

HUSSEIN MOUKALLED

AI ENGINEER- SOFTWARE ENGINEER

+961 81663424 | BEIRUT, LEBANON | HUSSEIN.2K4@GMAIL.COM

Overview

A deeply passionate individual in the field of Artificial Intelligence, with a strong interest in both its practical applications and theoretical research. Constantly exploring how intelligent systems can solve real-world challenges and push the boundaries of innovation. Proven track record of leading technical teams, participating in research papers, optimizing system performance and delivering robust products.

Technical Skills

- **Programming Languages:** Python, C++, SQL, Assembly, JavaScript.
- **Software & Tools:** Git, Github, Docker, Kubernetes, Google Colab, Jupyter, Postman, Swagger/OpenAPI, Terraform, Jenkins, GitHub Actions, Bash, Nginx, Prometheus, Grafana, Redis, Figma, Jira
- **Databases:** MySQL, PostgreSQL, MongoDB, ChromaDB, Relational DB Design, ER Modeling, Normalization.
- **AI & Automation:** Deep experience with AI tools including Cursor, Antigravity, Claude, ChatGPT, and advanced AI-assisted development workflows.
- **Cloud & Infrastructure:** Hands-on experience with AWS and Microsoft Azure for deploying and managing applications.
- **MLOps & DevOps:** Familiar with MLOps pipelines, model deployment, monitoring, and DevOps practices including CI/CD, containerization, and scalable system design.

Experience

AMERICAN UNIVERSITY OF BEIRUT.

IT support specialist at AUB| September 2023 – June 2026

- Selected for a competitive working student program as an IT Support Specialist
 - Demonstrated strong technical aptitude and reliability early on
 - Earned high-level responsibilities beyond typical student role scope
 - Frequently managed office operations independently
 - Received a rare contract extension beyond the one-year limit (policy exception)
 - Recognized for impactful performance and contribution
 - Provided support for a wide range of technical issues
 - Ensured smooth day-to-day operations across the department
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TAWASOUL AI

AI ENGINEER LEAD | January 2025 – June 2026

- Led AI engineering initiatives at Tawasoul as AI Engineer Lead
- Built interactive AI avatars for interview preparation and networking
- Developed solutions end-to-end from scratch (research → implementation → testing → iteration)
- Translated AI concepts into practical, user-facing applications
- Conducted continuous experimentation and refinement to improve performance and user experience
- Delivered impactful, real-world AI solutions with clear user value

AMERICAN UNIVERSITY OF BEIRUT.

AI Engineer | June 2025 – September 2025

- Worked as an AI/ML Research Engineer in collaboration with AUB and AUBMC
- Contributed to a \$100,000 grant application at the King Hussein Research Center
- Designed a predictive model for immunotherapy toxicity in patients
- Led the technical design and development of the model from concept to validation
- Collaborated closely with multidisciplinary teams (engineers, doctors, nurses)
- Translated clinical requirements into scalable AI solutions
- Demonstrated strong ability to operate in complex, research-driven, team environments

DEAFFERENCE

AI ENGINEER LEAD | March 2024 – August 2024

- Applied expertise as a researcher, AI engineer, and consultant for innovative startups
- Served as AI Engineer Lead at Deaffrance
- Designed and architected the full system using optimal components and technologies
- Built an AI model for real-time sign language translation into Arabic dialect
- Led end-to-end development (research → system design → implementation → testing → iteration)
- Focused on real-time performance, accuracy, and usability in production scenarios
- Translated complex AI challenges into practical, impactful solutions

Education

AMERICAN UNIVERSITY OF BEIRUT

Beirut, Lebanon | BS in Computer & Communication Engineering

Earned a 3.8 GPA and graduated with High Distinction. Completed relevant coursework in web development, database management, and software engineering with a main emphasis on AI and MLOPs.

LYCEE ABDEL KADER

Beirut, Lebanon | Scientific French Baccalaureate

Graduated with High Distinction. Earned the Prix des Lauriers award for outstanding academic achievements and was student council president from 2012 till 2022.

DEEPMED

- Engineered a cloud-based platform enabling hospital staff to seamlessly use AI for medical predictions
- Bridged the gap between complex AI systems and non-technical healthcare users
- Integrated 6 tabular classification models and 3 image-processing pipelines
- Fully automated workflows for ease of use and minimal user intervention
- Designed and deployed 27 containerized microservices on AWS
- Implemented CI/CD pipelines with continuous quality assurance
- Integrated real-time monitoring for performance and reliability
- Delivered a scalable, reliable system with low operational complexity

SMART PENETRATION TESTING USING AI

- Designed and developed an AI-driven penetration testing system to automate vulnerability discovery and exploitation workflows
- Built intelligent agents to simulate real-world attacker behavior and decision-making
- Applied advanced AI techniques to enhance reconnaissance, scanning, and attack strategy optimization
- Bridged cybersecurity and AI to create adaptive, self-improving security testing frameworks
- Focused on real-world applicability, enabling scalable and efficient security assessments
- Prepared the project for research publication
- Demonstrated strong ability to combine research rigor with hands-on engineering execution
- Delivered a high-impact solution at the intersection of AI, cybersecurity, and automation

VIDEO2GRAPH

- Engineered a graph-based video reasoning system enabling multi-hop question answering over long-form videos
 - Designed a heterogeneous knowledge graph combining transcripts (ASR), visual data, and OCR into a unified representation
 - Built a full evaluation pipeline with advanced metrics (retrieval, QA, faithfulness, graph quality, efficiency) for rigorous benchmarking
 - Implemented baseline systems (Chunk RAG) and controlled ablations to validate structural reasoning improvements
 - Designed reproducible experimentation framework with runtime-configurable system variants (full graph vs. ablations)
 - Developed a stratified mini evaluation dataset preserving diversity across datasets, reasoning types, and difficulty levels
 - Conducted deep architectural analysis across 10+ state-of-the-art systems to position and improve the solution
 - Optimized retrieval using hybrid methods (dense embeddings + lexical overlap + graph traversal)
 - Improved system interpretability by building advanced graph visualization and debugging tools
 - Delivered a research-grade system emphasizing scalability, reproducibility, and experimental rigor
 - Demonstrated ability to operate at the intersection of AI, systems engineering, and research-level evaluation
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Soft skills

- **Problem Solving** – Tackling complex, ambiguous challenges with logic and creativity.
- **Critical Thinking** – Evaluating data, algorithms, and results with a sharp, analytical mindset.
- **Team Collaboration** – Working seamlessly across research, engineering, and product teams.
- **Adaptability** – Thriving in fast-evolving tech landscapes and rapidly changing priorities.
- **Communication** – Explaining technical ideas clearly to both technical and non-technical audiences.