Ahmed Ali Mohamed Ali

Embedded Software Engineer

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Education

2019 – 2024 Zagazig, Egypt	**Mechatronics Engineering** *Zagazig University* An undergraduate student at the Faculty of Engineering, Department of Mechatronics Engineering,

Courses

|	
2023 – present Egypt	**Mastering Embedded System** ⬈ *Eng. Keroles Shenouda* 1. Introduction of Embedded Systems. 2. C/Embedded C in depth 3. Bootloader with its 3 phases 4. Data Structure for Embedded Systems, creating Full Project using linked list &FIFO &LIFO 5. BareMetal projects starting from our startup.s/startup.c file, Linker_script.ld, MakeFile using cross-toolchain. 6. Implementing STM32F103C6 & ATMEGA32 all Drivers • (GPIO,EXTI,USART,SPI,I2C,TIMER,ADC) 7. Mastering RTOS and making our own RTOS 8. Mastering Can Protocol • Can See All Drivers from this link ⬈ • And Simulations from this link ⬈
2022/07 – 2022/10 Cairo, Egypt	**Embedded Software Engineer** ⬈ *Mohamed Tarek Courses* Full Embedded Systems Diploma under the supervision of Engineer Mohamed Tarek, The Diploma covered the following topics: - Basic Concepts of Embedded Systems. - C Programming. - Data Structures (Linked-List, Stack and Queue). - AVR Micro-controllers Interfacing (Implement all the drivers). - C For Embedded Applications (Embedded C). - Real Time OS(RTOS). - Software Engineering. - Embedded Tools. - HW Labs. • Programming Languages (C) • Algorithm. • Control Systems.

Projects

2023 – 2024   **Graduation Project** ⌐
- The project aims to make a Modified and creative features for advanced driver-assistance system (ADAS) like (Face Recognition System, Traffic Signs Recognition System, Driver Monitoring System, Adaptive Cruise Control, Internal Wheel Jack) and apply them in real and big scale car using an STM32F103C6 microcontroller and FreeRTOS as operating system.

2023   **Smart Car Parking System** ⌐
- The project comprises an access control system utilizing an STM32F103C6 microcontroller with drivers for various components. It enables administrators to set passwords in EEPROM, manage users via IDs, and upon RFID match, display a welcome message on the LCD while activating a servo motor to 90 degrees. A PIR sensor triggers the servo to return to 0 degrees for controlled entry and exit gate access."

2023   **My OWN RTOS** ⌐
- MY RTOS is a project that seeks to revolutionize real time operating systems by providing performance, dependability and adaptability. As we tackle the intricacies of embedded systems, IoT devices and other real time applications MY RTOS has been developed to cater to the changing needs of these environments.

2023   **Distance Measuring System**
- The project integrated an ATmega32-based subsystem for precise distance measurement, utilizing GPIO, ICU, an Ultrasonic Sensor, and an LCD. This setup allowed the ATmega32 microcontroller to capture sensor signals via ICU, manage input/output tasks with GPIO, and display accurate distance measurements on an LCD screen.

2022   **Fan Speed Controller with Temperature**
- The project implemented a fan speed controller and temperature regulator, utilizing GPIO, ADC, PWM, LM35 sensor, LCD, and DC Motor drivers with an ATMega32 microcontroller. It ensured accurate fan speed control within a 10% range by monitoring temperature fluctuations via the LM35 sensor. The microcontroller managed temperature readings through ADC and adjusted fan speed using PWM signals, displaying real-time temperature feedback on the LCD for effective environmental control.

2022   **Door Locker Security Systems**
- The project aims to create a password-operated door unlocking system using an ATmega32 microcontroller with GPIO, Keypad, LCD, Timer, UART, I2C, EEPROM, Buzzer, and DC-Motor drivers. It manages access control through password entry via the Keypad and displays the system status on the LCD. The Timer module handles timing operations, UART enables serial communication, I2C interfaces with external devices, and EEPROM stores password data. Upon correct password input, the system activates the DC-Motor to unlock the door and provides feedback via the buzzer, ensuring controlled access.

2022   **Traffic Light System** ⌐
- The project plans to simulate and regulate a traffic light system using an ATmega32 microcontroller with GPIO, LCD, Timer, 7-segment display, Buzzer, and DC Motor drivers. It will control traffic signals via GPIO, time their sequences with the Timer, and display auxiliary information on the 7-segment display. The buzzer might signal events, and a DC motor could be used for specific functionalities. The goal is synchronizing and managing traffic flow, showcasing signal light control through the specified microcontroller and drivers.

2022	**Measurement System**
	• Developed and implemented a multi-sensor system utilizing an ATmega32 microcontroller and various drivers (GPIO, LCD, Timer, Buzzer, LM35, MQ2, PIR, Ultrasonic, Interrupt, Keypad, ADC). Integrated temperature, motion, gas detection, soil moisture, and distance measurements, optimizing data collection and processing efficiency.
2022	**Stop-Watch**
	• The project aims to build a stopwatch system utilizing an ATmega32 microcontroller with GPIO, Timer, External Interrupts, and 7-Segment drivers. It manages input/output via GPIO, controls timekeeping with the Timer, and captures external events using Interrupts. Interfacing with a 7-segment display, the system accurately showcases elapsed time. The ATmega32 microcontroller orchestrates these components to control the stopwatch's timing mechanism and display the elapsed time effectively.
2023	**Pressure detection system** ⊡
	• The STM32F103C6-based system is designed to detect pressure using a sensor within a 1-byte range. Upon detecting pressure up to 20 bars in decimal, the system activates an alarm, represented by an LED, which remains on for 60 seconds.

Skills

Troubleshooting	●●●●○	Implemented innovative problem-solving techniques	●●●●○
Fundamentals of Embedded systems.	●●●●●	Real time Operating system (RTOS)	●●●●●
Software Engineering	●●●●○	PIC and Atmega and Cortex M3/M4 Microcontrollers	●●●●●
C for Embedded Applications (Embedded C)	●●●●●	MATLAB and Simulink	●●●●○
C Programming and C++ object-oriented programming	●●●●○	Version Control Systems (GIT)	●●●●●
Familiar with GDB COMMANDS	●●●●○	Familiar with MAKEFILE	●●●●●
Familiar with Ethernet	●●●○○	Familiar with Adaptive AUTOSAR	●●●○○
Agile Scrum	●●●●●	JIRA	●●●●●
Very Good Knowledge in CAN protocol	●●●●○	TTool and UML digrams	●●●●●
MISRA C	●●●●○	CANoe	●●●●○

Languages

Germany	**English**	**Arabic**
A1	B1+	