Ahmed Hekal

Data Scientist | Machine Learning Engineer

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Summary

Results-driven Data Scientist and Machine Learning Engineer with extensive experience designing, developing, and deploying scalable machine learning models and data pipelines on AWS. Proficient in supervised and unsupervised learning, Deep learing, with a focus on delivering measurable business impact. As a passionate Data Science Instructor, I have trained numerous professionals and students, achieving a high certification pass rate. Skilled in translating complex datasets into actionable insights, optimizing cloud-based architectures, and driving data-driven decision-making.

Education

Bachelor's Degree in Electrical, Electronics, and Communications Engineering Cairo High Institute

- **Graduation Project**: Designed and implemented a quadcopter control system using PID controllers, achieving stable flight in test scenarios (Grade: Excellent).
- **Overall Degree**: Good

Work Experience

AI Team Lead   AMIT Learning

- Lead a team of data scientists to teach advanced machine learning models, including ensemble methods (e.g., XGBoost, Random Forest) and deep learning architectures (e.g., LSTMs) for predictive analytics.
- Oversee the deployment of models on AWS SageMaker, optimizing inference latency through hyperparameter tuning and model quantization.

Instructor - Data Science & Machine Learning   AMIT Learning

- Designed and delivered a comprehensive curriculum covering regression, classification, clustering, and deep learning (e.g., CNNs, RNNs) using Python libraries (Scikit-learn, TensorFlow, PyTorch).
- Trained numerous students annually, achieving a high pass rate in AWS Certified Data Analytics certification exams.
- Guided multiple capstone projects, including predictive maintenance models using Gradient Boosting (e.g., LightGBM) and time series forecasting with ARIMA and Prophet, resulting in successful project deployments.
- Collaborated with industry experts to align course content with market demands, incorporating real-world case studies on AWS Redshift.

Data Scientist & Cloud Machine Learning Engineer   FORTE CLOUD

- Developed and deployed machine learning models, including Random Forest and Gradient Boosting (XGBoost) for customer churn prediction, achieving high accuracy and reducing churn.
- Utilized AWS SageMaker for hyperparameter optimization and model training, reducing training time through distributed computing and Elastic Inference.
- Built and managed a cloud-based data warehouse using AWS Redshift, enabling real-time analytics for business teams.

- Automated ETL pipelines using AWS Glue, reducing data processing time and ensuring data consistency across platforms.

Research Assistant   Ain Shams University

- Developed a smart aquaponics monitoring system using AWS IoT Core, integrating time series forecasting models (e.g., SARIMA) to optimize water quality metrics, improving crop yield.
- Conducted research on scalable cloud-based ML models for IoT, presenting findings at the IEEE Conference on IoT, with a focus on reducing latency in event-driven architectures.

Instructor - Embedded Systems & Cloud Computing   Information Technology Institute (ITI)

- Delivered training on integrating AWS Lambda into embedded systems, enabling students to deploy IoT projects successfully.
- Developed hands-on labs for real-time data processing using MQTT protocols and cloud-based ML inference, reducing processing latency.

Certifications

- Huawei Certified ICT Associate - Big Data (HCIA-Big Data)
- AWS Certified Data Analytics - Specialty
- Deep Learning Nanodegree, Udacity
- AWS Certified Machine Learning - Specialty

Key Skills

- **Cloud Platforms**: AWS (SageMaker, Redshift, Athena, Glue, AppFlow)
- **Machine Learning**: Supervised Learning (Linear Regression, Logistic Regression, Random Forest, XGBoost), Unsupervised Learning (K-Means, DBSCAN), Deep Learning (CNNs, RNNs, LSTMs, Transformers),
- **Programming**: Python (Pandas, NumPy, Scikit-learn, TensorFlow, PyTorch), SQL
- **Data Engineering**: ETL Pipelines (AWS Glue), Data Warehousing, Real-time Data Processing
- **Data Visualization**: Seaborn, Matplotlib, AWS Quicksights
- **Model Deployment**: AWS SageMaker, Model Optimization (Quantization, Pruning), Autoscaling

Projects

Federated Learning with Blockchain

- Developed a federated learning framework using TensorFlow Federated and Ethereum blockchain, enabling secure, decentralized model training for sensitive governmental data.
- Achieved high model accuracy while ensuring data privacy through homomorphic encryption, reducing data breach risks.

Data Warehouse for SAP Data using AWS Services

- Built an automated data pipeline with AWS AppFlow and AWS Glue to integrate SAP ERP data into AWS Redshift, processing large datasets with high reliability.
- Created interactive dashboards in Tableau, reducing decision-making time for business stakeholders.

Ford Analysis

- Analyzed Fords bike-sharing dataset using Random Forest and SHAP analysis, identifying key pre-

dictors of ride demand with high accuracy.

- Delivered actionable insights that optimized bike allocation, increasing operational efficiency.

Predictive Maintenance for Industrial Equipment

- Developed a Gradient Boosting model (LightGBM) to predict equipment failures, achieving high precision and reducing downtime.
- Deployed on AWS SageMaker with autoscaling, cutting inference costs.

Fraud Detection System using AWS Fraud Detector

- Built a fraud detection system using AWS Fraud Detector and XGBoost, achieving high accuracy in identifying fraudulent transactions.
- Reduced false positives, saving significant operational costs annually.

Data-Driven Marketing Using AWS Personalize

- Developed personalized recommendation models using AWS Personalize and collaborative filtering, increasing customer engagement.
- Optimized model inference latency through SageMaker endpoint configuration.