Course Outline

Lesson 1: Introduction to Machine Learning

This is the lesson you're in right now! In this lesson, we introduce you to:

- The big picture – what is this course about and why does it matter?
- The prerequisites you'll need to have before you take this course.
- The business stakeholders you'll interact with as a professional in this field.
- A short history of machine learning, to give you context on where we are now.
- When and when not to use machine learning.
- The tools and environment you'll need for the course.
- Setting up AWS Sagemaker. The main IDE you'll use in the course.
- The project you'll build at the end of the course.

By the end of this lesson, you should be fully ready to start on the following lessons in this course.

Lesson 2: Exploratory Data Analysis

In this lesson we'll learn:

- Use AWS Sagemaker Studio to access datasets from S3 and perform data analysis functions using AWS tools.
- Perform data analysis and feature engineering with Data Wrangler.
- Perform data analysis and feature engineering with Pandas in Sagemaker Studio.
- Label new data for a dataset with Sagemaker ground truth.

By the end of this lesson, you'll be able to load, analyze, and create data using tools from AWS Sagemaker.

Lesson 3: Machine Learning Concepts

In this lesson we'll learn:

- Design a domain, model, and data outline for a case study.
- Build a ML lifecycle and apply it to a dataset.
- Differentiate between supervised and unsupervised models and apply them to an appropriate dataset.
- Differentiate between regression and classification methods and apply them to an appropriate dataset.

After this lesson, you will be able to model data into a conceptual framework and start training the general algorithm types.

Lesson 4: Model Deployment Workflow

- Load a new dataset in Sagemaker studio, create the 3 data set types, and identify which columns are features or target values.
- Clean or create new features from a dataset.
- Train (fit) a regression/classification model using scikit learn.
- Evaluate a trained model using methods like mse, rmse, r2, accuracy, f1, and precision.
- Tune a model's hyper parameters to achieve a better result.

By the end of the lesson, you will be able to build a repeatable workflow for building, training, and evaluating models.

Lesson 5: Algorithms and Tools

- Train, test, and optimize
    - A linear model
    - A tree-based model
    - A XGBoost model.
    - An AutoGluon Tabular prediction model
- Create a model using Sagemaker Studio jumpstart.

After this lesson, you'll be able to use a large range of different models to build and solve different business problems.

How It All Comes Together

When you complete this course, you will have gained a skill that is a foundation for all future machine learning. This introduction provides a high-level guide in how to design and train models that tackle real-

world problems. The project will evaluate your skill set by giving you the opportunity to apply your mastery and compete in a public setting.