# AYOUB HSAINE

**State Engineer in Robotics and Cobotics Seeking PhD Program**

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in Ayoub Hsaine    ⌨ Ayoub Hsaine    🌐 Portfolio    🚗 Driving License B

## EDUCATION

### State Engineer in Robotics and Cobotics
**Euromed University of Fez**

📅 Sep 2021 - Jun 2024    📍 Fez, Morocco

### Preparatory Cycle
**Euromed University of Fez**

📅 Sep 2019 - Jun 2021    📍 Fez, Morocco

### Baccaleureat in Physical Sciences
**Mohammed EL Rafrai High School**

📅 2019    📍 EL JADIDA, Morocco

## PUBLICATIONS

🏆 **Exploring Maze Navigation: A Comparative Study of DFS, BFS, and A* Search Algorithms**
Statistics, Optimization & Information Computing

A comparative study was conducted using Python and Pmaze to evaluate the performance of DFS, BFS, and A* search algorithms in path planning for a maze. The main objective of the project was to compare the efficiency of these algorithms in terms of path cost and algorithmic complexity. No physical robot was used in this study as it focused solely on the analysis of search algorithms. This study contributes to the advancement of knowledge in the field of path planning by exploring different approaches for mazes using Python and Pmaze.

Link to publication: http://www.iapress.org/index.php/soic/article/view/1939

## PROJECTS

Safe Box using LabVIEW MyRIO.

PepperChat: Integration of ChatGPT for intelligent conversations with the Pepper robot.

OpenCV and OCR for parking management.

Comparative Study: Path planning using search algorithms: DFS, BFS, and A*.

RoverBot: A mobile robot designed with mecanum wheels.

COVID-19 detection using support vectors, KNN, and perceptron.

## EXPERIENCE

### On-site Final Year Internship
**Generation Robots Bordeaux**

📅 March 1 to August 30, 2024

- **Focus of Internship:**
  - The internship focused on adding new functionality to the GR100 robot to enhance its security features. Over the six months, I worked on the development, implementation, and testing of algorithms that enable the GR100 robot to verify the integrity of an outdoor fence.
- **Tasks and Responsibilities:**
  - Conduct a state-of-the-art review.
  - Test and select the perception modalities for extracting the fence from the environment.
  - Develop algorithms to verify the regularity of the fence pattern.
  - Compress and optimize the model, then integrate it into the robot.
  - Establish a testing framework and conduct regular tests in short loops to collect data and experience to adjust the choices of techniques implemented

### On-site Research Internship
**Laboratory of Systems Engineering of Versailles (LISV) at Paris-Saclay University**

📅 June 19 to July 26, 2023

- The internship focuses on the interpretation and analysis of EMG signals, as well as the calculation and estimation of the elbow angle using MATLAB. This involves data collection for the triceps and biceps muscles, both with and without a 2 kg load, as well as MVC.

### Remote Application Internship
**CHU, Fez**

📅 August 1 to August 31, 2022

- Development of a mobile application to solve the problem of prescription validation.

### Summer Internship in China
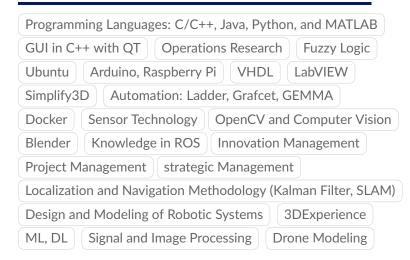**Global Summer School at Zhejiang University**

📅 August 1 to August 15, 2022

- Intelligent transport and smart mobility.
- IoT and intelligent service robots.

Differential drive control using a fuzzy logic controller.

Design and simulation in VHDL of an electronic lock.

Real-time object detection with MATLAB.

## SKILLS

Programming Languages: C/C++, Java, Python, and MATLAB

GUI in C++ with QT   Operations Research   Fuzzy Logic

Ubuntu   Arduino, Raspberry Pi   VHDL   LabVIEW

Simplify3D   Automation: Ladder, Grafcet, GEMMA

Docker   Sensor Technology   OpenCV and Computer Vision

Blender   Knowledge in ROS   Innovation Management

Project Management   strategic Management

Localization and Navigation Methodology (Kalman Filter, SLAM)

Design and Modeling of Robotic Systems   3DExperience

ML, DL   Signal and Image Processing   Drone Modeling

## COMPETITIONS

- OpenAI Stack Hackathon.
- African Robotics Brains22 Competition.
- The 5th edition of the National Robotics Competition (NRC) featuring Spider Robot.
- ALTEN AMSA 5 Robotic Arm Project.
- HultPrise Entrepreneurship Competition.

## On-site Observation Internship

**Floquet Monopole, Fez**

📅 July 1 to July 31

- Familiarized with the vehicle disc production line through various operations.

## CERTIFICATIONS

🏆 **Introduction to ML and DL**
Kaggle

🏆 **Specialization in Embedding Sensors and Motors**
Coursera

🏆 **Introduction to AI**
IBM

🏆 **Image Processing and Signal Processing**
MathWorks

## VOLUNTEERING

Head of Robotics Workshops, Treasurer, and Trainer.
**DIGICLUB**

Head of External Relations
**CYBERCLUB**

## LANGUAGES

English   French   Arabic   Spanish