Abdullah Magdy Elbarrany

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GitHub Profile
LinkedIn Profile

Professional Summary

Senior Machine Learning Engineer with strong ownership in building and deploying **production-grade AI systems in healthcare and computer vision**. Expertise in **LLMs, deep learning, and end-to-end ML systems**, including architecture design, cloud deployment, monitoring, and cross-functional collaboration. Proven ability to translate research into scalable real-world products.

Experience

•Machine Learning Engineer *Mar 2024 – Present*

mDoc Remote

- Led end-to-end development of an AI-powered health coach, owning system architecture, model development, real-world validation, and production deployment.
- Designed and evaluated **LLM-driven components**, applying prompt engineering, safety alignment, and iterative evaluation for clinically reliable behavior.
- Architected ML services and backend integrations, connecting LLM inference pipelines with user-facing applications.
- Deployed and operated scalable inference systems on **Google Cloud Platform (GCP)**, implementing monitoring, logging, and health dashboards.
- Collaborated with clinical, product, and engineering stakeholders; authored technical documentation covering architecture and deployment trade-offs.

•Machine Learning Engineer *May 2023 – Dec 2024*

Zedzag On-site

- Led a team of four engineers to deliver **HomeIoT**, a Flutter-based smart home management platform with Firebase Authentication and Cloud Firestore.
- Designed, trained, and deployed a **YOLO-based computer vision system**, integrating real-time inference into a mobile application.
- Owned the ML lifecycle from data preparation and training to deployment and optimization.

Technical Skills

- **Languages**: Python, C++, C#, PHP, Dart
- **ML & AI**: TensorFlow, Keras, Scikit-learn, YOLO, OpenCV, Pandas, NumPy
- **Cloud & MLOps**: GCP, AWS, Docker, Firebase
- **Frameworks**: Flutter, .NET
- **Databases**: MySQL, SQLite

Publications & Technical Writing

•From Benchmarks to the Real World: Why Healthcare AI Needs Real-World Data mDoc Blog

•The Use of Pose Estimation for Abnormal Behavior Analysis in Poultry Farms DOI

•BuckTracker: System For Multi Banknotes Tracking DOI

•Abnormal Behavior Analysis for Surveillance in Poultry Farms using Deep Learning IEEE Xplore

•Chicken Behavior Analysis for Surveillance in Poultry Farms Paper (PDF)

Professional Activities & Service

•Peer Reviewer – IEEE & Springer Journals Web of Science | ORCID

Selected Projects

•Abnormal Behavior Analysis for Poultry Farms

- Built a real-time computer vision monitoring system for poultry behavior, achieving **99.72%** precision in pose-based disease detection (YOLOv8) and up to **99.2%** precision in trajectory-based analysis (BI-LSTM / GRU).
- Tech: Python, YOLOv8, OpenCV, CNN, BI-LSTM, GRU.

•Statue Vision (AI-Powered Museum Guide)
GitHub

- Led development and deployment of a YOLO-based statue recognition system for museums.
- Integrated a Flask API with a Flutter mobile app to scan statues and retrieve historical details.
- Tech: Python, OpenCV, Flask, Firebase, Flutter.

•BuckTracker – Multi-Banknote Tracking System
GitHub

- Developed an AI-driven banknote tracking system using OCR and CNNs to detect and trace currency movements.
- Achieved **92%** accuracy in serial number recognition across USD, GBP, and EUR banknotes.
- Tech: Python, OpenCV, Tesseract OCR, TensorFlow, CNN, NumPy.

•HomeIoT – Smart Home Automation App

- Led development of a Flutter-based IoT app for creating homes/rooms and controlling smart lamps discovered on the local network.
- Implemented Firebase Authentication and Cloud Firestore for structured device and user data.
- Enabled real-time device control via network scanning, API requests, and MQTT communication.
- Tech: Flutter, Firebase, MQTT, Networking.

Achievements

•First Place – 6th UGRF Special Edition Nile University, Egypt *Aug 2024*

•Finalist – Innov8 Hackathon Bahrain *2023*

•Best Paper Award – IMSA International Conference IMSA *2023*

•Finalist – Benha Hackathon Benha University, Egypt *2022*

Education

•Bachelor degree of Computer Science *2019–2023*
University of Greenwich CGPA: 3.6