Machine Learning Engineering on AWS

Duration: 3 Days Course Code: GK910029 Delivery Method: Virtual Learning

Overview:

Machine Learning (ML) Engineering on Amazon Web Services (AWS) is a 3-day intermediate course designed for ML professionals seeking to learn machine learning engineering on AWS. Participants learn to build, deploy, orchestrate, and operationalize ML solutions at scale through a balanced combination of theory, practical labs, and activities.
Participants will gain practical experience using AWS services such as Amazon SageMaker AI and analytics tools such as Amazon EMR to develop robust, scalable, and production-ready machine learning applications.
Course level: Intermediate

Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

Target Audience:

This course is designed for professionals who are interested in building, deploying, and operationalizing machine learning models on AWS. This could include current and in-training machine learning engineers who might have little prior experience with AWS. Other roles that can benefit from this training are DevOps engineer, developer, and SysOps engineer.

Objectives:

- In this course, you will learn to do the following:
- Explain ML fundamentals and its applications in the AWS Cloud.
- Process, transform, and engineer data for ML tasks by using AWS services.
- Select appropriate ML algorithms and modeling approaches based on problem requirements and model interpretability.
- Design and implement scalable ML pipelines by using AWS services for model training, deployment, and orchestration.
- Create automated continuous integration and delivery (CI/CD) pipelines for ML workflows.
- Discuss appropriate security measures for ML resources on AWS.
- Implement monitoring strategies for deployed ML models, including techniques for detecting data drift.

Prerequisites:

We recommend that attendees of this course have the following:

- Familiarity with basic machine learning concepts
- Working knowledge of Python programming language and common data science libraries such as NumPy, Pandas, and Scikit-learn
- Basic understanding of cloud computing concepts and familiarity with AWS
- Experience with version control systems such as Git (beneficial but not required)

Content:

Day 1

Module 0: Course Introduction

Module 1: Introduction to Machine Learning (ML) on AWS

Topic 1A: Introduction to ML

Topic 1B: Amazon SageMaker AI

Topic 1C: Responsible ML

Module 2: Analyzing Machine Learning (ML) Challenges

Topic 2A: Evaluating ML business challenges

Topic 2B: ML training approaches

Topic 2C: ML training algorithms

Module 3: Data Processing for Machine Learning (ML)

Topic 3A: Data preparation and types

Topic 3B: Exploratory data analysis

Topic 3C: AWS storage options and choosing storage

Module 4: Data Transformation and Feature Engineering

Topic 4A: Handling incorrect, duplicated, and missing data

Topic 4B: Feature engineering concepts

Topic 4C: Feature selection techniques

Topic 4D: AWS data transformation services

Lab 2: Data Processing Using SageMaker Processing and the SageMaker Python SDK

Day 2

Module 5: Choosing a Modeling Approach

Topic 5A: Amazon SageMaker AI built-in algorithms

Topic 5B: Selecting built-in training algorithms

Topic 5C: Amazon SageMaker Autopilot

Topic 5D: Model selection considerations

Topic 5E: ML cost considerations

Module 6: Training Machine Learning (ML) Models

Topic 6A: Model training concepts

Topic 6B: Training models in Amazon SageMaker AI

Lab 3: Training a model with Amazon SageMaker AI

Module 7: Evaluating and Tuning Machine Learning (ML) models

Topic 7A: Evaluating model performance

Topic 7B: Techniques to reduce training time

Topic 7C: Hyperparameter tuning techniques

Lab 4: Model Tuning and Hyperparameter Optimization with Amazon SageMaker AI

Module 8: Model Deployment Strategies

Topic 8A: Deployment considerations and target options

Topic 8C: Choosing a model inference strategy

Topic 8D: Container and instance types for inference

Lab 5: Shifting Traffic A/B

Day 3

Module 9: Securing AWS Machine Learning (ML) Resources

Topic 9A: Access control

Topic 9B: Network access controls for ML resources

Topic 9C: Security considerations for CI/CD pipelines

Module 10: Machine Learning Operations (MLOps) and Automated Deployment

Topic 10A: Introduction to MLOps

Topic 10B: Automating testing in CI/CD pipelines

Topic 10C: Continuous delivery services

Lab 6: Using Amazon SageMaker Pipelines and the Amazon SageMaker Model Registry with Amazon SageMaker Studio

Module 11: Monitoring Model Performance and Data Quality

Topic 11A: Detecting drift in ML models

Topic 11B: SageMaker Model Monitor

Topic 11C: Monitoring for data quality and model quality

Topic 11D: Automated remediation and

Lab 1: Analyze and Prepare Data with Amazon SageMaker Data Wrangler and Amazon EMR	Topic 8B: Deployment strategies	troubleshooting Lab 7: Monitoring a Model for Data Drift Module 12: Course Wrap-up

Additional Information:

Activities
This course includes presentations, hands-on labs, demonstrations, and group exercises.

Further Information:

For More information, or to book your course, please call us on 00 20 (0) 2 2269 1982 or 16142

training@globalknowledge.com.eg

www.globalknowledge.com/en-eg/

Global Knowledge, 16 Moustafa Refaat St. Block 1137, Sheraton Buildings, Heliopolis, Cairo