Abdullah Magdy Elbarrany

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⭘ GitHub Profile
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PROFESSIONAL SUMMARY

Machine Learning Engineer with strong experience in **computer vision, deep learning, and applied AI systems**. Passionate about **performance-driven engineering**, data analysis, and building ML tools that support real-world engineering decision-making. Experienced in developing, deploying, and evaluating **machine learning and LLM-based systems** in production environments, with a strong interest in high-performance, data-intensive domains.

EXPERIENCE

•Machine Learning Engineer *Mar 2024 – Present*
mDoc Remote

- Led end-to-end development of production AI systems, owning system architecture, model development, evaluation, and deployment.
- Developed and evaluated **LLM-based components** for summarisation, information retrieval, and decision support, working closely with domain experts.
- Designed ML services integrating inference pipelines with user-facing applications.
- Deployed scalable ML systems on **Google Cloud Platform (GCP)**, implementing monitoring, logging, and performance dashboards.
- Authored technical documentation covering architecture decisions, performance trade-offs, and deployment considerations.

•Machine Learning Engineer *May 2023 – Dec 2024*
Zedzag On-site

- Designed, trained, and deployed **real-time computer vision systems**, integrating high-throughput inference into production applications.
- Owned the ML lifecycle from data preparation and training to optimisation and deployment.
- Collaborated closely with engineers to integrate ML models into end-user systems.

TECHNICAL SKILLS

- **Languages**: Python, C++, C#, PHP, Dart

- **ML & AI**: PyTorch, TensorFlow, Keras, Scikit-learn, YOLO, OpenCV

- **Applied ML Concepts**: Embedding models, similarity search, Retrieval-Augmented Generation (RAG), anomaly detection, trend analysis, multi-modal learning (vision + language)

- **Scientific Computing**: NumPy, Pandas, SciPy

- **Cloud & MLOps**: GCP, AWS, Docker, Firebase

- **Systems & Tools**: Git, Linux

- **Frameworks**: Flutter, .NET

- **Databases**: MySQL, SQLite

SELECTED PROJECTS

•Abnormal Behavior Analysis for Poultry Farms

- Built a **real-time computer vision monitoring system** for high-throughput video data, supporting anomaly detection and trend analysis.
- Achieved **99.72%** precision in pose-based 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

  – Developed a YOLO-based visual recognition system with embedding-based similarity matching.
  – Integrated a Flask API with a Flutter mobile app to enable real-time image inference and data retrieval.
  – Tech: Python, OpenCV, Flask, Firebase, Flutter.

- **BuckTracker – Multi-Banknote Tracking System**
  GitHub

  – Designed an AI-driven tracking system using CNNs and OCR for visual identification and similarity comparison across image sequences.
  – 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.

PROFESSIONAL ACTIVITIES & SERVICE

- **Presenter – Global Digital Health Forum (Google Nairobi)**

  – Delivered a technical presentation titled **"Insights and Learnings from Implementation of Digital Health and AI in Global Health"** at a Google-hosted GDHF session in Nairobi, Kenya.
  – Presented real-world AI deployment insights, system architecture considerations, and performance trade-offs to a technical and global health audience.

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

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)

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