Omar Mahmoud

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- Software development, debugging & troubleshooting of bare-metal applications.
- Developed low-level drivers and embedded software in C for different sensors and microcontrollers.
- Interested in Control systems engineering, Robotics, Embedded systems, Mechatronics.

Work Experience:

Design Engineer | DezignArena **August 2021 – Present**

- Engineered embedded software development, debugging & troubleshooting of bare-metal applications.
- Delivered low-level drivers based on I2C, SPI, USART for different sensors and microcontrollers in C/C++.
- Optimized a product design, saving 20% of the actuators in a project, internal components space, driver circuitry space on the PCB and reducing Firmware complexity.
- Contributed to the following projects
    - Thermal imaging project
    - Tracker unit project
    - Laboratory device

Design Engineer | iHub: Innovation Hub **March 2020 – July 2021**

- Directed mechatronics design and integration of subsystems.
- Restructured a pneumatic circuit of a project, cutting 30% of development effort and increased output accuracy to match a Fluke gas analyzer.
- Contributed to the following projects
    - Ventilator Project
    - Tracker unit project
    - Smart meter project

Design Engineer | BEEC **August 2018 – March 2020**

- Designed consumer electronics products enclosure of 3 projects.
- Extracted PCB boundaries, connectors placement for HW team for around 5 PCBs.
- Contributed to the following projects
    - Irrigation monitor device
    - Gate controller device, second version
    - Gate controller device

Skills:

- **Programming Languages**: C, Embedded C, C++, familiar with MATLAB, GNU Octave & Python.
- **Software**: GNU/Linux, Ubuntu, Git, Vim, QEMU, CMake, GNU Make.
- **Hardware**: STM32, ARM Cortex-M4, ARM Cortex-M3, AVR

Projects:

Thermal imaging project **April 2022 – Present**

A device used to capture thermal imaging streams of data.

- Research regarding LVDS interfacing and control of a thermal imaging sensor.

Tracker unit project **Dec 2021 – April 2022**

A device to be attached in an automobile that sends location and time data over LTE. The device runs on STM32F401, ARM Cortex-M4 core.

- Delivered low-level driver in C for an I2C battery monitor sensor & SPI flash memory IC.
- Implemented a strategy pattern to switch modes of operation.

Laboratory device **April 2021 – Nov 2021**

A device that semi-automates a lab test based on the client's research paper on detecting salmonella infection.

- Optimized a product design to save about 20% of the actuators in a project, thus, saving internal space, driver circuitry space on the PCB and reducing Firmware complexity.
- Designed a non captive lead screw mechanism.

Ventilator Project **March 2020 – April 2021**

An invasive type ventilator that delivers required flow and pressure values within the required time frame. The device is based on the AVR core.

- Restructured a pneumatic circuit of a project to cut 30% of development effort and increased output accuracy to match a Fluke gas analyzer.
- Calibrated sensors' readings - through curve fitting - with reference to Fluke gas analyzer.

Tracker unit project **June 2020 – December 2020**

A low power device that sends location and time data through LTE.

- Provided PCB boundaries, connectors' coordinates to the HW design team.
- Designed I2C bus, crystal oscillator circuit.

Smart meter project **March 2021 – April 2021**

A device that connects to utility meters through M-bus.

- Designed the enclosure, PCB mounting & provided connectors coordinates to the HW design team

Irrigation monitor device **August 2018 – September 2018**

A device built over a flow meter, it receives flow meter readings and sends it over various communication channels.

- Designed the enclosure, PCB mounting & provided connectors coordinates to the HW design team

Gate controller device, second version **September 2018 – October 2018**

An updated version of an earlier device with extra features. for the same client.

- Designed the enclosure, PCB mounting & provided connectors coordinates to the HW design team

Gate controller device **August 2018 – September 2018**

A device that mount over gates and control the gate based on QR scanner and wireless connection

- Designed the enclosure, PCB mounting & provided connectors coordinates to the HW design team

Education:

Assiut University **September 2013 – June 2018**

B.Sc. in Mechatronics Engineering. **Cumulative Grade: Very Good, 2nd Top.**

Graduation project **Grade: Distinct**

Low cost robotic gloves for people with disabilities.

Personal info:

Cairo, Egypt | Military service: completed | Birthdate: Dec 1995 | Graduated in 2018