Mostafa Ahmed Mahmoud Mohamed Qusit

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Education

Faculty of Engineering - Ain Shams University — Abdo Pasha, Cairo
Bachelor of Science (BSc) in Mechanical Engineering (Mechatronics Engineering Program) — *Sep. 2018 – July 2023*

- GPA: 3.43 (9th on my class)
- Graduation Project GPA: 4.0 (A+)

Experience

B1 Aircraft Maintenance Scheduling Engineer — May 2024 – Present
EGYPTAIR MAINTENANCE AND ENGINEERING - CAMO - Scheduling Dep. — *Cairo International Airport, Cairo*

- **Bill of Work (BOW):**
  - Prepared and managed comprehensive BOWs to ensure aircraft airworthiness and compliance with the Aircraft Maintenance Program (MP), service bulletins, and modifications.
  - Scheduled MP tasks in alignment with compliance deadlines, flight hours (FH), and flight cycles (FC).
- **Engineering Orders (EO):**
  - Received, evaluated, and scheduled EOs based on compliance deadlines, FH, and FC.
  - Ensured resources, materials, and man-hours were allocated effectively for EO execution.
- **Time-Controlled Items (TCI):**
  - Reviewed TCI lists to identify compliance due dates and scheduled tasks accordingly.
  - Monitored TCI progress and resolved delays to ensure timely completion.
- **Deferred Defects:**
  - Reviewed, prioritized, and scheduled deferred defects for resolution based on resources and compliance deadlines.
  - Coordinated with relevant departments to facilitate closure and follow-up.
- **Open Items:**
  - Scheduled and tracked tasks from Open Items Lists to meet compliance requirements.
  - Ensured timely resolution of all open items and prevented delays.

IT Programming Instructor — Sep. 2023 – May 2024
NASS Academy - WE School of Applied Technology - 1st Secondary Grade — *Nasr City, Cairo*

- Delivered engaging and interactive 4 main topics in **IT-related subjects:** *(Computer Architecture , Computer Networks , Intro. to computer programming and Python , IT Systems in Organization)*
- Integrated technology tools into teaching, including smart boards and Google Classroom, to enhance the learning experience.
- Fostered practical skills through hands-on activities and real-world projects.
- Assessed student performance using diverse evaluation methods, including quizzes, exams, and reports for international accreditation.
- Contributed to curriculum development by creating quizzes, question banks, and participating in grading process.
- Collaborated with colleagues to share best practices, refine teaching methods, and improve overall instruction quality.
- Enhanced teaching and presentation skills by adapting to dynamic classroom needs and implementing innovative approaches.

Embedded Software Engineer — Aug. 2022 – Sep. 2022
MASAR ELECTRIC - Embedded Systems Department — *Abdeen, Cairo*

- Developed and contributed to multiple embedded and automation projects, including:
  - Cooler Unit Project and Concrete Project, delivering efficient and reliable solutions.
- Implemented and integrated Human-Machine Interface (HMI) systems using DWIN DGUS II Touch Screen:
  - Designed and developed both front-end and back-end functionalities to enable seamless communication with microcontrollers.
- Engineered approximately 15 AVR embedded drivers across various layers:
  - MCAL Layer: Developed drivers for DIO, ADC, PWM, SPI, I2C, and other hardware abstractions.
  - HCL Layer: Created drivers for higher-level modules, including Keypad, LCD, and SD-Card integration.

Maintenance Engineer (Intern) Aug. 2021 – Sep. 2021

Royal Company for Ceramics Industry - Electrical Maintenance in sorting and packaging Dep. *El Obour City, Cairo*

- followed up the production line in detail, especially the sorting and packing part.
- Benefited and learned during maintenance operations, and understand potential and common faults, whether electrical, mechanical repairs, etc...

PROJECTS

Simple Online Store | *GitHub, VS Code, HTML, CSS, JavaScript, React* Sep 2023 – Oct 2023

- Designed and developed a simple online store using Front-End Framework called **React** (JavaScript-based).
- Implemented features like product listing, product details.
- Utilized React Hooks for state management and API calls.

M.A.H.R | *PlatfromIO IDE, ESP, ESP-NOW, IOT, Wi-Fi, Arduino, Python* Oct 2022 – July 2023

- A **M**ulti-function **A**utonomous **H**ousehold **R**obot, capable of navigating through the house on its own.
- **Autonomous Navigation:**
  - The robot is designed to navigate autonomously through the house, ensuring efficient movement and obstacle avoidance.
  - Motion Analysis: Implemented using MATLAB and Simulink to ensure stability during planar motion, enabling the robot to maintain balance while overcoming small obstacles.
- **Mechanical Design:**
  - Developed an optimized multi-material mechanical model using SOLIDWORKS to create a lightweight, yet rigid chassis (weighing 35 kg).
- **Manipulation System:**
  - Equipped with a 5 Degrees of Freedom (DOF) manipulator arm featuring: (Belt transmission mechanisms, Gear ratios, Differential wrist joint, Semi-soft gripper that adapts to the geometry of objects being grabbed)
- **Communication Capabilities:**
  - Integrated 4 communication methods, including: (USART, Wi-Fi, Bluetooth, ESP-NOW (for ESP boards only))
  - SIM800L Module: Allows the robot to make calls and send messages.
  - MP3 Module: Provides voice comments based on the robot's state for enhanced interaction.
- **Control and Feedback:**
  Control via a custom app and PS4 controller for manual or autonomous operation.
  Features live-streaming via a 2MP camera for real-time feedback and monitoring.
- **Custom PCB Design:**
  - The robot includes 2 custom-designed PCB boards for efficient management and integration of all components.
- **Software Architecture:**
  - Low-Level Control: Handled by ESP32 boards using PlatfromIO IDE (Application layer). *My Contribution*
  - High-Level Control: Managed by Raspberry Pi 4B using the Robot Operating System (ROS).

Service Towers Distribution - Optimization Problem | *Jupyter, Python* Feb 2023 – Jun 2023

- aimed to distribute service towers over a defined map, with certain constraints, using Python programming.
- 5 optimization techniques were used, Simulated Annealing **SA**, Genetics Algorithm **GA**, Particle Swarm Optimization **PSO**, Ant colony Optimization **ACO**, Grey Wolf Optimization **GWO**.

Machine Learning Model | *Jupyter, Python, OpenCV, TensorFlow* Oct 2022 – Feb 2023

- developed a ML classifier on the **CIFAR100** dataset using the OpenCV library and Python programming:
  Part 1: used **HOG** as Feature Extraction and (**KNN**, **K-means**, and **SVM**) as [3]Classifiers.
  Part 2: used **CNN** as Feature Extraction and Classifier.
  Part 3: used **CNN** as Feature Extraction and Classifier with the pre-trained model **VGG16** as a base model.

Mathematical Optimization Problem | *Jupyter, Python, NumPy, SymPy, SciPy* Oct 2022 – Feb 2023

- aimed to optimized a complex mathematical equation using Python programming.
- 3 optimizations methods were implemented: (Gradient Descent, Newton Raphson, and Steepest Descent).

Furuta Pendulum - Hybrid Control Problem | *Matlab, Simulink , Arduino* Oct 2022 – Feb 2023

- aimed to reach stability of the inverted pendulum through the rotation of the system's driven base.
- 2 Control techniques were used, linear-Quadratic Regulator Controller **(LQR)**, Proportional–Integral–Derivative Controller**(PID)**

3-Axis Parallel CNC Plotting Machine | *Arduino* Mar 2022 – Jun 2022

- A CNC M/C capable of drawing 2D pictures and writing using a pen (3 DOF).
- Was implemented using 2 different control algorithms: open loop using 2 stepper motors and closed loop using 2 PID-controlled DC motors and 2 encoders for the feedback and servo for Vertical motion(Pen up and down).
- An app was made to provide the CNC with the required text to be written.

RRR Serial Robotic Arm | *Arduino* April 2022 – Jun 2022

- An RRR (3 Revolute joint) serial robot capable of drawing numbers.
- Trajectory planning was implemented to achieve concise positioning, and Inverse kinematics were used to get the required angle of each joint.
- 3 servo motors were considered as an actuator with a built-in feedback element to optimize the control process.

Production Line and Storage Control | *Factory I/O, TIA Portal* Nov. 2021–Dec. 2021

- Designed and Implemented the Ladder Control Diagram of the Automation of the Production Line.

Courses & Trainings

Human Factors for Maintenance Engineers | *EGYPTAIR TRAINING ACADEMY* April 2025

Basic complementary Course for A&C Engineers | *EGYPTAIR TRAINING ACADEMY* Feb 2025

- Phase (1): Electrical Systems
- Phase (2): Avionics Systems

Aviation Regulation Course for Engineers | *EGYPTAIR TRAINING ACADEMY* Jan 2025

- Egyptian Civil Aviation Regulations (ECARs) by Egyptian Civil Aviation Authority (ECAA).

AMOS Software training for Scheduling/Planning Engineers | *EGYPTAIR M&E* Dec 2024 - Present

- Theoretical and Practical training with real-world application at work.

Basic Indoctrination for Aero./Mech. Engineers | *EGYPTAIR TRAINING ACADEMY* Aug 2024 – Nov 2024

- Phase (1): Inspection Procedures
- Phase (2): Power Sources & Avionics
- Phase (3): Airframe Systems (I)
- Phase (4): Airframe Systems (II)
- Phase (5): Engine Systems (I)
- Phase (6): Engine Systems (II)

Pre Basic for Mechanical Engineers | *EGYPTAIR TRAINING ACADEMY* July 2024 – Aug 2024

- Aerodynamics
- Aircraft Performance
- Engine Performance
- Digital Techniques
- Weight and Balance

Aircraft Maintenance Planning & Scheduling For Engineers | *AACO Training Center-RTC* June 2024

Embedded Systems | *Eng. Ahmed Abd El-Ghafar* July 2024 – Present

- C Programming, Data Structure and algorithms.
- Microcontroller Interfacing.
- Automotive Protocols (CAN, LIN), AUTOSAR and MISRA C.
- Automotive, Bootloader and ARM Cortex M4 Architecture.
- Real Time Operating System (RTOS)

E-Waste Refurbishment Curriculum Train-OF-Trainers | *Electronics Research Institute* Feb 2024

Competency-based learning Training | *Ministry of Education and Technical Education* Dec 2023

Full-Stack for beginners | *NASS Academy - WE School* Sep 2023

- Front-End: HTML, CSS/Bootstrap, JavaScript/React.
- Back-End: Node.js, Express.js, MySQL.

Create a Financial Statement using Microsoft Excel | *Coursera* Sep 2023

MATLAB Onramp | *MathWorks* Oct 2022

Simulink Onramp | *MathWorks* Oct 2022

Basic programming and operating CNC Milling centers using Fanuc Oi | *AOI Academy* Oct 2021

- learn G-code & M-code programming.
- program simple contour milling and drilling cycles.
- program, operate and set up 3-axis CNC Milling M/C using Fanuc Oi.

Fundamental Embedded Systems | *Eng. Hussien Hossam* Feb 2021 – Sep 2021

- C Programming Language, Data Structure Algorithms.
- Embedded Systems by AVR Microcontrollers.

Building Arduino robots and devices | *Coursera* Sep 2020

Introduction to Programming with MATLAB (level 1/3) | *Coursera* Sep 2020

Programming for Everybody (Getting Started with Python) (Level 1/5) | *Coursera* Sep 2020

Supply Chain | *IDT Student Activity* April 2020

Lean Manufacturing, 6-sigma, Quality, etc...

SKILLS

- **Computer Applications:**
  - MS Office (Excel, PowerPoint, Word)
  - Aviation Maintenance & Operational Systems (AMOS)
- **Mechanical Design:** SOLIDWORKS, Inventor, AutoCAD
- **Languages:** Arabic (Native), English (Professional)
- **Programming:**
  - Languages: Python, C/C++, SQL (MySQL), JavaScript, HTML/CSS, MATLAB/Simulink, G-Code
  - Frameworks: Arduino, Bootstrap, React, Node.js, Express
  - Tools: Git, GitHub, VS Code, PyCharm, IAR, Microchip/Atmel, PlatfromIO IDE, Jupyter, Arduino IDE
  - Boards: AVR, ESP32, STM32, ARM Cortex M4
  - Libraries: Python(NumPy, SymPy, SciPy, Pandas, Matplotlib, OpenCV, TensorFlow)
- **Soft Skills:** Teamwork, Communication, Problem Solving, Time Management, Adaptability, Public Speaking.