


# Moussa Omrane

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## Education

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### Khan Academy

2023 - 2024

#### Mathematics

- **Relevant Coursework:** Algebra 1 & 2, Linear Algebra, Precalculus, Calculus

## Experience

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### Cabby Rentals – Maurits Autoverhuur

Jun 2024 – Dec 2024

#### Lead Software Engineer

Full-Time – Amsterdam, Netherlands

- Developed and maintained the backend integration with the Tesla Fleet API, using the Partner Token authentication type and implemented a continuous token refresh system to allow users to lock and unlock their Tesla vehicles anytime. Also improved client-side error handling to make it more reliable, enabling drivers to control their Tesla vehicles more effectively.
- Led mobile development efforts using Flutter, implementing an intuitive UI/UX with complex custom widgets such as an interactive zoomable and pannable line graph with dynamic data visualization. Integrated mobile app features with backend services to provide a consistent user experience across 2 platforms (iOS and Android)
- Significantly reduced deployment, release time, and hassle by automating the CI/CD process using Fastlane and GitHub Actions, streamlining build processes, code signing, and deployment to the respective app stores.
- Addressed several significant security vulnerabilities, including one that allowed the creation of arbitrary admin users, thereby safeguarding against potential interference by malicious actors in business operations.
- Fixed the server-side user order validation logic to enforce access control for vehicle operations, mitigating unauthorized access risks.
- Secured the document name generation system and updated database records to prevent public access to sensitive files.
- Patched a critical vulnerability in user management by implementing role-based access control and input validation, preventing unauthorized elevation to admin status.
- Integrated Sentry SDK into backend services and mobile apps, configuring custom error grouping and environment-specific logging for efficient debugging.
- Provided guidance and mentorship to the flutter team developers, including pull-requests code reviews, offering advisement, and driving performance optimizations across backend and mobile codebases.

### Achieve

May 2024 – Aug 2024

#### UI/UX Designer & Software Developer

Part-Time – Remote

- Worked with multiple clients to design and develop user-centric web and mobile applications, ensuring seamless user experiences.
- Collaborated with cross-functional teams to deliver scalable backend solutions, including API integrations and database management.
- Designed intuitive and responsive UI/UX interfaces, creating wireframes, prototypes, and high-fidelity mockups for client projects.
- Supported the development of data processing pipelines, including data extraction, transformation, and storage for various client needs.
- Contributed to front-end development using modern frameworks and libraries, ensuring high performance and responsiveness.
- Participated in code reviews, debugging, and performance optimization across multiple projects for agency clients.

### Origify

Jan 2023 – Dec 2023

#### Founder & Software Engineer – A plagiarism detection ML model & software.

Algiers, Algeria

- Built an extensive data and web scraping system from various exam sources, and performed preprocessing including OCR and PDF-to-text conversion, to establish comprehensive datasets of educational materials.
- Compiled and published a dataset of **25,672 official exam papers** from Algeria's education system, spanning primary, middle, and high school levels.
- Developed a comprehensive text preprocessing pipeline using NLTK, including tokenization, stop word removal, and lemmatization, ensuring accurate document analysis.
- Implemented TF-IDF vectorization and cosine similarity calculations using Scikit-learn, improving plagiarism detection accuracy.
- Developed a multi-threaded data processing pipeline to handle concurrent document processing tasks, significantly reducing overall processing time by 50%.
- Designed and deployed a FastAPI backend with secure endpoints for comparing documents and managing data uploads, facilitating seamless integration and data handling.
- Created a responsive front-end interface with React Native, enhancing user experience and engagement.
- Utilized tools like Logsnag for events tracking and Sentry for performance monitoring, ensuring robust application performance and error tracking.
- Integrated continuous integration/continuous deployment (CI/CD) pipelines using GitHub Actions, automating the build, test, and deployment processes for faster and more reliable releases.
- Integrated automated testing processes, increasing test coverage and reducing defects, contributing to the overall reliability of the system.
- Led marketing efforts across social media platforms, email campaigns, and public outreach, effectively promoting the software to students and educators.

## Sonemap

Dec 2022 – Jun 2024

Co-Founder & Software Engineer – An electricity infrastructure GIS management.

Algiers, Algeria

- Developed and designed a dynamic UI and UX front-end using React.js, Typescript, and Tailwind CSS to create an engaging user experience.
- Integrated Mapbox maps API for interactive map implementation, displaying Geo-spatial data effectively, and optimized data retrieval and visualization.
- Utilized Zustand and Jotai for efficient and scalable state management, ensuring excellent data flow and optimal performance.
- Scraped and processed various GIS datasets from multiple sources using Python and Playwright to enhance data efficiency and availability (e.g., OpenStreetMap, Overpass, Wikimapia).
- Built an admin dashboard using WHMCS to manage analytics, user accounts, and billing. Customized WHMCS templates, set up automation rules, and used hooks to extend its functionality for our needs.
- Worked with WHMCS reports and analytics tools, modifying SQL queries and dashboard widgets to display real-time data on user activity, subscriptions, and infrastructure usage.
- Set up automated billing in WHMCS and integrated payment gateways to handle transactions and manage subscriptions without manual intervention.
- Developed a scalable back-end infrastructure, utilizing PostgreSQL for data storage and Redis for caching to enhance performance in managing and updating map-related data.
- Optimized PostgreSQL queries by migrating to SQL from the non-SQL joins Prisma Rust Engine, improving API response time by 25% and enhancing the overall application experience.
- Developed Sonemap as a Progressive Web App (PWA) for mobile usability, responsiveness, and offline functionality.
- Implemented a service-worker caching system synchronized with Redis to facilitate real-time and offline data flow.
- Integrated Sonemap with SCADA API systems using industry-standard protocols like MQTT and Modbus for real-time monitoring and event-driven updates via an MQTT broker.

## Projects

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**Kreads** | *Svelte Kit, Google Drive API, Service Workers, Google OAuth, Stripe, ElevenLabs API*

- Developed a personal e-book library software application to enhance reading experiences across devices with precise progress tracking and offline syncing capabilities.
- Implemented a fully decentralized system using Google Drive storage, ensuring data security and privacy without storing user data.
- Handled various book formats like PDF and EPUB, allowing users to customize their reading experience.
- Developed mobile-friendly PWA with offline syncing using service workers, ensuring compatibility with mobile apps.
- Features included personal book uploads, public tracker overlay, progress tracking, AI TTS subscription, and more.
- Integrated Google OAuth for user authentication and Stripe for payment processing (in progress).
- Created comprehensive mobile UI for home, book upload, book search, book page, bookmark page, and profile page.
- Planned integration of ElevenLabs API for TTS functionality and other premium offers.
- Marketing strategies include social media promotion on Reddit and Product Hunt.
- Planned monetization through subscriptions for TTS and additional storage.

## Certifications

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**Meta Front-End Developer Professional Certificate**

Jan 2025

- Built responsive websites using HTML, CSS, and JavaScript to create visually appealing and interactive content.
- Learned React to build dynamic web applications and worked with Bootstrap to streamline UI design.
- Gained hands-on experience with GitHub for version control and collaborated on projects, ready to showcase during job interviews.

**Microsoft Back-End Developer Professional Certificate**

Jan 2025

- Demonstrated proficiency in designing, implementing, and deploying scalable .NET Core solutions, with a focus on performance and security.
- Applied Object-Oriented Programming (OOP) principles in creating modular, efficient back-end systems in C#.
- Optimized system performance and security, utilizing advanced algorithms and caching techniques for improved efficiency.
- Enhanced development workflows through CI/CD practices for faster and more reliable deployments.

**Google Cybersecurity Professional Certificate**

Jan 2025

- Gained a deep understanding of cybersecurity practices and their critical role in protecting organizations.
- Learned to identify common risks, threats, and vulnerabilities, and applied mitigation strategies.
- Developed skills in protecting networks, devices, and data using SIEM tools and hands-on experience with Python, Linux, and SQL.
- Built a solid foundation for defending against cyberattacks and securing sensitive information.

**HackerRank Problem Solving (Intermediate)**

May 2024

- Developed strong problem-solving skills through intermediate-level algorithm challenges, focusing on optimizing solutions.
- Worked with a variety of data structures and algorithms to enhance my coding efficiency.

## Badges & Achievements

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### Hackthebox Pro Badge & CTF Creator

- Mastered the exploitation of web vulnerabilities such as SQL Injection, Cross-Site Scripting (XSS), and Server-Side Request Forgery (SSRF) through real-world scenarios.
- Gained extensive experience with reverse engineering binaries, leveraging tools like Ghidra, IDA Pro, and Radare2 to deconstruct and analyze compiled executables.
- Developed proficiency in exploiting buffer overflows and format string vulnerabilities, understanding memory corruption techniques in low-level languages such as C/C++.
- Acquired hands-on experience with network penetration testing using tools like Nmap, Wireshark, and Metasploit to identify and exploit network-based vulnerabilities.
- Deepened knowledge of post-exploitation techniques, including persistence mechanisms, lateral movement, and data exfiltration in enterprise environments.

### TryHackMe Badge

- Gained comprehensive knowledge of networking fundamentals, including TCP/IP, OSI model, subnetting, and common protocols (HTTP, DNS, DHCP) through hands-on labs.
- Developed a strong understanding of operating system internals, including process management, memory allocation, and file system structures in both Windows and Linux environments.
- Acquired skills in Active Directory security, focusing on user authentication, access controls, group policies, and common attack vectors such as Kerberoasting and Pass-the-Hash.
- Enhanced capabilities in network defense techniques, implementing strategies such as network segmentation, firewalls, and intrusion detection systems to protect enterprise networks.
- Practiced incident response methodologies, including identifying, containing, and mitigating threats within virtual environments simulating real-world cyber attacks.
- Built and configured vulnerable environments to explore exploitation techniques and defensive measures, reinforcing knowledge of security best practices in system and network configurations.
- Completed challenges focused on enumeration and exploitation of Active Directory environments, utilizing tools like BloodHound and PowerView for privilege escalation and lateral movement analysis.

## Technical Skills

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**Languages:** Javascript, Typescript, Python, Go, PHP HTML, CSS, BASH, Dart, SQL, Assembly

**Technologies:** React.js, React Native, Flutter, Preact, Flask, Laravel, FastAPI, TensorFlow, Scikit-Learn, PyTorch, Tailwind, Node.js, Bun, Electron, Tauri, Git, PostgreSQL

**Concepts:** Compiler, Operating System, Virtual Memory, Cache Memory, Data Science, DOM Manipulation, Encryption, Decryption, Machine Learning, Continuous Integration / Continuous Deployment (CI/CD), Neural Networks, API, Database Normalization, Agile Methodology, Cloud Computing, Web Security

**Project management:** Asana, Slack