Deploying ML Models with SageMaker

FinTech

Lesson 13.2

Installation for Deep Learning

Please install before Deep Learning unit commences

Instructions

AWS Homework

Due on Sept 14

Class Objectives

By the end of class, you will be able to:

Describe the pros and cons of using cloud services to deploy machine learning models.

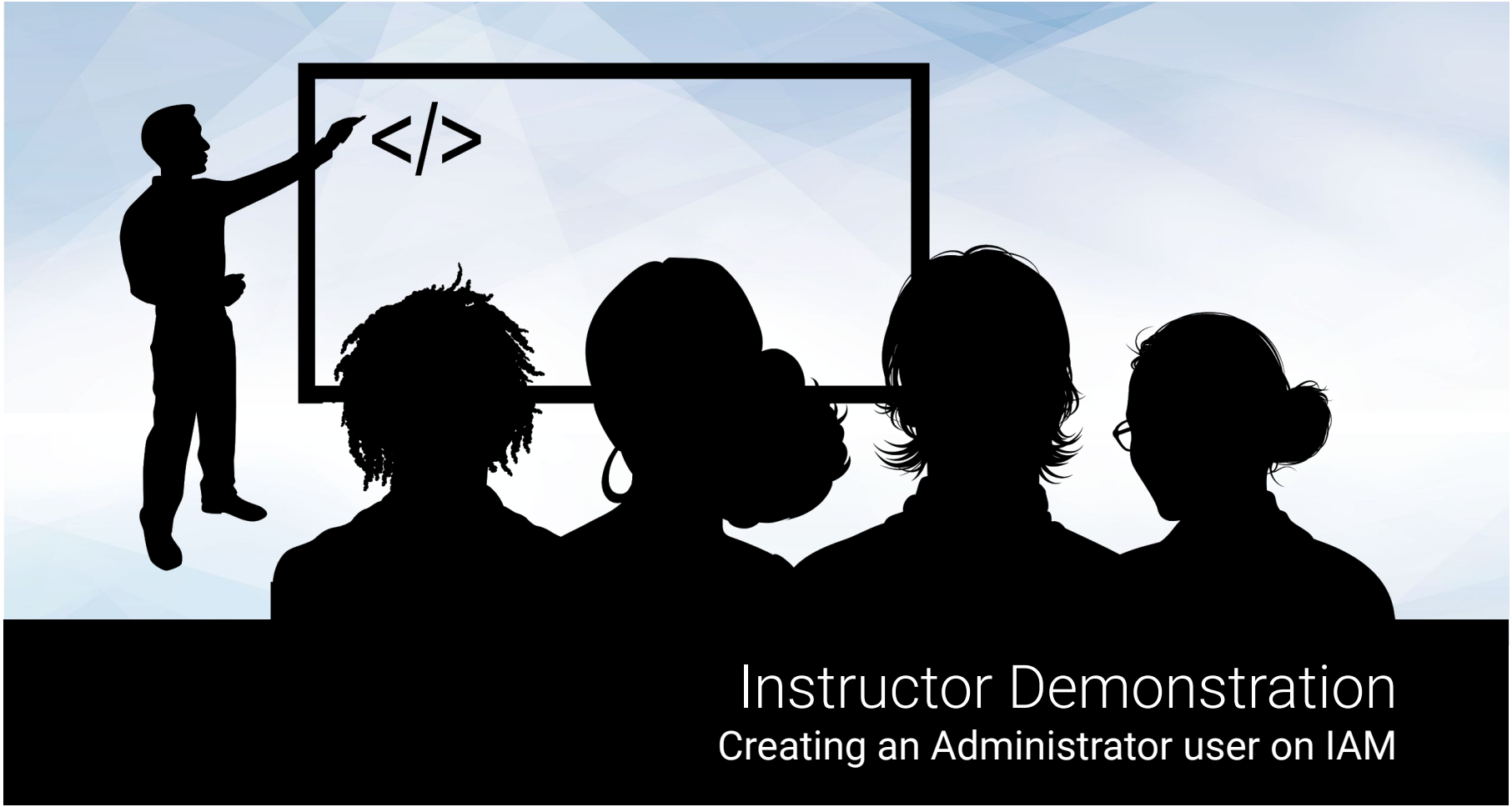
Orchestrate a cloud solution by combining different AWS services.

Understand how Amazon SageMaker works and how it can be used to deploy machine learning models.

Deploying Machine Learning Models with Amazon SageMaker

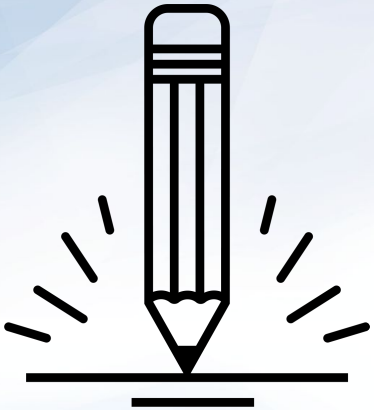
Amazon SageMaker

Amazon SageMaker (Free Trial) 	**Amazon Lex** (12 Months Free) 	**AWS Lambda** (Always Free) 	**Amazon S3** (12 Months Free) 
`250` hours per month of `t2.medium` notebook usage for the first two months	`10,000` text requests per month	`1,000,000` free requests per month	`5` GB of Standard Storage
`50` hours per month of `m4.xlarge` for training for the first two months	`5,000` speech requests per month	Up to `3.2` million seconds of compute time per month	`20,000` Get Requests
`125` hours per month of `m4.xlarge` for hosting for the first two months			`2,000` Put Requests



Instructor Demonstration

Creating an Administrator user on IAM



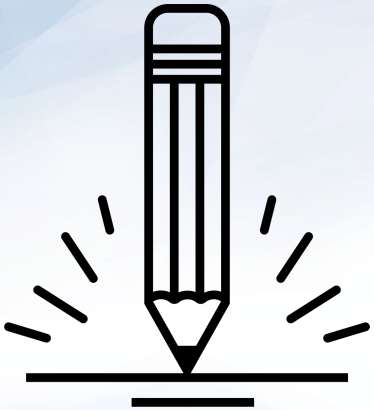
Activity:

Creating an Admin user on IAM

In this activity, you will create an administrator user to manage your AWS account.

Suggested Time:
10 Minutes

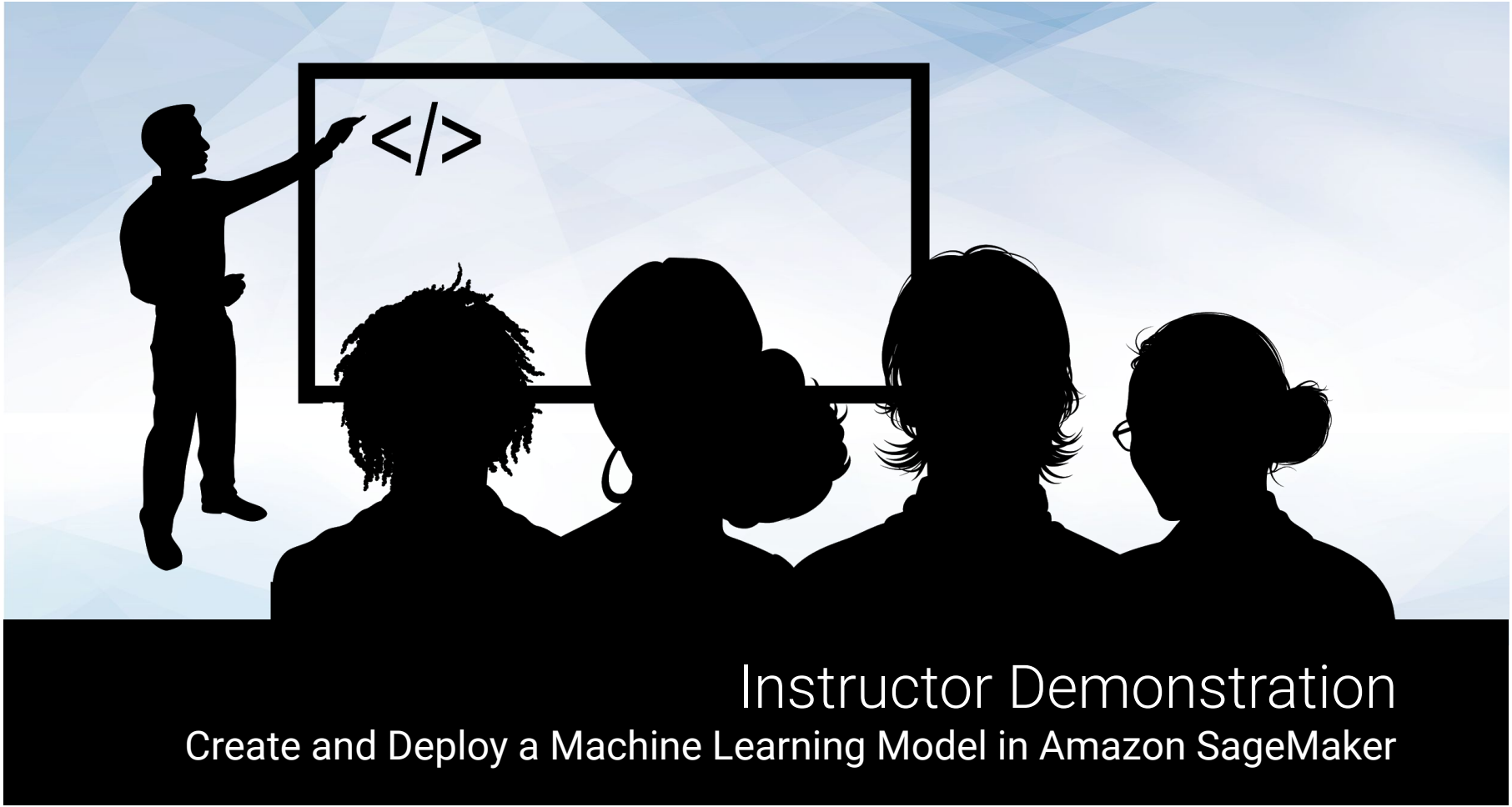
Time’s Up! Let’s Review.



Activity: Create an Amazon SageMaker Notebook Instance

In this activity, you will learn how to create an instance of Amazon SageMaker, and how to use Jupyter notebooks on the AWS cloud.

Suggested Time:
20 Minutes



Instructor Demonstration

Create and Deploy a Machine Learning Model in Amazon SageMaker

Challenge: Deploying a Housing Price Prediction Model in Amazon SageMaker

In this activity, you will calculate a linear regression model to predict the price of a house using the Boston Housing dataset and the SageMaker built-in `Linear Learner` algorithm.

Suggested Time:
20 Minutes

Time’s Up! Let’s Review.

Challenge Review

01 The data is fetched and analyzed to become familiar with it.

02 The data is split into Test and Train datasets and converted into to the RecordIO-wrapped ProtoBuf format used by Amazon SageMaker's algorithms.

03 The prepared and formatted data is uploaded to an Amazon S3 bucket.

04 The model is trained using a linear learner algorithm using the data stored in Amazon S3.

05 The trained model is deployed on an Amazon SageMaker instance.

06 Predictions are performed and the model's performance is scored.


Break

Deploying ML Models with Amazon SageMaker

Pros:

- Data storage capacity
- Hardware / GPU
- Cost savings
- Availability
- RESTful API

Cons:

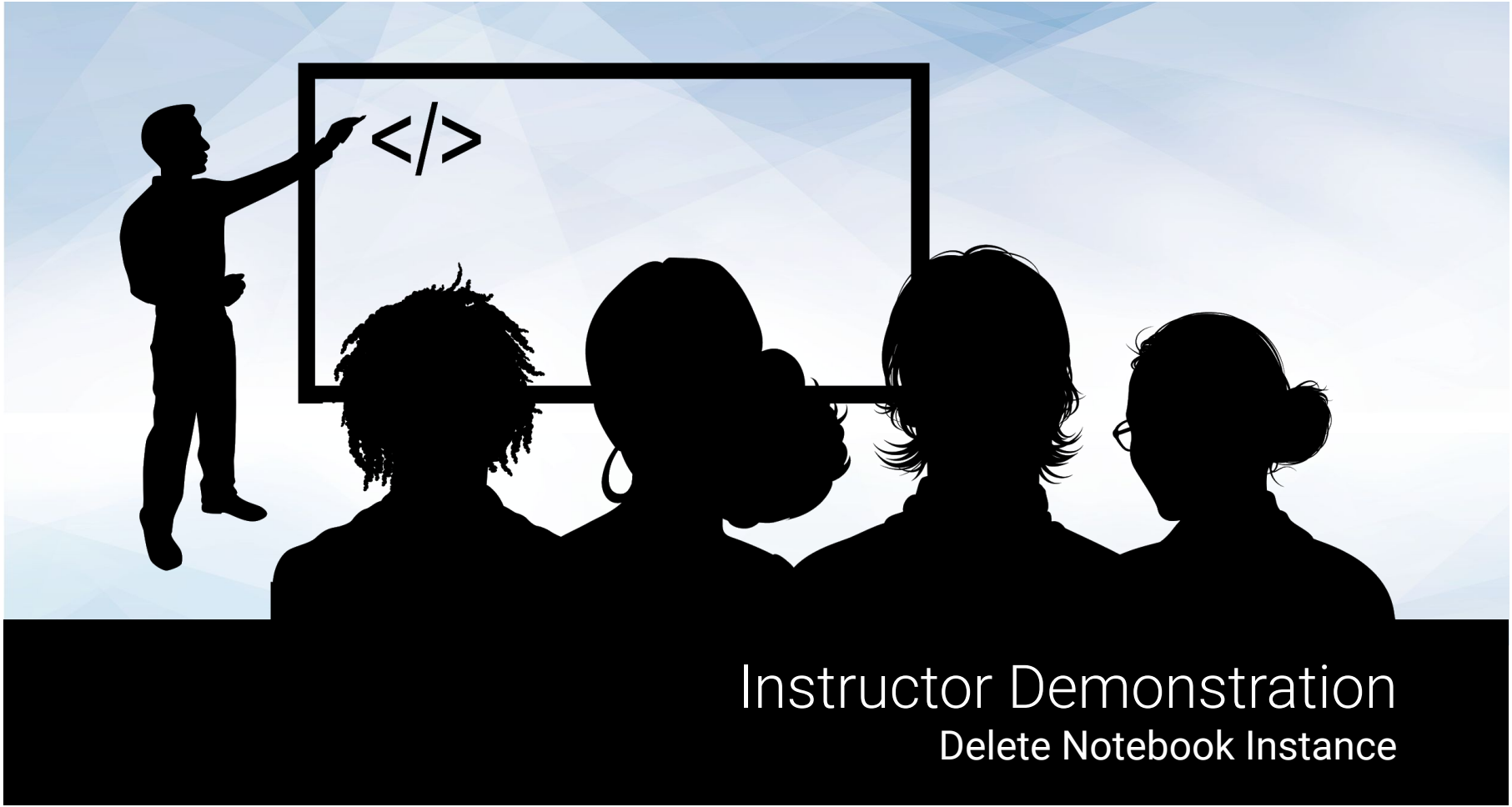
- Data privacy / security
- Visibility

Challenge: Credit Risk Evaluation with Amazon SageMaker

In this activity, you will train and deploy a binary classification model to predict the credit risk of a person using the German Credit Risk dataset and the SageMaker built-in `Linear Learner` algorithm.

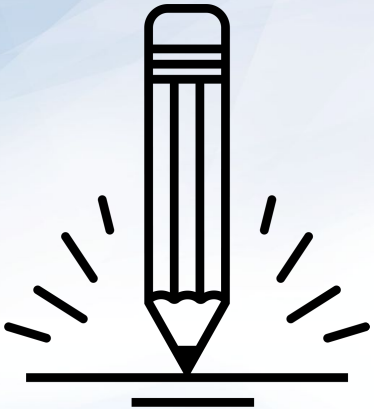
Suggested Time:
20 Minutes

Time’s Up! Let’s Review.



Instructor Demonstration

Delete Notebook Instance



Activity: Delete AWS resources

In this activity, you will delete all the AWS resources created in Today's class to avoid additional charges.

Suggested Time:
15 Minutes

Questions?