

ALI ELGAZZAR

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EMBEDDED SOFTWARE ENGINEER

Embedded Software Engineer with nearly 3 years of experience developing low-level software in Radio Frequency and automotive domains, contributing to projects. Skilled in implementing hardware drivers and integrating communication protocols including UART, SPI, I2C, CAN, and LIN, with hands-on experience using AVR microcontrollers (ATmega32). Proficient in Embedded C, with expertise in MCAL and HAL layer development, RTOS integration, and testing strategies. Experienced in delivering scalable, reliable embedded solutions within cross-functional teams, with a strong passion for real-time systems, continuous learning, and high-impact engineering.

- Low-level C and Embedded C Programming • Microcontroller Programming • MCAL & HAL Layer Development
- Driver Implementation • Serial Communication and Embedded Protocols • Hardware Abstraction
- Real-Time Operating Systems • Cross-Platform Development • Problem Solving

Languages: C, Embedded C, TypeScript

Web: React, Tailwind CSS, HTML, CSS

Web Services: RESTful APIs, JSON, SOAP

Web/App Servers: Apache, Tomcat

Frameworks: React, Redux, React Router, Axios.

Databases: MS SQL, MongoDB, Atlas

Design Patterns: Singleton, Factory, Builder

SDLC: Agile, Waterfall

Tools: IntelliJ, Visual Studio, Eclipse, Atmel Studio, CodeBlocks, PyCharm, GitHub, Proteus, Postman

Platforms: Chrome DevTools, Windows, Linux, macOS

PROFESSIONAL EXPERIENCE

CAREER NOTE: Completed on-campus studies and currently taking distance education courses to complete a **Master's Degree in Computer Science** (Available for full-time, W-2 employment).

SI-VISION, Cairo, Egypt • 07/2022 – 04/2024

A fabless semiconductor company specializing in low-power analog, mixed-signal, and RF IP solutions for wireless, IoT, and consumer electronics applications.

Embedded Software Engineer

- Designed and implemented embedded drivers for AVR (ATmega32) microcontrollers, including UART, SPI, I2C, ADC, and PWM, enabling robust peripheral communication and precise device control.
- Collaborated with hardware engineers and QA testers to integrate and validate firmware functionality, ensuring alignment with system specifications and seamless hardware-software interaction.
- Applied RTOS principles to improve task scheduling and responsiveness in time-critical embedded applications, enhancing overall system performance.
- Developed layered firmware architecture using MCAL (Microcontroller Abstraction Layer) and HAL (Hardware Abstraction Layer), promoting modularity, maintainability, and reusability across projects.
- Executed unit and integration testing using Proteus simulation and manual validation, ensuring firmware reliability and reducing defects in production.
- Adhered to MISRA C guidelines and embedded coding standards through peer code reviews and technical discussions, ensuring code quality and regulatory compliance.
- Contributed to internal tooling and knowledge sharing, reducing onboarding time and accelerating development cycles for new team members.

Technologies Used: C, Embedded C, AVR (ATmega32), UART, SPI, I2C, ADC, Timers, RTOS, Git, Atmel Studio.

VALEO, Cairo, Egypt • 05/2024 – 08/2024

A leading embedded systems hub with 3,000+ engineers, delivering 50% of Valeo's global automotive software across ADAS, lighting, powertrain, and more for worldwide export.

Software Engineer – Embedded & Microservices

- Developed and integrated embedded drivers for AVR (ATmega32) microcontrollers, including UART, SPI, I2C, ADC, and PWM, enabling faster, modular integration of ECU components across various automotive applications.
- Implemented multitasking systems using FreeRTOS to manage real-time operations across multiple hardware interfaces, enhancing response time and ensuring deterministic execution in time-sensitive environments.

- Integrated CAN and LIN communication protocols to support robust in-vehicle networking, improving interoperability, diagnostics, and communication reliability across ECUs and vehicle systems.
- Adhered to automotive software development standards such as MISRA-C and V-model lifecycle practices, reducing defect rates and ensuring compliance with safety and quality regulations.
- Designed and developed layered architecture using MCAL and HAL, increasing code reusability, modularity, and easing the integration of new hardware modules.
- Performed hands-on debugging using logic analyzers, oscilloscopes, and real-time monitoring tools, reducing issue resolution time and improving firmware stability and reliability.

Technologies Used: C, Embedded C, RTOS, CAN, LIN, Git, AUTOSAR-style architecture.

INDEPENDENT CONTRACTOR EXPERIENCE

Enozom Software, Alexandria, Egypt • 06/2022 – 05/2024

A company specializing in high-quality, scalable web and mobile solutions for diverse industries using modern techs.

Front-end Engineer

- Developed responsive, accessible web applications using React, TypeScript, and Tailwind CSS, delivering seamless user experiences across modern browsers and device types.
- Led front-end development for microservice-based features, collaborating closely with back-end engineers to ensure cohesive, scalable, and maintainable system architecture.
- Refactored legacy JavaScript codebases into TypeScript, improving maintainability, type safety, and overall code clarity.
- Designed and built reusable, modular UI components, accelerating development workflows and ensuring visual and functional consistency across the application.
- Collaborated within Agile teams, actively participating in daily standups, sprint planning, and retrospectives, maintaining close alignment with product managers, designers, and QA engineers.
- Improved front-end performance through optimization strategies including lazy loading, code splitting, and adherence to modern best practices, reducing load times and improving user engagement.

Technologies Used: React, TypeScript, TailwindCSS, Redux, REST, React Testing Library, Git, Docker, Agile/Scrum.

INTERNSHIP EXPERIENCE

Maxevia Corporate, Nasr City, Egypt • 02/2021 – 03/2021

A health and wellness lifestyle center offering scientifically tailored fitness, aging, and entertainment programs.

Front-End Engineer

- Developed and maintained responsive web interfaces using React.js, resulting in improved user engagement and optimized mobile performance with custom components to enhance client website functionality.
- Collaborated with UI/UX designers to implement pixel-perfect interfaces and ensure cross-browser compatibility, leading to a more consistent and accessible user experience across platforms

Technologies Used: HTML5, CSS3, TypeScript, React.js, Tailwind CSS, Git, Visual Studio Code, NPM, Webpack.

ACADEMIC PROJECTS

Maharishi International University (2025)

E-Commerce System: Built a serverless e-commerce front end with ReactJS, enabling product browsing, search, cart, and authenticated orders. Integrated with AWS Lambda, API Gateway, Cognito, and DynamoDB. Deployed via S3 and CloudFront with CI/CD using CloudFormation and CodePipeline.

PERSONAL PROJECTS

Personal Portfolio Website (2023): Created a responsive portfolio site with ReactJS and TailwindCSS, featuring sections for intro, resume, projects, and contact. Included animations, custom components, and a validated contact form to showcase front-end skills and project experience.

EDUCATION

Master of Science in Computer Science

(In progress via distance education; expected completion 06/2027)

Maharishi International University, Fairfield, Iowa

Key Courses: Algorithms, Cloud Computing, Web Application Programming, Modern Web Application

Bachelor degree in Mechatronics Engineering

Banha Faculty of Engineering, Kalyobia, Egypt (06/2022)