APPLIED TECHNOLOGY ACADEMY

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The Machine Learning Pipeline on AWS

Award Winning Training · Applied Technology Academy

This course explores how to the use of the iterative machine learning (ML) process pipeline to solve a real business problem in a project-based learning environment. Students will learn about each phase of the process pipeline from instructor presentations and demonstrations and then apply that knowledge to complete a project solving one of three business problems: fraud detection, recommendation engines, or flight delays.

LEVEL	DURATION	EXPERIENCE	AVERAGE SALARY	LABS
Specialty	**4 Days**	**Advanced**	**125,000**	**Yes**

Course Overview

By the end of the course, students will have successfully built, trained, evaluated, tuned, and deployed an ML model using Amazon SageMaker that solves their selected business problem. Learners with little to no machine learning experience or knowledge will benefit from this course. Basic knowledge of Statistics will be helpful.

Students will learn to:

- Select and justify the appropriate ML approach for a given business problem
- Use the ML pipeline to solve a specific business problem
- Train, evaluate, deploy, and tune an ML model using Amazon SageMaker
- Describe best practices for designing scalable, cost-optimized, and secure ML pipelines in AWS
- Apply machine learning to a real-life business problem after the course is complete

Course Outline

- **Lesson 0: Introduction to Data Lakes**
  - Describe the value of data lakes
  - Compare data lakes and data warehouses
  - Describe the components of a data lake
  - Recognize common architectures built on data lakes
  - Pre-assessment
- **Lesson 1: Introduction to Machine Learning and the ML Pipeline**
  - Overview of machine learning, including use cases, types of machine learning, and key concepts
  - Overview of the ML pipeline
  - Introduction to course projects and approach
- **Lesson 2: Introduction to Amazon SageMaker**
  - Introduction to Amazon SageMaker

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  - Demo: Amazon SageMaker and Jupyter notebooks
  - Hands-on: Amazon SageMaker and Jupyter notebooks
- **Lesson 3: Problem Formulation**
  - Overview of problem formulation and deciding if ML is the right solution
  - Converting a business problem into an ML problem
  - Demo: Amazon SageMaker Ground Truth
  - Hands-on: Amazon SageMaker Ground Truth
  - Practice problem formulation
  - Formulate problems for projects
  - Checkpoint 1 and Answer Review
- **Lesson 4: Preprocessing**
  - Overview of data collection and integration, and techniques for data preprocessing and visualization
  - Practice preprocessing
  - Preprocess project data
  - Class discussion about projects
  - Checkpoint 2 and Answer Review
- **Lesson 5: Model Training**
  - Choosing the right algorithm
  - Formatting and splitting your data for training
  - Loss functions and gradient descent for improving your model
  - Demo: Create a training job in Amazon SageMaker
- **Lesson 6: Model Evaluation**
  - How to evaluate classification models
  - How to evaluate regression models
  - Practice model training and evaluation
  - Train and evaluate project models
  - Initial project presentations
  - Checkpoint 3 and Answer Review
- **Lesson 7: Feature Engineering and Model Tuning**
  - Feature extraction, selection, creation, and transformation
  - Hyperparameter tuning
  - Demo: SageMaker hyperparameter optimization
  - Practice feature engineering and model tuning
  - Apply feature engineering and model tuning to projects
  - Final project presentations
- **Lesson 8: Deployment**

- How to deploy, inference, and monitor your model on Amazon SageMaker
- Deploying ML at the edge
- Demo: Creating an Amazon SageMaker endpoint
- Post-assessment
- Course wrap-up

Intended Audience

This course is intended for:

- Developers
- Solutions Architects
- Data Engineers
- Anyone with little to no experience with ML and wants to learn about the ML pipeline using Amazon SageMaker

Prerequisites

We recommend that attendees of this course have:

- Basic knowledge of Python programming language
- Basic understanding of AWS Cloud infrastructure (Amazon S3 and Amazon CloudWatch)
- Basic experience working in a Jupyter notebook environment

Follow-On Courses

- AI/ML Specialist
- Generative AI Essentials on AWS

Ready to enroll? Call 800.674.3550 or email Info@AppliedTechAc.com — private team cohorts, GSA MAS purchasing, military credentialing funding, VA GI Bill and VR&E and student financing available.