Khaled Mohamed Abdelgaber AI Engineer

Email: khaled.edu.engineer@gmail.com Phone: +201150882331 Location: Sohag, Egypt LinkedIn: https://www.linkedin.com/in/khaled-mohammed-msc-1b2a6119a GitHub: https://github.com/Khaled-Mohammed-Abdelgaber

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PROFESSIONAL SUMMARY

AI Engineer skilled in building LLM-powered applications and intelligent agents using Langchain, OCR, and RAG. Experienced in Python, FastAPI, and deep learning, with a research background in physiological signal modeling. Focused on deploying real-world AI solutions with measurable impact.

SKILLS

- Programming: Python, FastAPI, JavaScript
- Machine Learning: Scikit-learn, XGBoost, LightGBM
- Deep Learning: TensorFlow, PyTorch, Keras
- LLM & NLP: LangChain, BERT, RoBERTa, RAG, Hugging Face
- Web Automation: Selenium, n8n
- Databases: Supabase, SQL, NoSQL
- Tools: Git, OpenCV, Pillow, VS Code
- Biomedical Signal Processing: NeuroKit, SciPy, NumPy, Pandas
- Cloud & APIs: OpenAI API, Gemini API, RESTful APIs
- Document Processing: OCR, PDF parsing, Image Captioning

WORK EXPERIENCE

Machine Learning Engineer | Freelancing | Egypt | Jan 2022 - Present - Contributed to AI projects including road damage detection, image translation, and cyberbullying detection. - Fine-tuned BERT and RoBERTa models for Arabic NLP. - Built intelligent agents for email automation, legal Q&A, and OCR processing. - Applied RAG and LLMs in financial analysis, medical content generation, and image captioning.

Deep Learning Biomedical Engineer | Upwork | Egypt | Dec 2024 - Feb 2025 - Designed signal processing pipelines and optimized neural networks. - Addressed data imbalance using augmentation and resampling techniques. - Worked with ECG, ABP, and PPG biomedical signals. - Utilized TensorFlow, PyTorch, NeuroKit, and Python scientific libraries.

EDUCATION

M.Sc. in Electrical Engineering | Sohag University | Egypt | 2025 GPA: 3.44/4.0 Relevant Coursework: Machine Learning, Deep Learning, Computer Vision, NLP

B.Sc. in Electrical Engineering | Sohag University | Egypt | 2020 GPA: 93.6/100 Relevant Coursework: Probability, Mathematics (1-3), Networking

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PROJECTS

Arabic Review Classification for Talabate - Tech: PyTorch, LangChain, Python, NLTK - Fine-tuned BERT to classify Arabic customer reviews. Achieved 74% accuracy on 2,500-sample test set.

Cyberbullying Detection on Twitter - Tech: PyTorch, LangChain, Python, NLTK - Built and fine-tuned RoBERTa-large model for tweet classification. Achieved 87% accuracy.

Road Damage Detection with YOLOv11 Nano - Tech: Ultralytics, OpenCV, Pillow, PyTorch - Enhanced YOLOv11 Nano with self-attention layers. Achieved 2% mAP@50 improvement.

AI Agent for Gmail, Calendar & Meet Automation - Tech: n8n, Supabase, OpenAI - Automated communications and scheduling. Integrated with Telegram for real-time interaction.

Contextual RAG System for Netflix 2024 Financial Report - Tech: n8n, Supabase, OpenAI - Implemented a contextual RAG system for financial Q&A with vector search.

Automated Medical Article Publishing System - Tech: Python, Selenium, Gemini API - Created a desktop app to generate and publish medical content with branded watermarks.

Intelligent Document Processing with LLMs - Tech: LangChain, Python, PyTorch - Used OCR + LLM to extract and structure scanned documents for automation.

Image Captioning for Architectural Designs - Tech: Gemini API, Python, PyTorch - Built an app for batch image captioning targeted at architecture professionals.

PUBLICATIONS

Subject-Independent Per-Beat PPG to Single-Lead ECG Mapping URL: https://www.mdpi.com/2078-2489/14/7/377 - Developed beat-based autoencoder for on-device PPG-to-ECG mapping. - Applied two-stage clustering for beat segmentation. Achieved ~0.92 correlation and ~0.0086 MSE.

CERTIFICATIONS

- Generative Deep Learning with TensorFlow
- Custom and Distributed Training with TensorFlow
- NLP in TensorFlow
- Introduction to Machine Learning in Production
- Sequences, Time Series, and Prediction
- Custom Models, Layers, and Loss Functions (TensorFlow)
- AWS Academy Graduate: ML Foundations
- Retrieval-Augmented Generation with LangChain
- Developing LLM Apps with LangChain