Mohammed Ahmed Abdellah Mohammed

Model Based Development | Embedded SW Engineer

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Profile

Model-Based Development Engineer with hands-on experience in the automotive and renewable energy sectors, working under V-model and MAAB standards. **Skilled in** C/C++, MATLAB/Simulink, and Embedded Systems, with a strong foundation in Model-Based Design, Unit testing, and SW Debugging. **Continuously** seek new opportunities to expand my expertise in challenging environments.
Passionate about problem-solving, bug fixing, and SW optimization. **Curious, hardworking, and self-motivated** with a keen eye for detail. with a Strong ability to learn, explore, and innovate to solve complex problems.

Education

2016 – 2021 **Bachelor's degree of Electrical Engineering,** *Assiut University*
Grade: Good | 73.3% **Graduation Project**: Team Leader | Full marks

2024 – present **Master's degree of Electrical Engineering,** *Assiut University*

Work Experience

Apr 2024 – present
Full Time

Model-Based Development Engineer, *Soch Solar Systems LLP*
- Designed and optimized a **PMSM FOC** model using MATLAB/Simulink on an **NXP** board, adhering to **V-model** SDLC and **MAAB** guidelines.
- Developed automated **MATLAB scripts** for startup routines, protected model generation, and model structure modification.
- Integrated **Git-based CI** pipelines to auto-generate commit comparison reports.
- Optimized execution time by **30%** and memory usage by **10%**.

Jul 2023 – Apr 2024
Part Time

Junior R&D Embedded SW Engineer, *Soch Solar Systems LLP*
- Extended firmware features and maintained version control via Git.

Oct 2021 – Jul 2022
New Vellage, Giza

Junior R&D Embedded System Intern, *Valeo Egypt Internship*
- Collaborate with the team on some Projects for various OEMs on **CoreALM** platform using **Git**.
- Engaged in the full software process **V-cycle**. which included:
  - Requirements writing and reviewing using **DOORs**.
  - Component Design using **doxygen**.
  - Planning, executing, and reviewing tests at each stage, including:
    - Unit Testing using **vectorCast**.
    - Static Testing on **MISRA-C** (Required, and Mandatory rules) using **Klocwork**.
    - Integration Testing using **IAR**, **Eclipse, Melexis**, and **Muxtrace** debuggers.
    - Validation Testing using **Vector CANoe**.
  - Ensured report traceability with **Reqtify**.
- contributed to bug fixing and optimized the execution time. Valeo Internship Certification

Technical Skills

Model-Based Development
MATLAB/Simulink - Stateflow - Embedded Coder - Git

Interfacing
- *8-bit Microcontrollers based on AVR and PIC*
  - MCAL and HAL full Implementation "*GitHub*"
- 32-bit Microcontrollers Based on Arm Cortex M4/M3
  - Using the Standard SW Interface *CMSIS on Projects.*
  - Configure the Drivers using STM32CubeMX

Real Time Operating System - RTOS: (FreeRTOS)

Programing Experience:
- C/C++ | MATLAB | Python
- OOP (*Object Oriented Programming)*
- Data Structures and Algorithms

Communication
UART | I2C | SPI (Implemented on AVR - ARM)
UDS: used in Projects using (CAN - LIN)
Ethernet and FlexRay (Introductory insight).

Introductory Insight (AUTOSAR - ISO26262 - ASPICE)

Soft Skills

- Ability to communicate technical information effectively
- Strong ability to learn, explore, and innovate
- Adapting to any difficult environment
- Thrives under high pressure
- Quick execution of tasks
- Strong presentation skills

Courses & Diplomats

Nov 2024 – Mar 2025 **Model-Based Development Diploma**, *OS Academy*
- MBD Concepts
- MATLAB / Simulink Baiscs
- MATLAB Scripting
- Arduino Support Package
- PID Controller Design
- Stateflow Design
- System Modeling
- Model Architecture
- Embedded Coder
- Battery Management System (Mega Graduation Project)

Detailed progress is documented in my **LinkedIn posts** .

Mar 2024 – Mar 2024 **AUTOSAR Architecture (Learn from Scratch with Demo),** *Pranesh Kumar (Udemy)*
- Layered Architecture (Layers, Stacks)
- Integration Process

Dec 2022 – Dec 2023 **Embedded System Mastering,** *FastBitLab*
- C language
- ARM Architecture
- IF 1: (GPIO | ADC | TMR | UART | SPI | I2C)
- IF 2: (PWM | CAN | RTC | Power Modes)
- IF 3: (LCD | TFT), Bootloader and DMA
- RTOS (FreeRTOS) on STM32Fx with Debugging

Jul 2020 – May 2021 **STM32 - ARM Cortex-M4,** *E/ Ahmed El-deeb*
- ARM Architecture
- Drivers Implementation (GPIO | DMA | TMR | ADC | UART | SPI)

May 2020 – Jul 2020 **UT.6.20x: Embedded Systems - Shape The World,** *The University of Texas System*
- Microcontroller Input/Output
- Multi-Threaded Interfacing.
- ARM Cortex M "Tiva C".
- Real-Time OS(RTOS).

Projects

Apr 2025 – Jun 2025 **Battery Management System,** *OS Academy (Mega Graduation Project)*
Architected and delivered firmware for a 3-cell Li-ion battery pack on STM32F4, featuring:
- Real-time monitoring of cell voltages, temperatures, pack voltage/current at 10 kHz sampling.
- Main state machine managing modes (Standby, CC, CV, Driving, Fault) and secure relay control.
- SOC/SOH estimation via Coulomb counting and OCV Correction with ±3 % accuracy.
- Current-limit calculation with ±0.01 A resolution and Cells balancing logic.
- Fault detection and response within 50 ms.

Aug 2021 – Jan 2023 **micro-Phasor Measurement Unit,** *Smart Grid Lab*
uPMU: A High-Accuracy Measurement Device with 512 samples per cycle.,
- Utilizing an external 16-bit resolution 200 MSps ADC and Designed the PCB using EasyEDA.
- Optimized measurement time for 16 signals, reducing it from 6 µsec to 1.5 µsec.
- Developed the SW from drivers to application on the STM32F407 DevBoard.
- Implemented the DFT algorithm to estimate measurements.
- Designed a LabVIEW GUI, and validated the Project in Real Time Simulator form Opal-RT.

Jul 2020 – Aug 2021 **Building Management System based on Mobile Application,** *Graduation Project*
Developed a Smart Plug that works with existing infrastructure, allowing users to control devices and monitor their usage through a Flutter Mobile App. Enabling real-time tracking of electrical high accurate readings and usage analysis.

Jun 2020 – Dec 2020 **Electric Vehicle Manufacturing Rally,** *EVER Egypt*
Designed the Electric Car Model (Battery System, Buck Converter, Inverter, and Brushless Motor) and Configured this Blocks on MATLAB Simulink to simulate the Driving Cycle.

Mini Projects

- Comprehensive PMSM Control
- Cruise Control System
- Throttle Position Sensors
- Accelerator Pedal Position Sensor
- Solar Panel Tracker
- Auto-Irrigation Control System
- Auto-Tune PID Control Module
- Energy meter with theft detection
- Framework Over The Air (FOTA)

Awards

2st Place Winner, *African Forum for Innovation and Technology*
Nov 2021

1st Place Winner, *Abu Dhabi University 8'th Competition*
Jun 2021

Best Newcomer Electric Vehicle Rally, *EVER EGYPT*
Dec 2020

Languages

English (B2 - Level)

Certificates

Problem Solving (*HackerRank*)

Advanced C Programming (*Ahmed Adel (Udemy)*)

UT.6.20x: Embedded Systems - Shape The World: Multi-Threaded Interfacing (*The University of Texas System*)

UT.6.10x: Embedded Systems - Shape The World: Microcontroller Input/Output (*The University of Texas System*)

Introduction to Programming with MATLAB (*Vanderbilt University*)