

Mohamed Saad Eldin Elmansy

Senior Data Scientist | GenAI & MLOps | Python · NLP · BI Developer | Data & AI Consultant | O&M · NRW Expert | ML Automation · Data-Driven Strategy | Trainer

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 Certifications: credly.com/users/mohamedelmansy

Profile Summary

Senior Data Scientist and AI Consultant with 14+ years of experience delivering end-to-end data science, machine learning, and business intelligence solutions across Egypt, Saudi Arabia, UAE, and Oman. Specialized in Python, cloud-based analytics, GenAI, and explainable AI (XAI), with a strong track record of automating KPIs, streamlining compliance reporting, and reducing operational inefficiencies. Proficient in developing scalable AI products, LLM-powered automation tools and intelligent dashboards, and self-serve BI tools using Python, SQL, Power BI, and NLP techniques. Experienced in MLOps, model governance, and ethical AI practices across regulated industries. Delivered 1700+ hours of technical training and led cross-functional stakeholder engagements on data strategy, regulatory and legal analytics, and contract evaluation tools. Currently pursuing an Executive MBA, with a focus on transforming tax and compliance workflows through GenAI and data-driven strategy. Recognized for collaborative leadership, innovation delivery, and bridging technical, legal, and business teams to drive measurable impact.

Key Skills

- Data Engineering & Big Data: Cloudera CDP (HDFS, Hive, Impala, Oozie), Apache Spark, PySpark, Informatica DEI/EDC (PowerCenter-equivalent), Apache Airflow, Kafka, On-premise architecture, Data Contracts, ETL pipelines, Data Modeling.
- Programming & Automation: Python (Pandas, NumPy, Scikit-learn), SQL, PySpark, RESTful APIs, Workflow Automation, Git, API Integration, Data Quality Scripts.
- Cloud & Infrastructure: AWS, Azure, GCP, On-premise deployment, DataOps, CI/CD, Cloud-to-OnPrem Integration, Change Data Capture (CDC).
- Machine Learning & Analytics: Regression, Classification, Clustering, Forecasting, Model Deployment, MLOps Collaboration, Explainable AI (XAI), Feature Store Design, Model Monitoring, Prompt Engineering, LangGraph.
- BI & Dashboards: Power BI (DAX, Dataflows), Tableau, Rationalization, KPI Automation, Operational & Legal Analytics.
- Governance & Ethics: Responsible AI, Data Contracts, Data Privacy, Compliance Management, Blockchain for Finance, Metadata Governance, Audit-Ready Pipelines.
- Domain Expertise: SCADA, GIS, NRW Control, DMA Zoning, Utility Infrastructure Analytics, Contracts Evaluation.
- Leadership & Delivery: Technical Mentorship, Stakeholder Engagement, AI-Driven HR, ChatGPT Business Use, Innovation Management, Cross-Functional Collaboration, Agile Delivery, O&M Strategy, 1700+ Hours of Technical Training.

Experience

Engineering Consultant - National Water Company (NWC), Saudi Arabia

2024–Present

- Deployed AI solutions for predictive maintenance, increasing asset uptime by 22%.
- Built centralized data platforms and automated KPI dashboards, SLA benchmarking tools, and operational and legal analytics visualizations, improving reporting speed by 40%.
- Designed contract evaluation tools (spider charts, scoring models) used across the kingdom.
- Developed RESTful APIs for secure data exchange and automation workflows.
- Ensured analytics delivery aligned with data privacy regulations and client-sensitive data standards across regulated domains.
- Developed ETL pipelines using Informatica DEI/EDC (comparable to PowerCenter) for metadata management and data lineage in compliance-sensitive environments.
- Built and deployed LLM-based agents using Langchain for automated KPI generation.
- Trained 100+ staff on O&M workflows, KPI-driven contract evaluation, tax reporting, and data governance compliance.
- Enabled AI-driven pipelines for predictive asset risk modeling and cost deviation detection.
- Launched a stakeholder-friendly web system for O&M data sharing and tracking.

- Freelance Data Scientist & Analyst & Trainer** **2020–Present**
Online and Onsite (Egypt, KSA, AUE, Oman, UK, Canada)
- Developed interactive dashboards (Power BI, Tableau, Python Dash) that improved decision-making speed by 30%.
 - Created full analytics pipelines using Python, SQL, and APIs to automate workflows and reporting.
 - Supported 500+ students and professionals in training, research, statistical modeling, and Python mentoring.
 - Collaborated with product managers and data engineers to design and deploy scalable analytics solutions aligned with business objectives.
- Freelancer IT & Software Engineer, Global / Remote** **2010–Present**
- Constructed custom web platforms (e-commerce, order tracking) using PHP, JS, MySQL.
 - Implemented AI tools for image detection and customer behavior analysis, boosting engagement by up to 40%.
 - Managed and optimized full-stack IT environments (servers, networks, business apps) for small clients.
- Senior NRW Engineer, Holding Company for Water and Waste Water, Egypt** **2016–2024**
- Led data-driven utility optimization strategy using predictive analytics and anomaly detection, achieving a 30% performance gain.
 - Executed DMA & DMZ rollout, integrating GIS, SCADA, and field data into real-time dashboards.
 - Created Excel/Python tools for anomaly detection, cutting manual processing time by 50%.
 - Delivered over 40 training sessions on NRW analytics and operational KPIs.
 - Managed donor-funded projects with GIZ, EU, VNG and USAID.
- O&M Engineer, Greater Cairo & Damietta Water Companies** **2011–2016**
- Led field operations for leakage detection, SCADA-integrated meter calibration, and preventive maintenance; supervised teams on pump installation, valve testing, and asset upgrades including STP pipelines.
 - Collaborated with GIS teams to define DMA zones and build hydraulic models; delivered field training on advanced leakage detection tools and diagnostics.
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- Highlighted Training Courses Delivered**
- AI-Powered Presentations – *Ministry of Transport, Onsite, Oman (2025)* - Enabled 20+ professionals to cut design time by 50% using AI tools, improving clarity and audience impact.
 - Data Mining – *Online, KSA (2024)* - Empowered 60+ attendees in pattern discovery and clustering; 90% reported boosted trend analysis confidence.
 - Applied Statistics & Data Analysis (KAUST) – *Online, KSA (2024)* - Achieved 85% improvement in participants' Python-based statistical accuracy on real datasets.
 - Power BI for Data Analysis – *Onsite, Oman (2024)* - Guided analysts through building dynamic dashboards; 100% achieved hands-on project delivery.
 - Statistical Reporting with Excel – *Royal Oman Police, Onsite, Oman (2024)* - Enhanced report quality across 4 departments; reduced errors by 30% through structured Excel analysis.
 - Data Visualization with Tableau – *Nama Company, Onsite, Oman (2023)* - Boosted data storytelling skills for 25+ staff; 75% demonstrated improved insight extraction.
 - Advanced Power BI Techniques – *Online, KSA (2023)* - Elevated DAX and modeling capabilities; 80% applied solutions directly to business dashboards.
 - Advanced AI Applications – *Online, KSA (2023)* - Delivered hands-on ML model training; engineers reached 90%+ real-time classification accuracy.
 - Infographic Design Fundamentals – *Online, UAE (2022)* - Transformed complex data into visuals; improved stakeholder understanding by 60%.
 - Design Thinking for Visualization – *Online, KSA (2022)* - Led a 3-day workshop yielding user-centered dashboards in 5 departments.
 - Creative Data Interpretation with Python – *Online, KSA (2021)* - Taught matplotlib & seaborn techniques; 95% of participants applied skills immediately in their roles.

Highlighted Projects

- O&M Contracts Bundling System – NWC, Saudi Arabia (2024) – Applied explainable AI (XAI) techniques on contracts management and analytics via centralized dashboards and ML models, boosting O&M efficiency.
- Road Safety Dashboard – KAUST, Saudi Arabia (2024) – Reduced Road incidents by 15%.
- Online Ordering System – Hull, UK (2024) – Improved order efficiency by 30% and cut wait times 25% through real-time tracking and automation.
- NRW Reduction Phase – VNG, Egypt (2023–2024) – Lowered NRW by 25% through AI-based monitoring.
- NRW Program – USAID, Egypt (2019–2024) – Achieved 30% reduction in NRW via smart technologies.
- DMA Establishment – GIZ, Egypt (2018–2024) - Cut water loss by 15% through DMA zoning.
- Technical Support – EU, Egypt (2019–2023) – Enabled 20% NRW reduction by optimizing daily O&M practices.
- AI E-Commerce Platform – Canada (2023) – Boosted sales by 40% using predictive telecom-scale data Model.
- YOLO Person Detection – RMIT, Australia (2022) – Built real-time detection system achieving high accuracy.
- NRW Feasibility Study – EU, Egypt (2019–2022) – Delivered insights that shaped Egypt's national NRW strategy.
- DMA Monitoring – KFW/Dorsch, Egypt (2019–2020) – Reduced NRW by 20% through smart DMAs.
- Network Strategy Development – EU, Egypt (2015–2017) – Reduced NRW by 10%.

Highlighted Certifications and Professional Training

AI & Data Science

- Data Science Essentials with Python – Cisco, 2025.
- AI Fundamentals + Capstone – IBM, 2025.
- AI for Everyone – Cisco, 2025.
- Data Science Specialization – IBM, 2025.
- AICE (Artificial Intelligence Career Essentials) – ALX Africa, 2025
- Data Science – ALX Africa, 2023–2024.

Project Management

- PMP Exam Preparation – PM-Tricks, KSA, 2024.

Water Sector & Utilities

- Sustainable Water Services – Netherlands, 2023.
- NRW & Leakage Control (B) – Japan, Fuji TECOM, 2017.
- Water Plant & Network Operation – Egypt, 2018.
- Chlorine Safety Training – Egypt, 2018.
- Electrical Systems Training (Cables, Motors, Transformers) – Egypt, 2012–2014.
- Water Meter Installation & Calibration – Egypt, 2012.

Education

- Executive MBA (in progress) – Cardiff Institute, UK (Expected 2025).
- B.Sc. in Electronics & Communication Engineering – Cairo University (2010).

Languages

- Arabic (Native). | English (Fluent).

MEMBERSHIPS

- Saudi Council of Engineers – Professional Engineer. | Egyptian Engineers Syndicate – Certified Engineer.