

# Alaa ElGhoul

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## Quick Summary

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Computer Engineering Master's graduate (coursework completed) with a strong foundation in software engineering, game development, and system design.

Experienced in Unity (C#), object-oriented programming, Game-play programming, and state-driven systems, with a focus on clean architecture and maintainable code.

I design and implement modular, scalable software and gameplay systems, adapting to real-world performance and engineering constraints.

## Projects

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### ShiftRunner3D — Unity (C#)

- Designed and implemented a **state-driven gameplay system** for a 3D runner game.
- Built **deterministic player movement and obstacle behavior** based on clearly defined rules.
- Implemented **rule-based collision handling**, scoring, and progression logic.
- Structured gameplay code using modular components to improve maintainability and iteration speed.

### FlarpyBloarb — Unity (C#)

- Developed an arcade-style game focusing on **precise timing, physics-based interactions**, and scoring rules.
- Implemented **event-driven gameplay logic** for player input, obstacle spawning, and game-over conditions.
- Designed gameplay flow using clearly defined states to ensure predictable and testable behavior.

### AccessControlDoor — Embedded System (ESP32, C++)

- Designed a **rule-based access control system** using ESP32 for secure entry management.
- Implemented deterministic logic for authentication, state transitions (locked/unlocked), and error handling.
- Integrated hardware inputs and outputs with embedded software constraints in mind.

### SubM — Master's Thesis Project (Autonomous Underwater Vehicle)

- Designed the **system architecture** for an autonomous underwater vehicle (AUV).
- Implemented modular subsystems for navigation, control, and data handling.
- Focused on **deterministic behavior, system reliability**, and real-world operational constraints.
- Thesis completed and currently in the formal submission and defense phase.

### fitTrack — Smartwatch System & Mobile Application (ESP32, Flutter, Firebase)

- Developed a **smartwatch-based health tracking and security system** using ESP32 sensors.
- Implemented embedded logic for real-time data acquisition and event-based alerts.
- Built a Flutter mobile application for **device control and real-time data visualization**.
- Integrated Firebase Realtime Database for synchronized data flow between hardware and mobile application.

## Skillset

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**Programming Languages:** C#, C++, Dart, Python, JavaScript, SQL

**Game Development:** Unity, Gameplay Programming, State-Driven Systems, Rule-Based Mechanics, Deterministic Logic, Collision & Scoring Systems

**Software Engineering:** Object-Oriented Programming, Clean Architecture, Modular Design, Event-Driven Systems, System Design, Data Flow Management

**Embedded Systems & IoT:** ESP32, PlatformIO, C++ Embedded Programming, Sensor Integration, Real-Time Data Acquisition, Hardware-Software Integration

**Frontend & Web Development:** React, Next.js, Tailwind CSS, HTML, CSS, JavaScript

**Mobile & Backend:** Flutter, Firebase Realtime Database, REST APIs, Real-Time Synchronization

**Tools & Workflow:** Git, Visual Studio, VS Code, Figma, Agile / Scrum

## Education

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- IAÜ Istanbul Atlas University**, Istanbul, Turkey, **Computer Engineering** Oct 2023 - Sep 2025
- **Coursework:** Artificial Intelligence and Machine Learning, Robotics, Internet of Things (IoT), Advanced Algorithms, Software Design and Architecture, Embedded Systems Programming.
- ISITC Higher Institute of Computer Science and Communication Technologies** Sousse, Tunisia, **Computer Science** Sep 2019 - Sep 2023
- **Coursework:** Programming Fundamentals, Object-Oriented Programming, Data Structures and Algorithms, Software Engineering, Web Development, Mobile Application Development.
- BAC Baccalaureate in Mathematics** Jammel, Monastir, Tunisia Sep 2017 - Jun 2018
- **Coursework:** Advanced Mathematics, Physics, Computer Science Fundamentals, Problem Solving.

## Experience

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- Teleperformance** — Quality Specialist Istanbul, Turkey Jul 2024 - Jan 2026
- Managed quality assurance workflows in a high-volume, fast-paced operational environment.
  - Performed root cause analysis on performance and quality issues, contributing to process improvements.
  - Worked with structured guidelines, metrics, and rule-based evaluation systems to ensure consistent quality standards.
  - Adapted quickly to evolving tools, policies, and workflows while maintaining accuracy and professionalism.
- Mayors Bike / Slimmezon** — Web Designer & Developer Remote, Netherlands Oct 2023 - Jun 2024
- Designed and developed responsive web interfaces for e-commerce platforms.
  - Implemented structured layouts and user flows with a focus on usability and conversion.
  - Integrated payment solutions and interactive components using HTML, CSS, and JavaScript.
  - Applied UX/UI principles using Figma to translate design concepts into production-ready interfaces.
- TerraForm** — Systems Engineer Intern Sousse, Tunisia Feb 2023 - Sep 2023
- Contributed to the development of a smartwatch-based security system using ESP32 sensors.
  - Implemented embedded logic for sensor data collection and event-based threat reporting.
  - Developed a companion mobile application using Flutter and Dart for device interaction.
  - Used PlatformIO and C++ for embedded development and followed Scrum-based project workflows.

**TechInventors** — Software Engineer

Tunis, Tunisia  
Jun 2022 – Sep 2022

- Developed a mobile and web-based system for stadium reservation and scheduling.
- Implemented application logic and user interfaces using Flutter for mobile and JavaScript-based web technologies.
- Collaborated within an agile team environment using Scrum methodology.

## **Additional Experience And Certifications**

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**Cisco (May 2022)** : CCNAv7: Introduction to Networks & CCNAv7: Basics of switching, routing and wireless.

**Cisco Networking Academy** : Introduction to Cybersecurity