

# MAHMOD EL SHAL

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## EDUCATION

**2023 - PRESENT**

**MSC ROBOTICS, THE UNIVERSITY OF MANCHESTER**

- Foundation in robotic systems, autonomous robots and robotic Manipulators.

**Robotic System Design Project | Group**

- Developing mobile robot (based on the Leo Rover robot) to autonomously retrieve an object from an unknown environment.
- Designing load cells for attaching sensors, cameras and a robot manipulator.
- Leading the development of the robot's software and implementing computer vision and machine learning algorithms utilising ROS 2, Gazebo simulation, and coding in Python and C++.

**2020 - 2023**

**BENG (HONS) MECHATRONIC ENGINEERING,**

**THE UNIVERSITY OF MANCHESTER**

- Solid understanding of core engineering concepts such as digital system design, power electronics, microcontroller engineering and Control Systems.

**Electronics Laboratory Work**

- Simulated different (silicon and silicon carbide) inverters' topologies using PLECS software to assess their performance and characteristics.
- Carried out fault-finding tests to troubleshoot various components on the designed circuit board.

**The Embedded System Project | Group**

- Designed and programmed an autonomous line following track buggy using STM32 microcontroller.
- Designed the chassis of the buggy using SolidWorks software, and the PCB using Altium designer. Achieved a total mark of 81%.

**Final Year Project | Individual**

Developed a ROS-based robot guide dog system for the blind.

- Conducted a robot simulation using Gazebo simulator to implement SLAM navigation algorithm for a quadruped robot.
- Used OpenCV computer vision library to implement object and facial detection application and developed a strong understanding of Computer Vision principles.
- Designed and 3D printed Haptic feedback unit that interfaces with the robot to provide reliable inputs for the user. Overall Grade: 77%.

**2019 - 2020**

**INTERNATIONAL FOUNDATION YEAR, INTO MANCHESTER**

- Chemistry (A\*), Mathematics (A\*), Physics (A\*)

## **EXPERIENCE**

**2020 - PRESENT**

**ONLINE TRANSLATOR AND DESIGNER**

- Provide translation services for articles, reports and thesis to clients and ensure long-term satisfaction.
- Working with clients cultivated various valuable skills, including effective communication and time management.

**2019 – 2020**

**TEAM MEMBER, PC REPAIRING CENTRE**

- Part of a team of 4 diagnosing computer problems, repairing both software and hardware and providing customer service.
- Responsible for building and setting up desktop PCs to be ready by the specified date.

**JAN 2018 – JUN 2019**

**MATHS TEACHING ASSISTANT, MGM EDUCATION CENTRE**

- Helped in preparing and marking tests for high school students and presented alternative methods for solving problems.
- Offered student support by providing guidance and study tips, aiding them in problem-solving and academic progress.

## **SKILLS**

- |                                       |                                |
|---------------------------------------|--------------------------------|
| • MATLAB, Simulink, LabVIEW           | • Microsoft office             |
| • PLECS, LTspice                      | • C, C++, Python               |
| • Fusion 360, Solidworks              | • Machine Learning             |
| • 3D Printing tools such as Ultimaker | • ROS / ROS2, Gazebo Simulator |

## **LANGUAGES**

- |           |          |           |
|-----------|----------|-----------|
| • English | • Arabic | • Italian |
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**References on Request**