communication with **Raspberry Pi 4** via **UART**.

Keywords: Python, C, Computer Vision, STM32, Solidworks.

Chess-Playing Robot 01/2023 – 05/2023
- Implemented the **inverse kinematics** algorithm to control the **robotic arm**.
- Built a computer vision system to detect, identify, and track the chessboard and chess pieces on the board.

Keywords: Python, C, Computer Vision, Solidworks, Inverse Kinematics.

Building two autonomous robots 10/2021 – 05/2022
- Constructed two robots meeting specification document requirements, with a focus on **mechanical design**.
- Engineered a 3-axis robotic arm controlled by an **Arduino microcontroller**.
- Increased robots precision using velocity and position control based on **PID controller algorithm**.
- Established local communication for the robots through the **ROS** (Robot Operating System) ecosystem.

Keywords: Python, C, C++, STM32, Arduino, Solidworks, Proteus, ROS, PID Controller.

EDUCATION

Engineering cycle - INSAT 09/2020 – 06/2025 | Tunis, Tunisia
National Institute of Applied Science and Technology
Industrial and automatic computing: Study and development of all types of embedded systems, robotics, control systems, industrial mechanics, and electronics

SKILLS

Robotics Operating System 'ROS'
Software development for robot control.

Micro controllers
Operational knowledge of Hardware architecture and software tools for Raspberry PI-STM32-ESP32.

Frameworks
STM32CUBE, IAR Workbench, Arduino, OpenCV, TensorFlow, QT.

Programming languages:
C/C++, Python, Java, SQL, JavaScript, HTML/CSS.

RTOS
Adept with FreeRTOS.

Developer Tools:
Git, Solidworks, Proteus, Catia, STM32CubeIDE, VS Code, Visual Studio, PyCharm, Eclipse.

LANGUAGES

English (C1)

Arabic (Native language)

French (B2)

German (A2)

AWARDS

5th Place at Eurobot International Robotics Competition
Planet Sciences

1st Prize at Eurobot National Qualification
Association of Robotics Techniques ATR

1st Place at NRW Makeathon
Orange Tunisia & NRW

Student Entrepreneur Status
Student entrepreneur pole of the university of Carthage

ORGANIZATIONS

Aerobotix INSAT 01/2021 – present | Tunis, Tunisia
Member
Participating with the club in various national and international competitions and guiding members' work and projects.

Association of Robotics Techniques 09/2022 – 09/2023
The official spokesperson

Tunisian Association Mathematical Sciences 08/2015 – 06/2020
Member