

Mohammed Mufleh

AI Engineer | LLM, RAG, FastAPI

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ABOUT ME

Results-driven AI Engineer specializing in building production-ready AI systems using LLMs, RAG pipelines, prompt engineering, embeddings, OCR, and computer vision. I design end-to-end solutions that combine strong backend intelligence with practical, user-focused experiences. I bring a product-focused mindset to AI engineering, turning advanced AI concepts into practical solutions that improve efficiency, consistency, and decision-making. I am seeking opportunities to contribute to impactful AI products in LLMs, RAG, automation, and applied machine learning.

EXPERIENCE

AI Lab Assistant

Jan 2024

PRINCE MUQRIN UNIVERSITY | MEDINA, KSA

- Designed and led an 18-week training program on deep learning, ROS robotics, and generative models.
- Developed and deployed a real-time Tic-Tac-Toe robot using ROS for motion control, YOLOv8 for board detection, and Minimax for strategy.
- Collaborated with faculty to document lab workflows and implement ethical evaluation checklists for student experiments.

AI Intern

Summer 2023

EXPERT VISION COMPANY (EVC) | MECCA, KSA

- Built NLP-driven data pipelines and custom vision classifiers using OpenCV and PyTorch.
- Experimented with transformer-based summarization and prompt-engineering workflows for automated document analysis.
- Developed and assembled drone hardware—including motors and flight controllers—and programmed automated missions in QGroundControl. Integrated onboard AI face-recognition for real-time video processing and feature extraction.

PROJECTS

Advanced E-Commerce Search Engine

- Architected a retrieval-augmented generation system combining Elasticsearch, vector embeddings, and a lightweight LLM to answer natural-language product queries.
- Integrated Stable Diffusion to generate on-demand product mockups based on customer descriptions.
- Implemented monitoring dashboards to track latency, relevance scores, and user feedback loops.

Customer Support Copilot

- Designed and built a full-stack AI support copilot from scratch, featuring a WhatsApp-like agent workspace for customer tickets, draft replies, and source-backed response generation.
- Developed a retrieval-augmented generation system that merges knowledge-base citations, customer/order context, and persistent conversation memory to deliver accurate, context-aware support drafts with built-in safety guardrails.
- Architected scalable product features including multi-tenant auth, JWT login/guest access, user-scoped conversation storage, audit trails, structured reply metadata, and feedback-driven learning for iterative response improvement.

Clothing Customization Platform

- Built a Streamlit app that ingests garment images, applies deep-segmentation, and lets users recolor segments via a JSON-driven palette.
- Fine-tuned a diffusion model on custom datasets to generate style variations, with evaluation metrics for color consistency and style adherence.

Crowd Analysis with "Focal Inverse Distance Transform Maps"

- Implemented the "Focal Inverse Distance Transform Maps" method for AI-based crowd localization—fine-tuning on 3,200 manually annotated images (from 70,000+) and building a rapid annotation pipeline. Achieved high-precision head detection, real-time entry/exit tracking, and smart congestion alerts, and am now integrating temporal dynamics and spatial relationships via Transformer and Graph Matching architectures.

TurtleBot3 Tic-Tac-Toe Robot

- Led end-to-end development of a human-playable Tic-Tac-Toe robot—designing it to face a person using ROS for control, YOLOv8 for environment perception, and Minimax for game strategy.

EDUCATION

B.Sc. in Artificial Intelligence

Prince Muqrin bin Abdulaziz University, Medina, KSA | May 2024

SKILLS

- Programming
- Machine Learning Engineer
- Data Science
- Computer vision
- Microsoft Azure
- Robotics(ROS)
- RAG Systems
- Prompt Engineering
- Embeddings & Vector Search
- LLM Application Development
- Conversation Memory Systems
- FastAPI
- Docker
- JWT Authentication
- Multi-Tenant SaaS Architecture
- PostgreSQL / pgvector

LANGUAGES

- Arabic
- English

LINKS

- [GitHub: github.com/alhydym7](https://github.com/alhydym7)
- [LinkedIn: linkedin.com/in/mohammed-alhydym7](https://www.linkedin.com/in/mohammed-alhydym7)