

Mohamed Aly

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SUMMARY

Mechatronics Engineer with a strong programming background and solid hands-on experience in **Python and C++**, with a focus on **object-oriented programming and data analysis**. Practical industry experience in testing and validation environments, including automated analysis of large datasets and development of internal tools to support engineering teams. Highly motivated, detail-oriented, and eager to continuously learn and apply software-driven solutions to real-world engineering problems.

EXPERIENCE

Intern in Validation for Electric Drives and Machines

ZF Friedrichshafen

Nov 2023 – Mar 2024, Schweinfurt, Bavaria, Germany

- Supported the validation and testing of automotive systems through hands-on involvement in test setups, execution, and evaluation
- Developed Python scripts for automated analysis of time-series and endurance test data, significantly reducing evaluation time and improving data consistency
- Performed data processing and visualization to support technical decision-making within development and validation teams
- Designed and maintained internal dashboards using Vue.js to present test results in a clear and structured manner
- Collaborated closely with cross-functional engineering teams to align test results with development goals and quality requirements

Electrical Technician (Installation & Maintenance)

FA Kaefer

Jan 2023 – Mar 2023, Gochsheim, Bavaria, Germany

- Performed electrical wiring and installation for gate and door systems, control units, and access control technologies
 - Assisted in the assembly, maintenance, testing, and repair of electrical and electromechanical systems
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PROJECTS

Bachelor Thesis

- Designed and implemented a software-controlled DC motor system with a focus on control logic and signal processing
- Developed PWM-based control logic to regulate motor speed with predefined duty-cycle levels
- Implemented control prioritization logic between PLC inputs and microcontroller-based signals
- Simulated and validated system behavior using LTspice before hardware implementation
- Followed a structured engineering workflow (requirements → design → implementation → testing → documentation)
- Emphasis on programming logic, system behavior analysis, and test-driven validation

Technical Projects (Study)

- Developed multiple embedded software applications using C/C++ on microcontroller platforms (Arduino)
 - Implemented PWM-based motor control, sensor data acquisition, and actuator control through structured code
 - Designed and simulated electronic circuits to support software-driven system behavior
 - Performed testing, debugging, and validation of software-hardware interactions
 - Applied programming concepts such as modular code structure, state-based logic, and basic object-oriented design
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EDUCATION

Bachelor of Engineering (B.Eng.) – Mechatronics

Technische Hochschule Würzburg-Schweinfurt · Schweinfurt · Oct 2021

Bachelor of Science in (Transferred)

Arab Academy for Science and Technology · Cairo, Egypt · Sep 2018 – Oct 2021

IGCSE (High School)

Sherborne School · Doha, Qatar · Aug 2016 – Jun 2018

SKILLS

Validation & Test: Automated Data Analysis with Python, Technical Documentation

Embedded Systems & Electronics: C/C++ (Embedded), Arduino, PWM-Motor control

Automation & Tools: PLC (STEP 7, TIA Portal), MATLAB, AutoCAD, Fusion 360, Git, MS Office

Circuit Design & Simulation: LTspice, Proteus

Deutsch, Englisch, Arabisch, Französisch
