Practical Data Science with Amazon SageMaker

Course Duration: 8 Hours **Course code: GK0630**

1. Course Overview

This one day course covers to solve a real-world use case with machine learning and produce actionable results using Amazon SageMaker. This course teaches you how to use Amazon SageMaker to cover the different stages of the typical data science process, from analyzing and visualizing a data set, to preparing the data and feature engineering, down to the practical aspects of model building, training, tuning and deployment.

2. What you'll learn?

In this course, you will learn to:

- Discuss the benefits of different types of machine learning for solving business problems
- Describe the typical processes, roles, and responsibilities on a team that builds and deploys ML systems
- Explain how data scientists use AWS tools and ML to solve a common business problem
- Summarize the steps a data scientist takes to prepare data
- Summarize the steps a data scientist takes to train ML models
- Summarize the steps a data scientist takes to evaluate and tune ML models
- Summarize the steps to deploy a model to an endpoint and generate predictions
- Describe the challenges for operationalizing ML models
- Match AWS tools with their ML function

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3. Target Audience

- Development Operations (DevOps) engineers
- Application developers

4. Pre-Requisites

We recommend that attendees of this course have:

- AWS Technical Essentials
- Entry-level knowledge of Python programming
- Entry-level knowledge of statistics

5. Course content

Module 1: Introduction to Machine Learning

- Benefits of machine learning (ML)
- Types of ML approaches
- Framing the business problem
- Prediction quality
- Processes, roles, and responsibilities for ML projects

Module 2: Preparing a Dataset

- Data analysis and preparation
- Data preparation tools
- Demonstration: Review Amazon SageMaker Studio and Notebooks
- Hands-On Lab: Data Preparation with SageMaker Data Wrangler

Module 3: Training a Model

- Steps to train a model
- Choose an algorithm
- Train the model in Amazon SageMaker

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- Hands-On Lab: Training a Model with Amazon SageMaker
- Amazon CodeWhisperer
- Demonstration: Amazon CodeWhisperer in SageMaker Studio Notebooks

Module 4: Evaluating and Tuning a Model

- Model evaluation
- Model tuning and hyperparameter optimization
- Hands-On Lab: Model Tuning and Hyperparameter Optimization with Amazon SageMaker

Module 5: Deploying a Model

- Model deployment
- Hands-On Lab: Deploy a Model to a Real-Time Endpoint and Generate a Prediction

Module 6: Operational Challenges

- Responsible ML
- ML team and MLOps
- Automation
- Monitoring
- Updating models (model testing and deployment)

Module 7: Other Model-Building Tools

- Different tools for different skills and business needs
- No-code ML with Amazon SageMaker Canvas
- Demonstration: Overview of Amazon SageMaker Canvas
- Amazon SageMaker Studio Lab
- Demonstration: Overview of SageMaker Studio Lab

- (Optional) Hands-On Lab: Integrating a Web Application with an Amazon SageMaker Model Endpoint

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