Hassan Mahadjir

SOFTWARE ENGINEER | TECHNICAL LEAD | RESEARCH ASSISTANT

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PROFESSIONAL SUMMARY

Architecture-focused Software Engineer, Technical Lead, and Research Assistant with 3+ years of industry experience and more than four years of teaching and mentoring. Builds multi-tenant web, mobile, backend, and database systems using TypeScript, Next.js, NestJS, React Native, and PostgreSQL. Pursuing an M.Sc. in Computer Engineering with research in computer vision and identical-twin biometrics; ranked 1st in B.Sc. Software Engineering.

EDUCATION

M.Sc. in Computer Engineering | Eastern Mediterranean University | Famagusta, Northern Cyprus **Oct 2025 - Present**
Research focus: facial biometrics, identical-twin differentiation, computer vision, deep learning, and model evaluation.

B.Sc. in Software Engineering | Eastern Mediterranean University | Famagusta, Northern Cyprus **Feb 2021 - Jan 2025**
CGPA: 3.82/4.00 | High Honors | Ranked 1st in Class | Best Graduation Project | Excellence Award | 7 High Honor Certificates

PROFESSIONAL EXPERIENCE

Research Assistant | Eastern Mediterranean University | Famagusta, Northern Cyprus **Oct 2025 - Present**
- Coordinate practical labs for Data Science, Software Engineering, Software Design, Software Testing, and Requirements Analysis.
- Prepare assignments, demonstrations, exercises, and assessment material; review student work and provide actionable feedback.
- Supervise 1-2 assistant instructors and mentor students in programming, modeling, testing, debugging, and real-world problem solving.

Independent Software Architect / Full Stack Engineer | Madaar SaaS POS/ERP | Remote **May 2026 - Present**
- Design a KSA-focused multi-tenant platform covering users, employees, branches, inventory, customers, providers, sales, payments, subscriptions, RBAC, and analytics.
- Implement Next.js/NestJS/PostgreSQL foundations for authentication, tenant isolation, permissions, feature gating, package limits, receipts, approvals, notifications, and localization.
- Produce SRS, ERD, module definitions, API/data contracts, implementation plans, and integration guidance for ZATCA, translation, email/SMS, payments, and receipt services.

Technical Lead (Partner) | B2B Market-Supplier Platform | Famagusta, Northern Cyprus **Dec 2025 – April 2026**
- Lead a four-engineer team building mobile apps, web dashboards, centralized backend services, and PostgreSQL data models for markets, suppliers, and delivery operations.
- Own architecture, technology selection, Git workflows, coding standards, code review, task assignment, scalability decisions, and deployment strategy.
- Translate stakeholder requirements into role-based workflows for products, ordering, delivery tracking, notifications, reporting, and secure communication.

Full Stack Software Engineer | Freelance | Remote **Jul 2025 - Oct 2025**
- Gathered client requirements and delivered scalable web and mobile solutions from architecture and UI implementation through deployment and support.
- Selected technologies, integrated APIs and databases, addressed feedback, and maintained delivered systems.

Software Engineer | RescueTrack EMS Dispatch System | Remote - Riyadh, Saudi Arabia **Dec 2024 - Jul 2025**
- Developed digital patient-record, communication, inventory, and reporting workflows for a multi-tenant EMS platform.
- Configured hospital-level data isolation and coordinated workflow, task assignment, system configuration, technical decisions, and deployment.

Software Engineering Intern | Trendbox Innovative Solutions | Famagusta, Northern Cyprus **Jul 2024 - Aug 2024**
- Developed Node.js/NestJS APIs with PostgreSQL, JWT authentication, RBAC, normalized schemas, and secure mobile integrations.
- Built React Native components, multilingual support, and a custom barcode scanner for the TrendPOS application.

ACADEMIC TEACHING & LEADERSHIP

Academic Tutor | Eastern Mediterranean University | Famagusta, Northern Cyprus **Oct 2023 - Jan 2025**
- Tutored Python, Java/OOP, C data structures, algorithms, software design, and engineering subjects; guided implementation and debugging.

Student Instructor | Freelance | Famagusta, Northern Cyprus **Feb 2021 - Jul 2025**
- Delivered individual and group tutoring in mathematics, engineering, and software courses using concise explanations and practical exercises.

Outgoing Global Talent Vice President | AIESEC | Famagusta, Northern Cyprus **Oct 2022 - Jan 2025**
- Led recruitment, team coaching, KPI tracking, stakeholder partnerships, and the full participant lifecycle for international internships.

RESEARCH & SELECTED PROJECTS

Master's Thesis | Biometric Differentiation of Identical Twins **Ongoing**
- Study facial biometrics using preprocessing, PCA, LBP, CNNs, deep learning, and recognition evaluation in Python/PyTorch.
- Compare methods using accuracy, confusion matrices, classification metrics, and published identical-twin benchmarks.

LBP and PCA Face Recognition | Biometrics Research Project
- Implemented partition-based LBP feature extraction, feature concatenation, PCA comparison, and test-image recognition workflows.
- Achieved 94.20% accuracy in LBP experiments and analyzed the gap against earlier benchmark performance.

Facial Emotion Recognition CNN | RAF-DB Academic Project
- Built a seven-class PyTorch CNN with preprocessing, augmentation, early stopping, regularization, and confusion-matrix evaluation.
- Reached 81% classification accuracy and compared activation functions and training behavior.

Municipality Smart Application | Best Graduation Project | EMU **Jun 2024 - Jan 2025**
- Led system analysis, UI/UX, database design, and development using React Native, Next.js, NestJS, PostgreSQL, Firebase, Neon, and Expo.
- Implemented authentication, real-time synchronization, multilingual workflows, and scalable application structure.

GPT-Like Language Model Study | Independent Project **2025**
- Prepared training data and implemented BPE tokenization and sliding-window input-target generation using Python, NumPy, Pandas, and PyTorch.

Dry Bean Classification | Neural Network Academic Project
- Built and compared feed-forward neural networks for seven-class classification using z-score normalization, dropout, early stopping, confusion matrices, and classification reports.
- Analyzed class imbalance, architecture depth, learning rates, and training behavior across local and RTX 4090 computing environments.

Multi-Objective Evolutionary Optimization | ZDT1-ZDT3 Academic Study
- Implemented and analyzed population-based optimization under a 200,000-function-evaluation budget using Pareto dominance, archives, selection, crossover, mutation, and diversity preservation.
- Studied NSGA-II, SPEA-II, PAES, differential evolution, and particle swarm optimization through formulas, examples, and comparative workflows.

Additional Software Projects | Blood Donation Finder and Rays of Hope **2021 - 2023**
- Designed workflows for donor discovery, blood requests, appointments, profiles, and notifications in a mobile blood-bank concept.
- Developed a responsive Flask-based orphan-support platform and led UI/UX and backend integration.

TECHNICAL, AI & PRODUCTIVITY SKILLS

Programming: TypeScript, JavaScript, Python, Java, C, SQL.
Frontend & Mobile: React, Next.js, React Native, HTML, CSS, Bootstrap, Expo, i18next, shadcn/ui, responsive UI, API integration.
Backend & Architecture: Node.js, NestJS, Express, REST APIs, TypeORM, JWT, RBAC, multi-tenancy, feature gating, system design, API documentation.
Databases & DevOps: PostgreSQL, Supabase, Neon, Firebase, Docker, Vercel, Railway, Git/GitHub, ERD, normalization, migrations.
Research & AI: PyTorch, NumPy, Pandas, computer vision, biometrics, CNNs, PCA, LBP, model evaluation, literature review, experiment reporting.
Productivity & Communication: Word for SRS/research reports; Excel for analysis, estimates, pricing, and logs; PowerPoint for teaching and stakeholder presentations; Figma, Lucidchart, DrawSQL, and Notion for design and planning.

COURSES & APPLIED LEARNING

Computer Vision, Deep Learning, Data Science, Software Engineering, Software Architecture and Design, Software Testing, Requirements Analysis, Database Systems, Interaction Design, Data Structures, and Algorithms.

ARTIFICIAL INTELLIGENCE (AI)

Codex and Claude for codebase analysis, implementation planning, debugging, refactoring, test generation, architecture review, schema/migration review, and technical documentation; all outputs are manually reviewed and tested.

LANGUAGES

Arabic: Native, English: Native