

# 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

 Riyadh, Saudi Arabia |  +201003706946, +966500482796 |  mohammedelmansy@gmail.com

 LinkedIn: linkedin.com/in/mohamedsaad-eldin |  Portfolio: mohelmansy.github.io

 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.

<b>Freelance Data Scientist &amp; Analyst &amp; Trainer</b>	<b>2020–Present</b>
<b>Online and Onsite (Egypt, KSA, AUE, Oman, UK, Canada)</b>	
<ul style="list-style-type: none"> <li>Developed interactive dashboards (Power BI, Tableau, Python Dash) that improved decision-making speed by 30%.</li> <li>Created full analytics pipelines using Python, SQL, and APIs to automate workflows and reporting.</li> <li>Supported 500+ students and professionals in training, research, statistical modeling, and Python mentoring.</li> <li>Collaborated with product managers and data engineers to design and deploy scalable analytics solutions aligned with business objectives.</li> </ul>	
<b>Freelancer IT &amp; Software Engineer, Global / Remote</b>	<b>2010–Present</b>
<ul style="list-style-type: none"> <li>Developed and maintained full-stack web platforms using Django, WordPress, Joomla, PHP, JavaScript, and SQL, ensuring secure, scalable, and high-performance applications.</li> <li>Designed and implemented RESTful APIs in Django and Python to enable smooth integration between backend services and frontend systems.</li> <li>Optimized relational databases (MySQL/PostgreSQL) for performance, integrity, and security, including schema design, indexing, and query optimization.</li> <li>Collaborated with clients to translate requirements into technical solutions, improving delivery speed and system reliability.</li> <li>Implemented AI-powered modules that increased user engagement by up to 40%.</li> <li>Managed full-stack IT environments, including server deployment, version control (Git), and application performance monitoring for small-to-medium clients.</li> </ul>	
<b>Senior NRW Engineer, Holding Company for Water and Waste Water, Egypt</b>	<b>2016–2024</b>
<ul style="list-style-type: none"> <li>Led data-driven utility optimization strategy using analytics and anomaly detection, achieving a 30% performance gain.</li> <li>Executed DMA &amp; DMZ rollout, integrating GIS, SCADA, and field data into real-time dashboards.</li> <li>Created Excel/Python tools for anomaly detection, cutting manual processing time by 50%.</li> <li>Delivered over 40 training sessions on NRW analytics and operational KPIs.</li> <li>Managed donor-funded projects with GIZ, EU, VNG and USAID.</li> </ul>	
<b>O&amp;M Engineer, Greater Cairo &amp; Damietta Water Companies</b>	<b>2011–2016</b>
<ul style="list-style-type: none"> <li>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.</li> <li>Collaborated with GIS teams to define DMA zones and build hydraulic models; delivered field training on advanced leakage detection tools and diagnostics.</li> </ul>	
<b>Highlighted Training Courses Delivered</b>	
<hr/> <ul style="list-style-type: none"> <li>AI-Powered Presentations – <i>Ministry of Transport, Onsite, Oman (2025)</i> - Enabled 20+ professionals to cut design time by 50% using AI tools, improving clarity and audience impact.</li> <li>Data Mining – <i>Online, KSA (2024)</i> - Empowered 60+ attendees in pattern discovery and clustering; 90% reported boosted trend analysis confidence.</li> <li>Applied Statistics &amp; Data Analysis (KAUST) – <i>Online, KSA (2024)</i> - Achieved 85% improvement in participants' Python-based statistical accuracy on real datasets.</li> <li>Power BI for Data Analysis – <i>Onsite, Oman (2024)</i> - Guided analysts through building dynamic dashboards; 100% achieved hands-on project delivery.</li> <li>Statistical Reporting with Excel – Royal Oman Police, <i>Onsite, Oman (2024)</i> - Enhanced report quality across 4 departments; reduced errors by 30% through structured Excel analysis.</li> <li>Data Visualization with Tableau – <i>Nama Company, Onsite, Oman (2023)</i> - Boosted data storytelling skills for 25+ staff; 75% demonstrated improved insight extraction.</li> <li>Advanced Power BI Techniques – <i>Online, KSA (2023)</i> - Elevated DAX and modeling capabilities; 80% applied solutions directly to business dashboards.</li> <li>Advanced AI Applications – <i>Online, KSA (2023)</i> - Delivered hands-on ML model training; engineers reached 90%+ real-time classification accuracy.</li> </ul>	

- 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

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- 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

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### 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

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

## Languages

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

## MEMBERSHIPS

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