

Ahmed AbouEleyoun

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Education

Cairo University – PgD in Computer Science, GPA: 3.7/4.0	2025
ALX – 12-Months Software Engineering Program	2024
Mansoura University – BS in Surveying and Geographic Information Systems	2022

Skills

Languages: C++, Rust, Go, TypeScript, JavaScript, PHP, Python, SQL

Tools and Technologies: React, Django, PostgreSQL, MySQL, MongoDB, Docker, Linux, Shell Scripting

Projects

Functional Programming Language

- Designed and implemented a statically typed functional programming language in Rust.
- Developed lexer, parser, and evaluator to support features like first-class functions, recursion, and conditionals.
- Implemented Hindley-Milner type inference for polymorphic types, for type safety and expressive generics.
- Wrote comprehensive error handling with detailed source context for syntax, type, and runtime errors.

MPRIS Control Tool

- Built a Rust CLI tool to control media playback via Linux's MPRIS D-Bus interface.
- Implemented 20+ commands (play/pause, volume, seek, metadata queries) with typed arguments.
- Supported player switching, property management, and shell autocompletion.
- Added state persistence for active player selection across sessions.

Development Tools Package Manager

- Developed a fast, cross-platform package manager in Go for external development tools.
- Supports installation, upgrades, and dependency management for 10+ package types (e.g., PyPI, npm, GitHub).
- Integrated GitHub registry synchronization and platform-specific asset resolution.
- Designed intuitive CLI with autocompletion and confirmation prompts.

Game Engine

- Designed and developed a modular, cross-platform game engine in C++ using OpenGL for rendering.
- Created an abstraction layer over the OpenGL API, simplifying rendering operations and improving maintainability.
- Integrated font rendering with multilingual support using FreeType2 and HarfBuzz.
- Implemented an Entity-Component-System architecture to boost performance.
- Leveraged modern C++ standards and best practices for maintainability and scalability.

Event Booking API

- Developed a RESTful API for event creation, user authentication, and booking management.
- Implemented JWT-like authentication using API keys with secure hashing.
- Designed database schema and migrations for users, events, and bookings.
- Built middleware for authentication, request validation, and context management.
- Wrote comprehensive unit and integration tests for handlers, services, and repositories.

Users API

- Developed a robust Users API using Laravel to manage user data, roles, and permissions.
- Implemented authentication, CRUD operations, and role-based access control (RBAC).
- Utilized middleware for authorization checks and validation for secure data handling.
- Designed RESTful endpoints with resource controllers and JSON responses.

Resume Creator

- Developed a responsive web app for creating professional resumes with real-time preview.
- Integrated PDF generation using React-PDF for downloadable and printable resumes.
- Designed form components with dynamic validation and auto-saving to localStorage.
- Built a modular architecture for easy addition of new resume sections.
- Added dark/light theme support and mobile-responsive design.

Roads Survey Spreadsheets

- Developed a Progressive Web App for creating and managing survey road spreadsheets with real-time data processing.
- Implemented a multi-step form with PDF parsing, validation, and dynamic spreadsheet generation.
- Utilized Redux for state management and IndexedDB for offline data persistence.
- Designed a responsive UI with dark/light themes and smooth animations using Material UI.
- Added features like edit forms, data visualization, and PWA installation support.