

# Overview

*Duration is 1 min*

In this lab you will demonstrate how to implement different image models on MNIST using the tf.keras API and define a DNN with dropout on MNIST to do image classification.

## Learning Objectives

In this lab, you will:

- Understand how to use dropout (DNN) for image classification
- Know how to deploy and use an image classification model using Google Cloud's AI Platform

## Setup

For each lab, you get a new Google Cloud 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.

**START LAB**

3. When ready, click .
4. Note your lab credentials. You will use them to sign in to the Google Cloud 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



[New to labs? View our introductory video!](#)

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.

## Create storage bucket and store data file

Create a bucket using the GCP console:

### Step 1

In your GCP Console, click on the **Navigation menu** (  ), and select **Storage**.

### Step 2

Click on **Create bucket**.

### Step 3

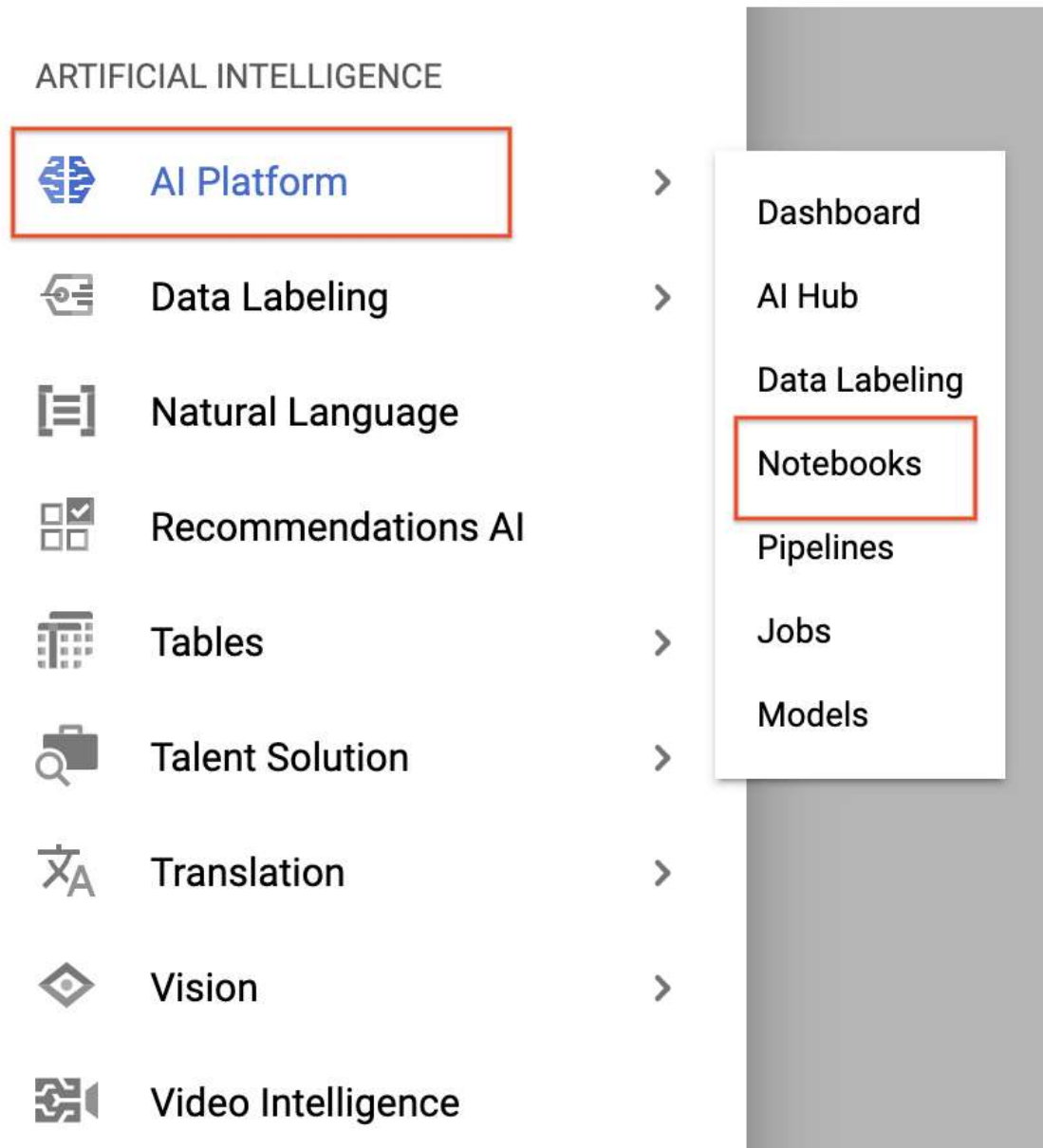
Choose a Regional bucket and set a unique name (use your project ID because it is unique). Then, click **Create**.

## Launch AI Platform Notebooks

To launch AI Platform Notebooks:

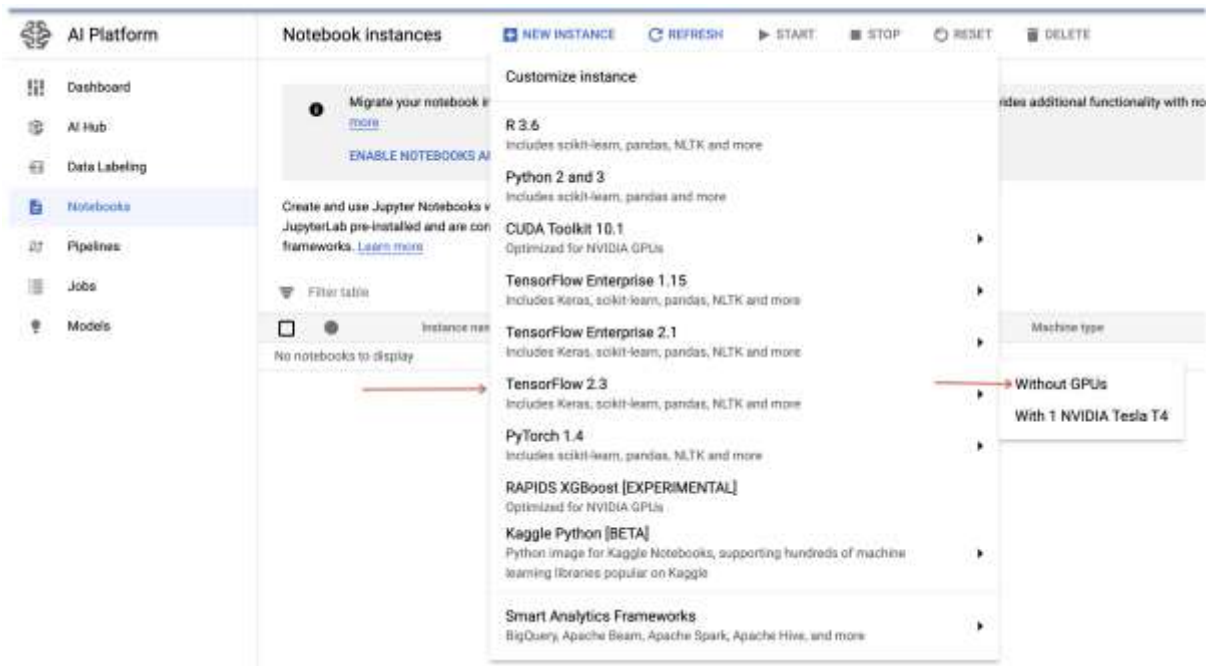
## Step 1

Click on the **Navigation Menu**. Navigate to **AI Platform**, then to **Notebooks**.



## Step 2

On the Notebook instances page, click [+ NEW INSTANCE](#). Select the latest version of TensorFlow 2.x *without GPUs*.



In the pop-up, confirm the name of the deep learning VM, move to the bottom of the window and click **Create**.

## New notebook instance

Instance name

tensorflow-2-3-20200904-171301

Lowercase letters, digits, or '-' only. Must start with a letter. Cannot end with a '-'.

Region \*

us-west1 (Oregon)

Zone \*

us-west1-b

Environment ?

TensorFlow 2.3 (with Intel® MKL-DNN/MKL)

Machine type

4 vCPUs, 15 GB RAM

Boot disk

100 GB Disk

Subnetwork

default(10.138.0.0/20)

External IP

Ephemeral(Automatic)

Extensions ?

[SELECT EXTENSIONS](#)

None selected

Permission

Compute Engine default service account

Estimated cost ?

\$99.89 monthly, \$0.137 hourly

CUSTOMIZE

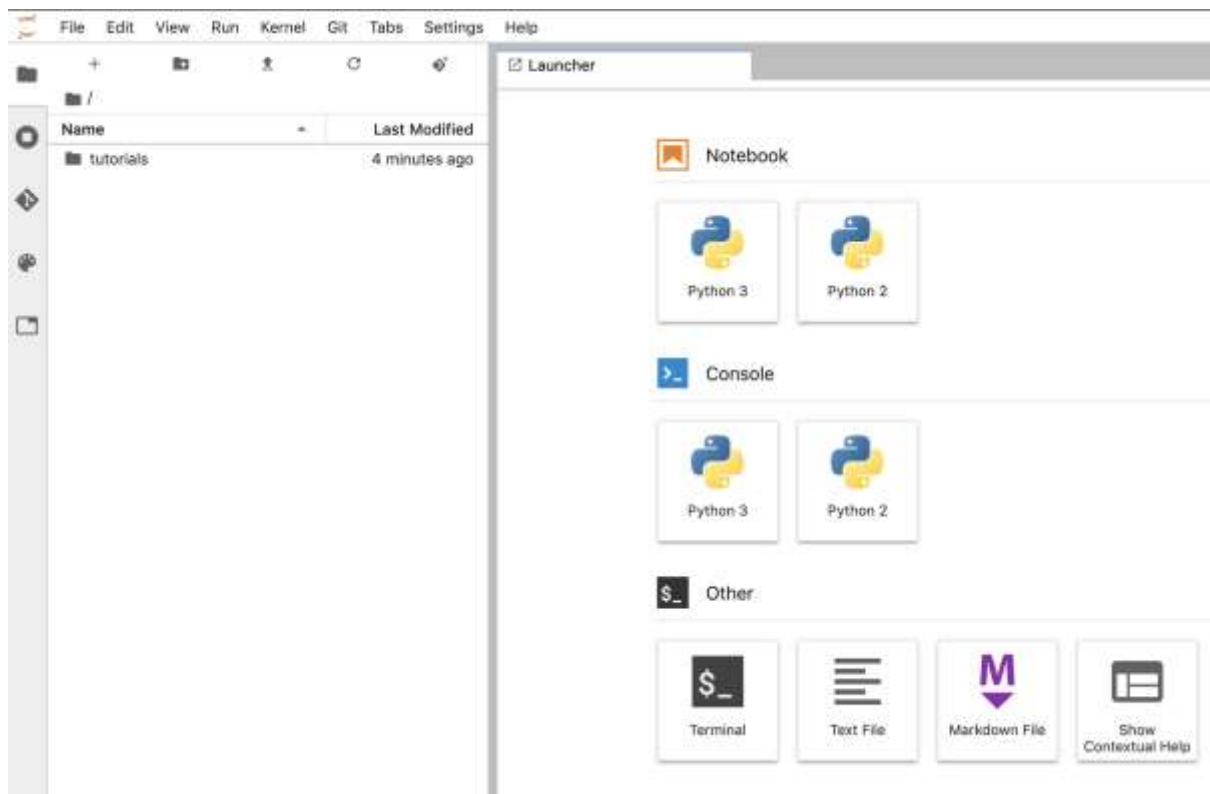
CANCEL

CREATE

The new VM will take 2-3 minutes to start.

### Step 3

Click **Open JupyterLab**. A JupyterLab window will open in a new tab.



## Clone course repo within your AI Platform Notebooks instance

To clone the `training-data-analyst` notebook in your JupyterLab instance:

### Step 1

In JupyterLab, click the **Terminal** icon to open a new terminal.



## Notebook



Python 3



Python 2



## Console



Python 3



Python 2



## Other



Terminal



Text File



Markdown File



Show  
Contextual Help

### Step 2

At the command-line prompt, type in the following command and press **Enter**.

```
git clone https://github.com/GoogleCloudPlatform/training-data-analystcontent_copy
```

### Step 3

Confirm that you have cloned the repository by double clicking on the `training-data-analyst` directory and ensuring that you can see its



contents. The files for all the Jupyter notebook-based labs throughout this course are available in this directory.

📁 / training-data-analyst /

Name	Last Modified
📁 blogs	a minute ago
📁 bootcamps	a minute ago
📁 courses	a minute ago
📁 CPB100	a minute ago
📁 datalab	a minute ago
📁 doc	a minute ago
📁 iot	a minute ago
📁 quests	a minute ago
📁 self-paced-labs	a minute ago
📄 CODEOWNERS	a minute ago
📄 CONTRIBUTING.md	a minute ago
📄 LICENSE	a minute ago
📄 README.md	a minute ago

## Image Classification using DNN Model with Dropout

*Duration is 60 min*

## Step 1

In the notebook interface, navigate to **training-data-analyst > courses > machine\_learning > deepdive2 > image\_classification > labs > 2\_mnist\_models.ipynb**.

## Step 2

In the notebook interface, click on **Edit > Clear All Outputs** (click on Edit, then in the drop-down menu, select Clear All Outputs).

Carefully read through the notebook instructions and fill in lines marked with #TODO where you need to complete the code as needed

Tip: To run the current cell you can click the cell and hit **shift enter**. Other cell commands are found in the notebook UI under **Run**.

In the first cell, make sure to replace the project id, bucket and region with your qwiklabs project id, your bucket, and bucket region respectively. Also, change the MODEL\_TYPE to *dnn\_dropout*.

- Hints may also be provided for the tasks to guide you along. Highlight the text to read the hints (they are in white text).
- If you need more help, you may take a look at the complete solution by navigating to **training-data-analyst > courses > machine\_learning > deepdive2 > image\_classification > solutions** and opening **2\_mnist\_models.ipynb**.

## 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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