Mohamed Ashour

Senior Software Engineer | Data-Intensive Systems, Cloud & ML Infrastructure

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Professional Summary

Senior Software Engineer with **9+ years of experience** building data-intensive systems, distributed processing pipelines, cloud infrastructure, and ML-enabled applications. Experienced in architecting systems for satellite and Earth observation data, real-time processing, and scientific workloads, and in translating scientific and product requirements into reliable production software. Strong background in **Python, Go, AWS, Kubernetes, Airflow, Postgres, and Infrastructure as Code**.

Professional Experience

Senior Data Engineer | Hydrosat

Jul 2025 - Present

- Lead architecture and development of **satellite imagery processing pipelines**, from ingestion and scientific processing through quality control and delivery. Translate requirements from Data Science and Product into service boundaries and engineering milestones.
- Design distributed processing on **AWS with Airflow, Kubernetes, SQS, and Postgres**, with workload scaling, retries, failure isolation, and reprocessing to support reliable pipeline operation.
- Package scientific models as **versioned Python libraries**, separating model logic from orchestration and infrastructure to improve testability and reuse across workflows.
- Define pipeline observability and data-quality checks using processing metadata, correlation identifiers, metrics, and lineage to trace data across processing stages.

Technologies: Python, AWS, Airflow, Kubernetes, SQS, Postgres, Docker, Terraform/OpenTofu, GDAL, Rasterio

Software Engineer | Spire Global

Jan 2022 - Jul 2025

- Designed and implemented **real-time data processing systems** for GNSS-R and GNSS-RO satellite data, meeting strict latency and reliability requirements for customers including **NASA, NOAA, and EUMETSAT**.
- Led engineering for an **ML-based sea ice detection system**, collaborating with scientists from initial experimentation through production deployment.
- Reduced AWS infrastructure costs by approximately **$250K annually** through architecture and infrastructure optimization.
- Built and maintained **CI/CD pipelines and Infrastructure as Code** for scalable and reliable cloud deployments.

Technologies: Python, Go, AWS, Docker, Postgres, Terraform, DynamoDB, Jenkins

Software Engineer | Yaoota

Oct 2020 - Dec 2021

- Built and maintained web-scraping and data-processing pipelines for collecting, extracting, and enriching product data.
- Developed ML and NLP components and contributed to **Kipp**, the primary scraping platform, and **Case**, an internal NLP and data-processing library.

Technologies: Python, NLP, Redis, Docker, Scrapy

Software Engineer | Egyptian Air Force

Oct 2018 - Oct 2020

Official military title: Software Specialized Officer

- Developed and maintained internal software systems and database-backed applications for multiple departments.

Technologies: C#, Oracle Database

Software Engineer | Elements Financial Technologies

Aug 2017 - Mar 2018

- Developed backend components for a **Payment Gateway as a Service** supporting online payment processing for business customers.

Technologies: Node.js, MongoDB, Docker, AWS

Freelance Python Developer | Self-Employed

Jan 2017 - Mar 2020

- Delivered web-scraping, data-processing, and machine-learning solutions for clients.

Technologies: Python, Selenium, Scikit-learn

Software Engineering Intern | Codescalers - Egypt

Jul 2016 - Sep 2016

- Built internal dashboards for monitoring cloud infrastructure.

Technologies: Python, Flask

Technical Skills

- **Languages:** Python, Go, SQL
- **Data & Distributed Systems:** Apache Airflow, Postgres, Redis, DynamoDB, SQS, event-driven pipelines
- **Cloud & Infrastructure:** AWS, Kubernetes, Docker, Terraform/OpenTofu
- **CI/CD & Reliability:** Jenkins, GitHub Actions, automated testing, observability
- **ML & Geospatial Computing:** Scikit-learn, NumPy, GDAL, Rasterio, production ML systems

Education

B.Sc. in Computer & Systems Engineering | Mansoura University, Egypt

2012 - 2017

Technical Writing & Education

- **Blog:** blog.m-ashour.space - Writing about software engineering, data systems, and machine learning.
- **YouTube:** youtube.com/@mohammedashour1994 - Educational content covering Python, machine learning, and data science.
- Experience in technical mentoring and teaching software engineering and data-related topics.