Amazon SageMaker Studio for Data Scientists

Course Duration: 24 Hours **Course code: GK110001**

1. Course Overview

The Amazon SageMaker Studio for Data Scientists course provides hands-on experience with data processing, model development, and deployment using Amazon SageMaker Studio. Participants will learn to clean and prepare data, develop machine learning models, and manage end-to-end ML workflows. The course also covers model monitoring and managing resources in SageMaker. This Amazon SageMaker Studio Training for Data Scientists equips professionals with essential skills for building scalable ML solutions.

2. What you'll learn?

In this course, you will learn to:

Accelerate the process to prepare, build, train, deploy, and monitor ML solutions using Amazon SageMaker Studio

3. Target Audience

Experienced data scientists who are proficient in ML and deep learning fundamentals

4. Pre-Requisites

We recommend that all attendees of this course have:

- Experience using ML frameworks
- Python programming experience
- At least 1 year of experience as a data scientist responsible for training, tuning, and deploying models
- AWS Technical Essentials

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5. Course content

Module 1 Setup and SageMaker Navigation

- Launch SageMaker Studio from the Service Catalog
- Navigate the SageMaker Studio UI
- Demo 1: SageMaker UI Walkthrough
- Demo 2: Creating EMR cluster in SageMaker UI
- Lab 1: Setting Up Amazon SageMaker Studio

Module 2 Data Processing

- Use SageMaker Studio to collect, clean, visualize, analyze, and transform data
- Set up a repeatable process for data processing
- Use SageMaker to validate collected data is ML-ready
- Detect bias in collected data and estimate baseline model accuracy
- Lab 2: Analyze and Prepare Data Using Amazon SageMaker Data Wrangler
- Lab 3: Analyze and Prepare Data at Scale Using Amazon EMR
- Lab 4: Data Processing Using Amazon SageMaker Processing and Sagemaker Python SDK
- Lab 5: Feature Engineering Using SageMaker Feature Store

Module 3 Model Development

- Use SageMaker Studio to develop, tune, and evaluate a machine learning model against business objectives and fairness and explainability best practices
- Fine-tune machine learning models using automatic hyperparameter optimization capability
- Use debugger to surface issues during model development
- Demo 3: Algorithms (Notebooks)
- Demo 4: Debugging

- Demo 5: Autopilot
- Lab 6: Using SageMaker Experiments to Track Iterations of Training and Tuning Models
- Lab 7: Analyzing, Detecting, and Setting Alerts Using SageMaker Debugger
- Lab 8: Using SageMaker Clarify for Bias, and Explainability

Module 4 Deployment and Inference

- Design and implement a deployment solution that meets inference use case requirements
- Create, automate, and manage end-to-end ML workflows using Amazon SageMaker Pipelines
- Use Model Registry to create a Model Group, register, view, and manage model versions, modify model approval status and deploy a model
- Lab 9: Inferencing with SageMaker Studio
- Lab 10: Using SageMaker Pipelines and SageMaker Model Registry with SageMaker Studio

Module 5 Monitoring

- Configure a Model Monitor solution to detect issues and initiate alerts for changes in data quality, model quality, bias, and feature attribution drift
- Create a monitoring schedule with a predefined interval
- Demo 6: Model Monitoring

Module 6 Managing SageMaker Studio Resources and Updates

- List resources that accrue charges
- Recall when to shut down instances
- Explain how to shut down instances, notebooks, terminals, and kernels
- Understand the process to update SageMaker Studio

Module 7 Capstone

The Capstone lab will bring together the various capabilities of SageMaker Studio discussed in this course. Students will be given the opportunity to prepare, build, train, and deploy a model using a tabular dataset not seen in earlier labs. Students can choose among basic, intermediate, and advanced versions of the instructions