

OUSSAMA HAMMOU MESSAOUD

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PROFESSIONAL SUMMARY

Dedicated Software Engineering student at 1337 Coding School (42 Network) with a strong foundation in low-level systems programming (C/C++) and modern backend architecture. Currently specializing in building scalable, high-concurrency systems using Node.js, PostgreSQL, and Message Queues. I enjoy solving hard database problems and making sure applications run smoothly.

TECHNICAL SKILLS

Backend & Databases: Node.js, Express.js, Fastify, PostgreSQL, SQLite, RabbitMQ, REST APIs, JWT
Frontend & Web: HTML5, CSS3, React, Vite, WebSockets, Web Audio API
System & DevOps: Docker, Docker Compose, Linux/Unix Administration, Shell Scripting, Network Architecture (TCP/IP)
Languages: C, C++, JavaScript, SQL, Bash
Concepts: Microservices, Event-Driven Architecture, Data Structures

KEY PROJECTS

Full-Stack Engineer - Aria (Real-Time AI English Tutor) | *Node.js, Express.js, WebSockets, React*

- Built a real-time voice-based AI English tutor using **Google Gemini 2.5's native audio model**, enabling live spoken conversations with instant grammar correction and vocabulary coaching.
- Built a smooth, real-time voice chat system using **WebSockets** and the **Web Audio API**.
- Designed and implemented the full-stack architecture: **Node.js/Express** backend proxying audio to Gemini's Live API, with dynamic AI system instructions based on session parameters
- Developed a **React SPA** with multiple practice modes, voice selection, and a responsive landing page featuring scroll-reveal animations and glassmorphism UI.

Backend Engineer - Scalable Event Ticketing System | *Node.js, Express.js, PostgreSQL, RabbitMQ, Docker*

- Built a backend that handles thousands of ticket bookings at the same time without crashing or losing data.
- Implemented **Event-Driven Architecture** by decoupling the API (Producer) from the Booking Worker (Consumer) using **RabbitMQ**, making sure no requests are lost when the system is very busy.
- Fixed bugs that caused double-booking by locking database rows in PostgreSQL to keep inventory accurate

Backend Engineer - ft_transcendence (Pong Game Platform) | *Node.js, Fastify, SQLite, WebSockets*

- Designed a robust backend using a microservices-based approach for modularity and scalability.
- Developed a real-time **Global and Private Chat system** using **WebSockets**, enabling instant messaging and seamless user-to-user communication.
- Integrated **OAuth** authentication (Google/github), user profile management and **JWT** to safely authorize users and keep their sessions secure.

DevOps Engineer - Inception | *Docker, Nginx, WordPress, MariaDB*

- Architected a multi-container infrastructure using Docker Compose to virtualize services.
- Configured a secure LEMP stack with dedicated volumes and networks for data persistence and isolation.

C++ Software Engineer - Webserv (HTTP Server Implementation) | *C++, Network Programming*

- Built a fully functional HTTP server from scratch using C++ and non-blocking I/O operations (epoll)
- Implemented core HTTP methods (GET, POST, DELETE) and CGI execution for dynamic content.
- Managed multiple client connections simultaneously without threads

EDUCATION

1337 Coding School (42 Network)

Software Engineering (Common Core)

Ben Guerir, Morocco

Oct 2023 – Present

- Methodology: Intensive peer-to-peer learning model emphasizing autonomy, problem-solving, and algorithmic rigor.

LANGUAGES

Arabic: Native | **English:** Technical