[ML on GCP C8] Image Classification with a Linear Model

2 hours   Free

Overview

Duration is 1 min

In this lab, you will define a simple linear image model on MNIST using the Estimator API to do image classification.
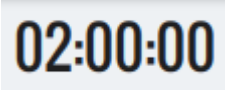
What you learn

In this lab, you will learn how to:

- Import the training dataset of MNIST handwritten images

- Reshape and preprocess the image data

- Setup your linear classifier model with 10 classes (one for each possible digit 0 through 9)

- Define and create your EstimatorSpec in tensorflow to create your custom estimator

- Define and run your train_and_evaluate function to train against the input dataset of 60,000 images and evaluate your model's performance

Setup

For each lab, you get a new GCP project and set of resources for a fixed time at no cost.

1. Make sure you signed into Qwiklabs using an **incognito window**.

2. Note the lab's access time (for example, 02:00:00 and make sure you can finish in that time block.

    There is no pause feature. You can restart if needed, but you have to start at the beginning.

3. When ready, click START LAB .

4. Note your lab credentials. You will use them to sign in to Cloud Platform Console.

Open Google Console

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked. Learn more.

Username

google2876526_student@qwiklabs.n

Password

TG959yrKDX

GCP Project ID

qwiklabs-gcp-0855e773352d3560

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5. Click **Open Google Console**.

6. Click **Use another account** and copy/paste credentials for **this**lab into the prompts.

> If you use other credentials, you'll get errors or **incur charges**.

7. Accept the terms and skip the recovery resource page.

> Do not click **End Lab**unless you are finished with the lab or want to restart it. This clears your work and removes the project.

Launch Cloud Datalab

To launch Cloud Datalab:

Step 1

Open Cloud Shell. The Cloud Shell icon is at the top right of the Google Cloud Platform [web console](#).

Step 2

In Cloud Shell, type:

```
gcloud compute zones
list
```

Note: Please pick a zone in a geographically close region from the following: **us-east1, us-central1, asia-east1, europe-west1**. These are the regions that currently support Cloud ML Engine jobs. Please verify [here](#)since this list may have changed after this lab was last updated. For example, if you are in the US, you may choose **us-east1-c** as your zone.

Step 3

In Cloud Shell, type:

```
datalab create
mydatalabvm --zone
<ZONE>
```

Replace with a zone name you picked from the previous step.

Note: follow the prompts during this process.

Datalab will take about 5 minutes to start.

Step 4

Look back at Cloud Shell and follow any prompts. If asked for an ssh passphrase, hit return (for no passphrase).
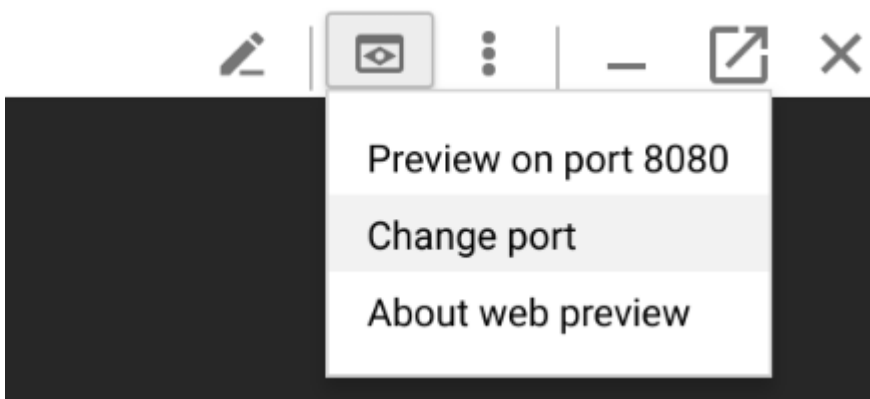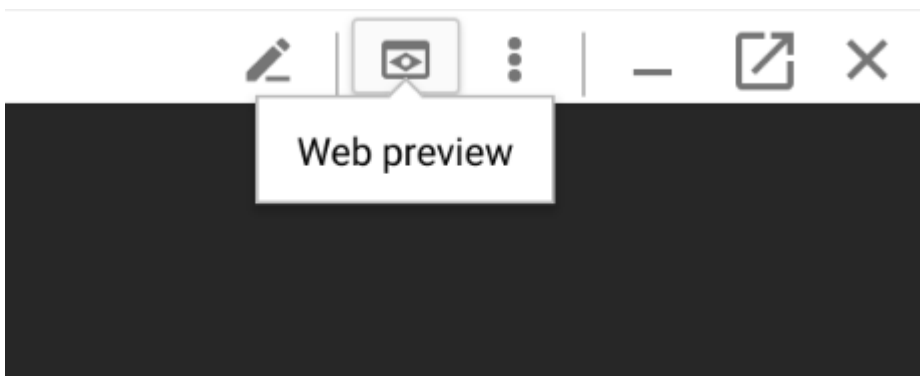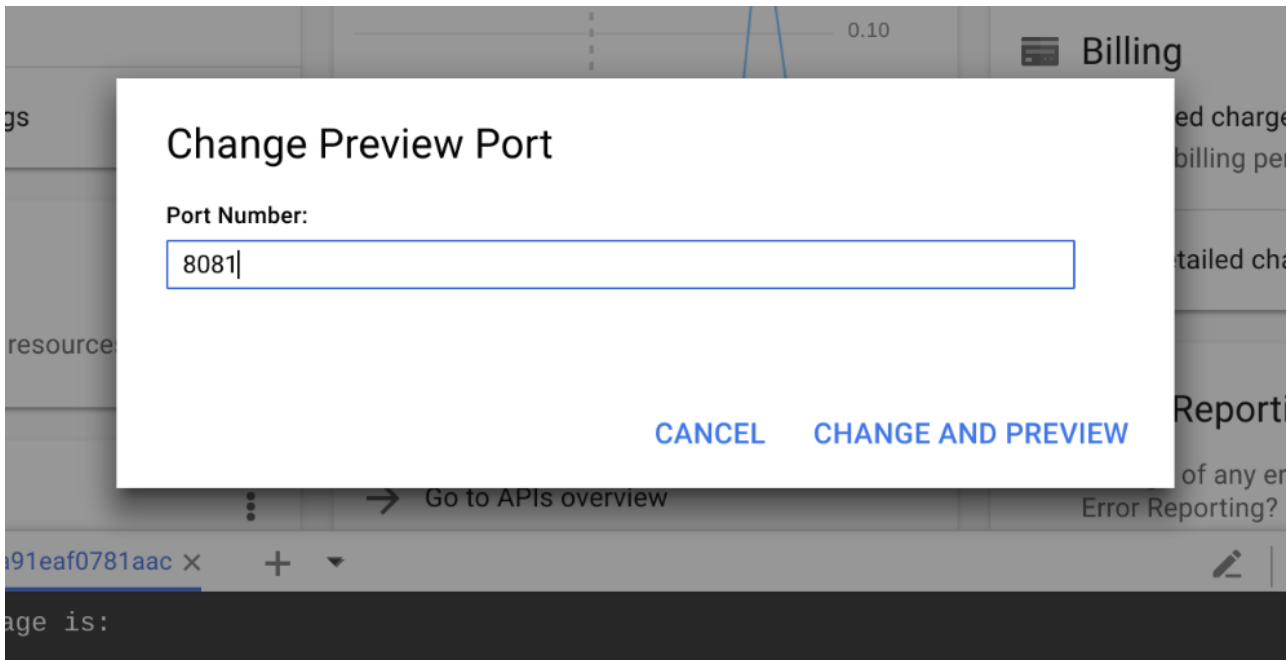
Step 5

If necessary, wait for Datalab to finishing launching. Datalab is ready when you see a message prompting you to do a **Web Preview**.

Step 6

Click on **Web Preview** icon on the top-right corner of the Cloud Shell ribbon.
Click **Change Port** and enter the port **8081** and click **Change and Preview**.

Note: If the cloud shell used for running the datalab command is closed or interrupted, the connection to your Cloud Datalab VM will terminate. If that happens, you may be able to reconnect using the command **datalab connect mydatalabvm** in your new Cloud Shell.

Clone course repo within your Datalab instance

To clone the course repo in your datalab instance:

Step 1

In Cloud Datalab home page (browser), navigate into **notebooks** and add a new notebook using the icon on the top left.
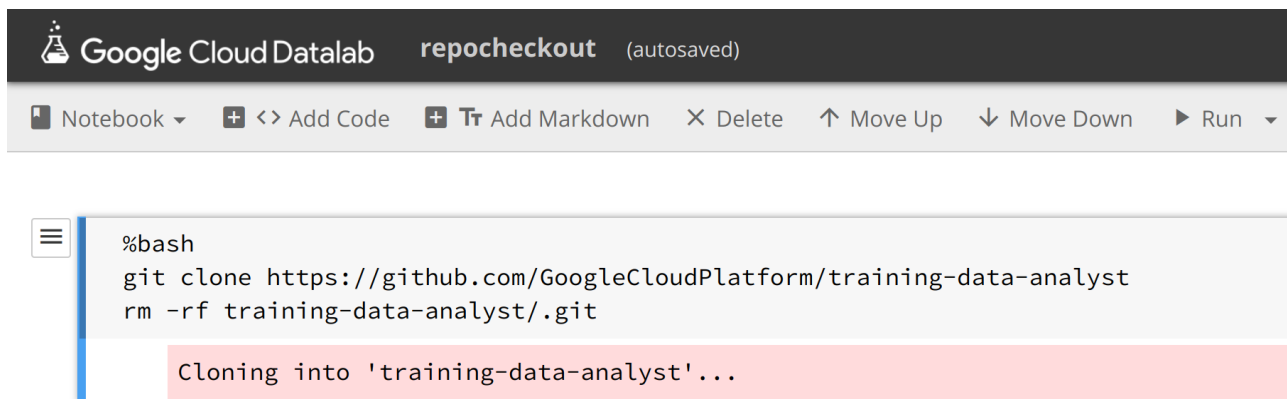
Step 2

Rename this notebook as **repocheckout**.

Step 3

In the new notebook, enter the following commands in the cell, and click on **Run** (on the top navigation bar) to run the commands:
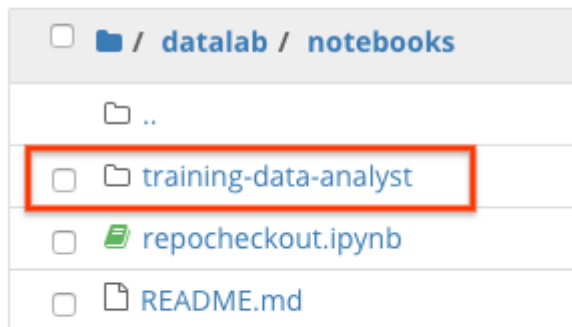
```
%bash
git clone
https://github.com/GoogleC
data-analyst
rm -rf training-data-
analyst/.git
```


Step 4

Confirm that you have cloned the repo by going back to Datalab browser, and ensure you see the **training-data-analyst** directory. All the files for all labs throughout this course are available in this directory.

MNIST Image Classification using a linear model

Duration is 15 min

Step 1

In Cloud Datalab, click on the **Home** icon, and then navigate to **datalab > notebooks > training-data-analyst > courses > machine_learning > deepdive > 08_image > labs**and open **mnist_linear.ipynb**.

> Note: If the cloud shell used for running the datalab command is closed or interrupted, the connection to your Cloud Datalab VM will terminate. If that happens, you may be able to reconnect using the command '**datalab connect mydatalabvm**' in your new Cloud Shell. Once connected, try the above step again.

Step 2

In Datalab, click on **Clear | Clear all Cells**. Now read the narrative and execute each cell in turn:

- Some lab tasks include starter code. In such cells, look for lines marked *#TODO*. Specifically, you need to write code to define the *linear_model* and the *eval_input_fn* function.
- If you need more help, you may take a look at the complete solution by navigating to : **datalab > notebooks > training-data-analyst > courses > machine_learning > deepdive > 08_image** and open the notebook: **mnist_linear.ipynb**

Note: When doing copy/paste of python code, please be careful about indentation

End your lab

When you have completed your lab, click **End Lab**. Qwiklabs removes the resources you've used and cleans the account for you.

You will be given an opportunity to rate the lab experience. Select the applicable number of stars, type a comment, and then click **Submit**.

The number of stars indicates the following:

- 1 star = Very dissatisfied
- 2 stars = Dissatisfied
- 3 stars = Neutral
- 4 stars = Satisfied
- 5 stars = Very satisfied

You can close the dialog box if you don't want to provide feedback.

For feedback, suggestions, or corrections, please use the **Support** tab.

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respective companies with which they are associated.