

## Lab 11: Working with Amazon SageMaker

- Amazon SageMaker is a fully managed machine learning service. With SageMaker, data scientists and developers can quickly and easily build and train machine learning models, and then directly deploy them into a production-ready hosted environment.
- It provides an **integrated Jupyter authoring notebook instance** for easy access to your data sources for exploration and analysis, so you don't have to manage servers.
- It also provides **common machine learning algorithms** that are optimized to run efficiently against extremely large data in a distributed environment.
- With native support for **bring-your-own-algorithms and frameworks**, SageMaker offers flexible distributed training options that adjust to your specific workflows.
- **Deploy a model into a secure and scalable environment** by launching it with a few clicks from SageMaker Studio or the SageMaker console.
- **Training and hosting are billed by minutes of usage**, with no minimum fees and no upfront commitments.

### **AWS official Web Resource:**

<https://docs.aws.amazon.com/sagemaker/latest/dg/whatis.html>

### **Lab Activities:**

#### **1. Build, train, and deploy a machine learning model with Amazon SageMaker**

**(Estimated Time 15 - 20 Minutes)**

After this activity student will learn how to:

1. Create a SageMaker notebook instance.
2. Prepare the data.
3. Train the model to learn from the data.
4. Deploy the model.
5. Evaluate your ML model's performance.

Step by Step guide:

<https://aws.amazon.com/getting-started/hands-on/build-train-deploy-machine-learning-model-sagemaker/>

Video Tutorial:

[https://www.youtube.com/watch?v=AVNqdT5ilOg&ab\\_channel=Simplilearn](https://www.youtube.com/watch?v=AVNqdT5ilOg&ab_channel=Simplilearn)

The above video is consisting of the following:

**(Estimated Time 25 Minutes)**

- 1.What Is AWS?
- 2.Why Do We Need AWS SageMaker?
- 3.What Is AWS SageMaker?
- 4.Benefits of AWS SageMaker?

5. Machine Learning With AWS SageMaker

6. How to Train a Model With AWS SageMaker?

7. How to Validate a Model With AWS?

8. Companies Using AWS SageMaker

9. Demo - Build, train and deploy a model. **At the time 10:28 Demo begins in the above video link.**

**2. Explore example notebooks that show how to apply machine learning, deep learning and reinforcement learning in Amazon SageMaker. (Estimated Time 20 Minutes)**

<https://github.com/aws/amazon-sagemaker-examples>

**3. Create a machine learning model automatically with Amazon SageMaker Autopilot.**

**(Estimated Time 15 - 20 Minutes)**

After completion of this activity students will be able to learn.

1. Create an AWS Account
2. Set up Amazon SageMaker Studio to access Amazon SageMaker Autopilot.
3. Download a public dataset using Amazon SageMaker Studio.
4. Create a training experiment with Amazon SageMaker Autopilot.
5. Explore the different stages of the training experiment.
6. Identify and deploy the best performing model from the training experiment.
7. Predict with your deployed model.

Step by Step Guide:

<https://aws.amazon.com/getting-started/hands-on/create-machine-learning-model-automatically-sagemaker-autopilot/>

Take the snapshots of the activities 1 and 3 that you performed and create a doc/pdf of your enrolment number\_lab11 (**Ex: E18CSE072\_Lab11**) and upload the file on LMS.