

Hussein M. Chalhoub

AI Engineer - Data Analyst - Data Scientist

hussein_chalhoub@hotmail.com • [+96171161367](tel:+96171161367) • [linkedin/in/hussein-chalhoub/](https://www.linkedin.com/in/hussein-chalhoub/) • <https://github.com/Husseinch24>

EDUCATION

Master of Engineering in Artificial Intelligence <i>Saint Joseph University of Beirut, Beirut, Lebanon</i>	<i>September 2024 – June 2026</i>
Bachelor of Engineering in Computer Engineering <i>Al Maaref University, Beirut, Lebanon</i>	<i>October 2019 – June 2024</i>

PROJECTS

AI-Based Panoramic Reconstruction of Cadastral Images - Master's Thesis January 2026 – June 2026

- Engineered a fully automated computer vision pipeline to reconstruct seamless panoramic views from historical Lebanese cadastral land-record scans, requiring no manual input at any stage
- Designed an edge orientation discovery system across all 78 unique map pairs using FFT phase correlation to detect sub-pixel alignment offsets and **2D Normalized Cross-Correlation (NCC)** to validate full-strip texture similarity, yielding a ranked confidence score per pair
- Implemented a coarse-to-fine rotation search combined with ink-density similarity scoring to enable fully unsupervised adjacency graph construction
- Applied **Mask R-CNN** for parcel boundary detection and **SIFT**-based feature matching for geometric alignment and homography estimation between adjacent map sheets
- Assembled the final panorama using a greedy best-first **BFS spanning** tree with linear alpha blending at every seam, enforcing collision-free placement and seamless stitching across all selected maps

AI-Driven Marketing Analytics System Oct. 2025 – Dec. 2025

- Automated ingestion and preprocessing of **multi-million-row e-commerce datasets** for daily business intelligence reporting.
- Engineered **sentiment analysis and KPI aggregation** to monitor product health and marketing risk.
- Built **interactive dashboards and executive summaries** for decision-makers using automated reporting workflows.
- Delivered **actionable insights for marketing strategy**, including top sellers, risk products, and customer pain points.
- Enabled **continuous market monitoring** using Google Trends and live product scraping.
- Ends up by sending emails to customers of the daily summary business analysis.

Python Teaching Chatbot – Generative AI Project Nov. 2025 – Dec. 2025

Built an Ai teaching assistant for Python, LangChain, and modern AI technologies using local and cloud language models.

- Built a complete **RAG pipeline** including web scraping, text chunking, embedding generation, vector storage, semantic retrieval, and controlled answer generation.
- Integrated **Ollama** for offline inference and **Google Gemini** for high-quality cloud reasoning.
- Developed a full Streamlit UI with logging, source citation, and confidence scoring.

AgriBot: Integrated Agricultural Management System March 2024 – June 2024

Developed a full-stack web application combining E-commerce, an LLM-powered chatbot, and a plant disease detection system using deep learning.

- Achieved **93% accuracy in plant disease classification** using a custom **CNN model** trained on **15,000+ images**.
- Integrated an LLM chatbot to provide real time agricultural advice, improving user engagement by **40%**.

EXPERIENCE

Web Development Intern at IDS Aug. 2023 –Sep. 2023

- Designed and implemented API endpoints in C# for seamless SQL Server integration, enabling full CRUD operations.
- Collaborated with development teams to deliver scalable solutions following industry best practices.

COMPETITIONS

AI Challenge Participant at ZAKA.AI Nov 2023 - Dec 2023

Detected fraudulent utility meter readings using Python.

TECHNICAL SKILLS

- Languages:** English, Arabic, French
- ML/AI:** Computer Vision, PyTorch, TensorFlow, Keras, Scikit-learn, NLP, n8n, MLOPS, Docker, AWS
- Data:** Pandas, NumPy, Power BI

SOFT SKILLS

- Critical Thinking, Teamwork, Problem Solving, Continuous Learning