AHMED HASSAN

Embedded Software Engineer.

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EDUCATION

2016-2021 **Bachelor's Degree (Certificate)**
Faculty of Engineering, Fayoum University

- Bachelor of Computer and Systems Engineering.
- *Graduation Project:* Sightful, an embedded device to help people with visual impairments to be more aware about surroundings.
  Technologies used: Embedded Linux (Raspberry Pi), AI and Machine Learning.

2013-2016 **High School (Certificate)**
Salah Salem High School in Fayoum
Science and Mathematics Division.

Military Status: Exempted

COURSES

Jun, 2019 - Nov, 2019 **Embedded Systems Diploma (Certificate)**
IMT School

- Embedded Systems Concepts and Embedded C Programming.
- AVR Micro-controller Interfacing.
- Tooling and Testing.
- *Final Project:* Mobile Controlled and Obstacle Avoidance Robot.

Jul, 2020 - Oct, 2020 **ARM Architecture Diploma (Certificate)**
IMT School

- ARM Architecture and Programming Model.
- STM32 Micro-controller Interfacing.
- IOT Concepts.
- *Final Project:* On the Air Programmer (OTA).

Mar, 2021- May, 2021 **Embedded Automotive and AUTOSAR Device Drivers (Certificate)**
Mohamed Tarek

- AUTOSAR Layered Architecture and Device Drivers.
- AUTOSAR and C MISRA Rules
- Automotive buses LIN and CAN.
- Implement DIO and PORT AUTOSAR Driver for TM4C Micro-controllers
- *Final Project:* Apply the full layered architecture model.

TECHNICAL SKILLS

- **Programming Languages.**
  C, C++, Java, Kotlin, Python and Dart.
- **Microcontrollers Interfacing.**
  AVR, STM, TIVA-C and PIC.
- **Sensors Interfacing.**
  PIR, IR, Ultrasonic and more.
- **Communication Protocols.**
  SPI, I2C, UART, CAN, LIN, USB.
- **IoT.**
  NodeMCU Board (ESP8266).
- **Embedded Linux**
  Working with Raspberry Pi.
- **RTOS.**
  FreeRTOS and building simple Scheduler based on Time Triggered Embedded Systems.
- **AUTOSAR**
  AUTOSAR Layered Architecture and Device Drivers.
- **Problem Solving**
  Algorithms and Data Structures.
- **Mobile and Web Applications Development.**

PERSONAL PROJECTS

- **OTA Programmer (GitHub).**

  OTA Programmer for STM32 Micro-controller using NodeMCU Board to flash hex file on MCU using website wirelessly with the bootloader flashed in the STM32 Flash Memory. The user uploads a hex file using the website, then NodeMCU reads the file content from the internet and start sending it. On reset, STM waits for 5 seconds for received code and after receiving all code and flashing it in application area of the Flash Memory it starts to run the code. If it didn't receive anything for 5 seconds, it will run the last flashed code in the application area. (Illustrating Video).

- **OS Scheduler (GitHub).**

  OS Scheduler to schedule one-shot or periodic tasks in C program for microcontrollers. The user configures the number of tasks then add each task with its first call time and period time.

- **AUTOSAR Drivers (GitHub).**

  Implementation of AUTOSAR Port and DIO Drivers for TM4C Micro-controller and implementing its configuration tool to generate configuration files automatically.

- **MIPS Single Cycle Processor (GitHub).**

  Implementation of Single Cycle MIPS Processor in System Verilog. The processor can execute assembly R-type and I-type instructions like (`add, sub, sll, or, mult, div` and more).

- **Mobile Controlled Robot (GitHub).**

  Mobile controlled robot that can be controlled using mobile application. It can avoid obstacles using Ultrasonic Sensor. When the robot is not moving, a buzzer will beep when any movement is detected with PIR Sensor.

- **Digital Multimeter (GitHub).**

  Auto-range Digital Multimeter based on (ATmega32) which has Ohmmeter measures from 5 Ohms to 3 Mega Ohms, DC Ammeter measures from 5 mA to 2 A, AC Ammeter measures from 5 mA to 50 A, DC Voltmeter measures from 5 mV to 55 V and AC Voltmeter measures from 5 V to 1000 V.

- **Morse Code Translator (GitHub).**

  A device based on (ATmega32, Touch Sensor) can receive a morse code from the user via the touch sensor. The device converts the entered code into text that is displayed on the LCD. Conversely, the user can enter text using (4*3 Keypad), such as the old phone, and the device will translate it to Morse Code using buzzer beeps.

- **Electric Water Heater (GitHub).**

  Electric water heater based on (PIC, and PICGenios Board) built for Swift Act Company Internship.

- **Hardware Calculator (GitHub).**

  Hardware calculator based on (ATmega32) uses keypad and LCD to perform mathematical operations.

- **Safety Jacket for Baby (GitHub).**

  Safety Jacket contains temperature, flame, smoke, IR and other sensors to send an SMS Message using GSM Module if anything unusual happens around the baby. The project is implemented with STM32 and Arduino Nano.