CTR-704 AWS Machine Learning

Overview

Course Duration: 5 Days

About This Course

The AWS Machine Learning course provides a comprehensive introduction to machine learning services on AWS. It covers the full machine learning pipeline, from data preparation and feature engineering to model deployment and monitoring, using AWS tools such as SageMaker, Glue, and others.

Audience Profile

This course is designed for data scientists, machine learning engineers, and developers who want to leverage AWS for building and deploying machine learning models.

At Course Completion

- Understand the AWS services available for machine learning.
- Build, train, and deploy machine learning models using AWS SageMaker.
- Implement machine learning solutions for real-world problems on AWS.

Course Outline

Module 1: Introduction to AWS Machine Learning

- Overview of AWS Machine Learning Services
- Why use AWS for Machine Learning?
- Key Concepts in Machine Learning
- Setting up AWS Environment
- Introduction to AWS SageMaker

Module 2: Data Preparation and Feature Engineering

- Data Collection and Cleaning
- Feature Selection and Engineering

- Using AWS Glue for Data Preparation
- Best Practices in Data Management

Module 3: Building and Training Machine Learning Models

- Overview of Machine Learning Algorithms
- Using AWS SageMaker for Model Training
- Hyperparameter Tuning with SageMaker
- Training Models on Large Datasets using AWS EC2

Module 4: Model Evaluation and Optimization

- Evaluating Model Performance
- Confusion Matrix, Precision, Recall, and F1 Score
- Optimization Techniques
- AWS SageMaker Model Monitoring and Debugging

Module 5: Deployment and Operationalization

- Deploying Models with AWS SageMaker Endpoints
- Integrating Models into Applications
- Continuous Integration and Deployment (CI/CD) with AWS
- Monitoring Deployed Models in Production

Module 6: Machine Learning with AWS AI Services

- Introduction to AWS AI Services (Rekognition, Polly, Lex, etc.)
- Practical Examples and Use Cases
- Building AI-Driven Applications with AWS
- Customizing AWS AI Services for Specific Needs
- The with statement

Module 7: Advanced Topics in AWS Machine Learning

- AutoML with AWS
- Handling Imbalanced Data
- Working with Unstructured Data
- Deep Learning on AWS

Module 8: Security and Compliance in AWS Machine Learning

- Data Security Best Practices

- Managing Access and Permissions with IAM
- Compliance and Regulatory Considerations
- Security Tools and Services in AWS

Module 9: Real-World Applications and Case Studies

- Industry-Specific Applications of AWS Machine Learning
- Case Studies and Success Stories
- Lessons Learned and Best Practices
- Group Project: Building a Machine Learning Solution

Module 10: Final Project and Review

- Comprehensive Project on AWS Machine Learning
- Review of Key Concepts
- Final Project Presentations
- Course Summary and Future Learning Pathways

work environment: AWS SageMaker, AWS Glue, AWS EC2, AWS AI Services

Prerequisites

- Basic knowledge of machine learning concepts.
- Familiarity with Python programming.
- Experience with AWS services is beneficial but not required.