

# Rayfa Chaabane

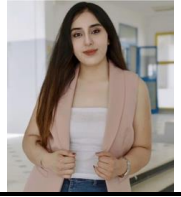
## Electrical Engineer

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Mannheim, Germany



## Summary

Electrical Engineer with a background in Industrial Automation and Industrial Computing. My accomplishments include automation, programming, electrical and mechanical design, and implementing advanced solutions in electronics and robotics. My problem-solving skills set me apart.

## Education

- **Exchange Program in Data Science at** , Philipps-Universität Marburg, Germany, 2025 - Present
- **Exchange Program in Electrical Engineering at** Fachhochschule Schmalkalden, Germany, 2023 - 2024
- **Master's Degree in Mechatronics Engineering at** Esprit: Private higher school of Engineering and Technology, Ariana, Tunisia, 2021 – Present
  - All coursework completed, thesis pending
- **Bachelor's Degree in Electrical Engineering |** ISET: Higher Institute of Technological Studies, Sousse, Tunisia, 2018 - 2021
- **Baccalaureate Degree in Mathematics |** High school Sahafa, Ariana, Tunisia, 2018

## Experiences

### Intern

#### Roche Diagnostics GmbH, Mannheim, 12/2024-present

- Designed and prototyped various PCBs, including innovative adapters for removable biosensors, enabling flexible usage of different biosensor types, Flexible PCB and DC DummyCell PCB for sensor validation.
- Utilized SolidWorks to design and prototype detailed 3D model of the Biosensor System.
- Gained practical expertise in the assembly and functionality testing of Biosensors, enhancing technical competence in biosensing technologies.

### Intern

#### RCI3D, Tunisia, 07/2023-09/2023

Engineered and executed a filament rewinding system for 3D printing filament extruders by utilizing SOLIDWORKS for mechanical design.

- Fabricated a functional model of the rewinding system employing 3D printing techniques.
- Increased system reliability by successfully integrating Arduino programming.

### Intern

#### RCI3D, Tunisia, 07/2022-08/2022

Designed and developed a test bench to assess the functionality of distance sensors by utilizing SOLIDWORKS. Spearheaded the development and execution of a specialized test bench for sensor performance evaluation.

- Improved testing efficiency by delivering the test bench project ahead of schedule.
- Crafted a 3D-printed model of a test bench, demonstrating precision and quality in design.
- Received commendation for exceptional teamwork and problem-solving skills.

### Intern

#### STERAS, Tunisia, 02/2021-06/2021

Automated an air treatment plant using PXC4.E16 controller and Siemens ABT sites software with focusing on regulation of air temperature and pressure.

- Constructed a scale model of the air treatment unit, whilst demonstrating design and functionality
- Designed a user-friendly mobile interface and enhanced remote monitoring capabilities.
- Demonstrated innovative problem-solving, receiving positive stakeholder feedback.

**Intern**  
**IEPI D'OR, Tunisia, 01/2020–02/2020**

Programmed and controlled temperature regulation for dough extrusion devices using S7-300 controller and STEP7 software. Conducted extensive testing and calibration for optimal temperature control.

- Developed intuitive HMI displays, improving user experience and operational efficiency.
- Recognized for innovative solutions in temperature control, contributing to process improvements.

## **Key Academic Projects**

### **Automated Warehouse**

- Enhanced warehouse efficiency through automation using Siemens S7-1500 PLC with TIA portal software for PLC programming and Factory IO, including database management, automatic/manual modes, and security features.
- Streamlined operations with custom HMI programming and improved system control.

### **Four Axis ROBOT Arm**

- Developed a proficient pick and place robot arm with four joints, utilizing SOLIDWORKS for mechanical design.
- Programmed the arm using Arduino IDE aimed at enabling precise movements and tasks execution.
- Implemented a MATLAB interface and wireless control to enhance the robot arm's functionality.

### **Automatic Security Car**

- Designed an automatic security car capable of medical emergency detection aimed at reducing accident risks, using SOLIDWORKS for mechanical design.
- Contributed to programming using RASPBERRY whilst incorporating advanced detection and response features.

### **ERP Implementation Project Manager**

- Led the SAP-based ERP implementation to streamline Material Management, Product Planning, and Enterprise Asset Management.

### **Automated Water Storage Model**

- Achieved optimal level control in a water tank using a Siemens S7-1200 PLC and TIA Portal, including database and digital/analog control modes.
- Designed and programmed HMI TP700 to enhance system monitoring and control capabilities.

### **Credit Card Clients**

- Enhanced a credit card using Machine learning algorithms and Anaconda software, Completed the following steps: Data preparation, Feature selection, testing decision tree and random forest algorithms, Calculated AUC for the algorithms and chose the best algorithm.

## **Technical Skills**

PLC - TIA Portal | Isis Proteus | LabVIEW | MATLAB-Simulink | Siemens NX | SolidWorks | SolidCAM | Catia | C | C++ | Global SAP system | SCADA Automation | Python | HMI | Microsoft Office | KiCAD | Altium CAD | Adobe | CST Studio

## **Areas of Expertise**

HMI & PLC Programming  
MATLAB & Wireless Control Systems  
System Troubleshooting & Maintenance  
Robotics & Mechatronics Engineering

Mechanical Design  
Rapid Prototyping  
Industry 4.0  
Heat Transfer & G&DT

ERP Implementation  
Project Management  
Computer Vision  
Machine Learning & IOT

## **Certifications**

- Certification of Advanced level of Siemens Academy in Automation
- Certified SOLIDWORKS Associate
- Certification of Application of AI for Predictive Maintenance

## **Languages**

Arabic, Native | French, Fluent | English, Fluent | German, Beginner