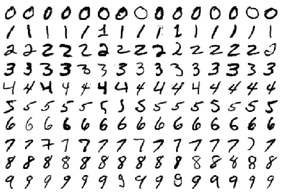
Deep Learning on AWS Lab 1 - Spinning up an Amazon SageMaker Notebook Instance and Running a Multilayer Perceptron Model

2 hours 10 Credits ★★★★½ Rate Lab

In this lab, you launch an Amazon SageMaker notebook instance and run a multilayer perceptron model that predicts handwritten digits from the MNIST dataset.



Objectives

After completing this lab, you will be able to:

- Launch an Amazon SageMaker notebook instance
- Launch a Jupyter notebook
- Create a multilayer perceptron neural network model
- Evaluate your predictions

Prerequisites

This lab requires:

- Access to a notebook computer with Wi-Fi running Microsoft Windows, Mac OS X, or Linux (Ubuntu, SuSE, or Red Hat). The Qwiklabs lab environment is not accessible using an iPad or tablet device, but you can use these devices to access the student guide.
- For Microsoft Windows users: administrator access to the computer
- An internet browser such as Chrome, Firefox, or Internet Explorer 9 (previous versions of Internet Explorer are not supported)

Duration

This lab takes approximately **45 minutes**.

Access the AWS Management Console

1. At the top of the lab page, launch the lab by clicking **Start Lab**

   A status bar shows the progress of the lab environment creation process. The AWS Management Console is accessible during lab resource creation, but your AWS resources may not be fully available until the process is complete.

   Note This process can take up to 12 minutes. Do not exit or refresh your browser during this time.

2. When the provisioning process is complete, click **Open Console**.

3. Log in to the console:

   - For **IAM user name**, type `awsstudent`
   - For **Password**, copy and paste the **Password** value from the left side of the lab page
   - Click **Sign In**

4. At the top-right corner of the console, make sure the AWS Region is the same as the **Region** displayed on the left side of the lab page.

   Click on this link to find region name matching region code.

   ⚠ Only use the Region indicated on the lab page. Do not change to a different Region during this lab.

Task 1: Launch your Amazon SageMaker notebook instance

In this task, you will create an Amazon SageMaker notebook instance. An Amazon SageMaker notebook instance is a fully managed machine learning Amazon Elastic Compute Cloud (Amazon EC2) compute instance running the Jupyter Notebook application.

5. In the AWS Management Console, on the **Services** menu, click **Amazon SageMaker**.

6. Click **Create notebook instance**

   Note If you don't see **Create notebook instance**, click **Notebook instances** in the left navigation menu. Then, click **Create notebook instance**

7. In the **Notebook instance settings** section, configure the following:

8. **Notebook instance name:** `Deeplearning-dev-notebook`

9. **Notebook instance type:** *ml.p2.xlarge*

   Amazon EC2 P2 instances are powerful, scalable instances that provide GPU-based parallel compute capabilities. P2 instances are designed for general purpose GPU compute applications using CUDA and OpenCL. These instances are ideally suited for machine learning, computational fluid dynamics, and computational finance workloads that require massive parallel floating point processing power.

8. Expand the **Additional configuration** section.

9. For **Lifecycle configuration**, click *Create a new lifecycle configuration.*

10. In the dialog box, for **Name**, enter `Lab1-LifecycleConfig`

11. In the **Scripts** section, click **Create notebook**.

12. Copy and paste the following code to line 4:

    Replace *<Region>* with region displayed at the left of this instruction.

    ```
    aws s3 cp s3://<Region>-tcprod/courses/ILT-TF-200-MLDEEP/v1.5.1/lab-1-setup-sagemaker/scripts/ /home/ec2-user/SageMaker/ --recursive
    ```

13. Click **Create configuration**

14. In the **Permissions and encryption** section, for **IAM role**, click *Enter a custom IAM role ARN.*

15. For **Custom IAM role ARN**, copy and paste the **SageMakerRoleArn** value from the left side of the lab page.

16. At the bottom of the page, click **Create notebook instance**

    Wait until your notebook instance status is ⊘ *InService*. This takes 2-5 minutes to complete.

17. Under **Actions**, open the Jupyter notebook instance by clicking **Open Jupyter**.

18. In Jupyter, open the **Lab1.ipynb** notebook file, which was automatically uploaded to the Jupyter console.

    To complete this lab, carefully move through the notebook, from top to bottom. Run each code cell and view its output. To run a cell, click within the cell and press **SHIFT + ENTER** OR click **Run** at the top of the page.

    Jupyter notebooks allow you to create and share documents that contain both code and rich text elements, such as equations. If you are unfamiliar with Jupyter notebooks, see Jupyter notebook docs.

Lab complete

Congratulations! You have completed this lab. To clean up your lab environment, do the following:

19. Close the **Lab1.ipynb** notebook file.

20. Log out of Jupyter Notebook by clicking **Quit**. Then, close the tab.

21. Log out of the AWS Management Console by clicking **awsstudent** at the top of the console, and then clicking **Sign Out**.

22. End the lab session in Qwiklabs by clicking **End Lab**.