




CHATER MARZOUGUI

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Software Engineer focused on AI systems, real-time applications, and intelligent platforms

FORMAL EDUCATION

Preparatory Cycle Physics-Chemistry - Faculty of Science, Monastir

2021-2023

Preparatory Classes for National Engineering Entrance Exams

National Engineering Degree in Telecommunications - Sup'Com, Tunisia

2023-2025

Focus on Embedded Systems, AI Applications, and Software Development

PAST INTERNSHIPS

Software Engineer Intern – Backend & Systems Optimization - Convery

Jul – Aug 2024

- Refactored a high-latency analytics system, improving response times by restructuring calls to the Stats microservice and implementing Redis-based smart caching strategies.
- Migrated data-fetching logic from the back-end to a dedicated microservice to enable separation of concerns and improve system scalability while cutting wait times by up to 70%.
- Optimized MongoDB queries with targeted filters and aggregation pipelines, reducing unnecessary data load and improving system throughput.
- Fixed multiple front-end bugs (React + TypeScript) and improved user experience on stat-heavy dashboards.

COMPETITIONS AND CONTRIBUTIONS




Competitions & Achievements

- **2nd Place — Orange AI Hackathon** Developed a mobile app and chatbot to find and describe the top 5 amenities closest to the user.
- **3rd Place — GO DATA SCIENCE 4.0, Mental Health Challenge (Zindi)** Developed a classification model that achieves 80% precision for mental health assessment using NLP techniques.
- **3rd Place — AI Anatomy Hackathon** Fifth place in the kaggle competition: Fine-tuned an LLM model for enhanced biomedical text generation And a mobile application with text-to-speech, speech-to-text, and agentic AI for medical procedures.

Contributions

- **President of IEEE RAS Chapter — Sup'Com Student Branch**
Organized and led robotics initiatives, workshops, and competitions; oversaw team logistics, partnerships, and interdisciplinary collaboration
- **Technical & Hackathon Manager — IndabaX Tunisia 2024** [Live Website Link](#)
Built and maintained the official event website, implemented speaker & sponsor updates, managed registration for 400+ attendees, and made the competition on Zindi.

PERSONAL PROJECTS

- **PV Fault Detection System (MATLAB + AI)** An end-to-end real-time simulation and embedded validation platform for photovoltaic microgrids, integrating MATLAB Simulink-based digital twins with AI-driven fault detection and Processor-in-the-Loop (PIL) testing on STM32 microcontrollers. The system achieves 98.9% classification accuracy across common PV faults using machine learning and enables hardware-software co-design for predictive maintenance in renewable energy systems. *(MATLAB Simulink/Simscape, Python, Scikit-learn, XGBoost, LSTM, STM32F4, UART, Embedded C)*
-  **Code Link Web-Based AR Duck Hunting Game** Developed an immersive browser-based shooting game leveraging computer vision with Aruco markers for distance-agnostic interaction. Features single and multi-player modes with a global leaderboard, real-time bullet tracking, and versatile controller options including smartphones and ESP8266-based devices. *(HTML, CSS, JavaScript, C++(Arduino), Python, OpenCV)*
-  **Code Link Skill Issue Check** Built a fully frontend quiz web app (HTML/CSS/JS) for structured course-based quizzes with instant feedback and JSON-based import/export. Enhanced the tool with a Python script using Gemini API to auto-generate MCQs from PDFs via OCR and chunked processing, enabling educators to quickly convert course documents into interactive sessions. *(HTML, CSS, JavaScript, Google Gemini API, PyPDF2, dotenv)*
-  **Code Link PDF AI Viewer – AI-Powered Learning Assistant** Developed a client-side web app using HTML, CSS, JavaScript, and PDF.js that enables users to upload and navigate PDF slides with real-time AI explanations using Google's Gemini API. Integrated interactive chat and slide analysis features, allowing users to query content contextually. Ensured privacy by keeping all data in-browser with no server or backend. *(HTML, CSS, JavaScript, PDF.js, Google Gemini API)*

CODING STACK

- **Programming Languages:** Python, Dart, JavaScript, TypeScript, Go, C/C++, MATLAB
- **Frameworks/Libraries:** Flutter, React, PyTorch, Scikit-learn, Simulink
- **Tools, Platforms & OS:** Git/GitHub, Firebase, MongoDB, PostgreSQL, Redis, Linux (Ubuntu), Windows
- **Languages:** Arabic (Native), English (C1 - TOEIC), French (Intermediate)