

Serverless Machine Learning - Lab 7 : Feature Engineering v1.3

2 hours

1 Credit

 [Rate Lab](#)

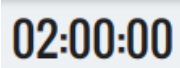
Overview

In this lab, you will perform the following tasks:

- Working with feature columns
- Adding feature crosses in TensorFlow
- Reading data from BigQuery
- Creating datasets using Dataflow
- Using a wide-and-deep model

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,  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 

[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**.

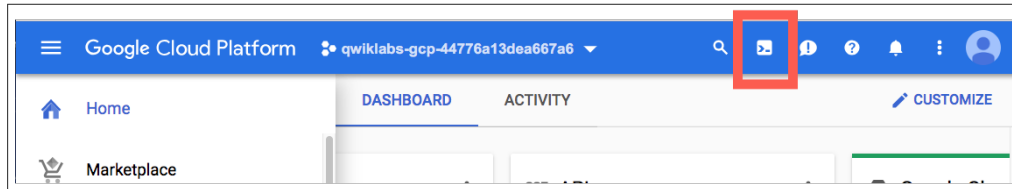
7. Accept the terms and skip the recovery resource page.

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.

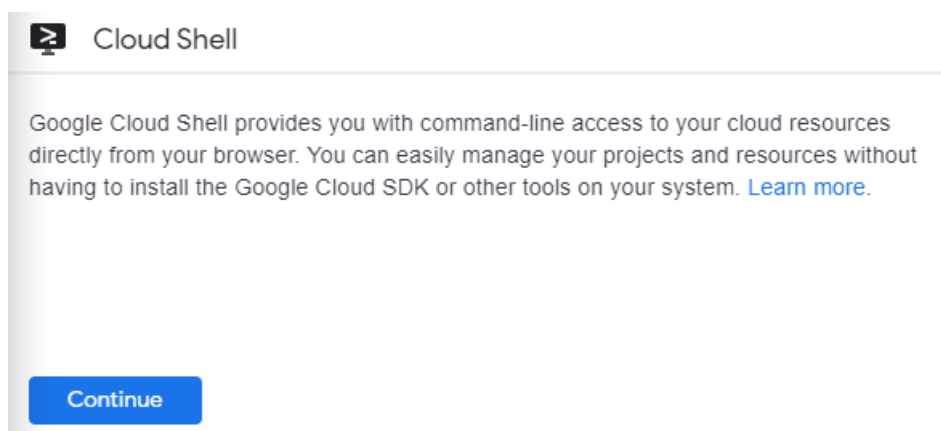
Activate Google Cloud Shell

Google Cloud Shell is a virtual machine that is loaded with development tools. It offers a persistent 5GB home directory and runs on the Google Cloud. Google Cloud Shell provides command-line access to your GCP resources.

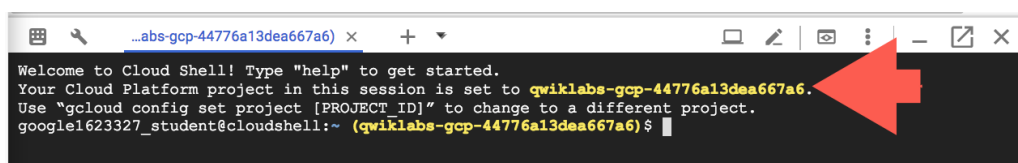
1. In GCP console, on the top right toolbar, click the Open Cloud Shell button.



2. Click **Continue**.



It takes a few moments to provision and connect to the environment. When you are connected, you are already authenticated, and the project is set to your *PROJECT_ID*. For example:



gcloud is the command-line tool for Google Cloud Platform. It comes pre-installed on Cloud Shell and supports tab-completion.

You can list the active account name with this command:

```
gcloud auth list
```

Output:

```
Credentialed accounts:  
- <myaccount>@<mydomain>.com (active)
```

Example output:

```
Credentialed accounts:  
- google1623327_student@qwiklabs.net
```

You can list the project ID with this command:

```
gcloud config list project
```

Output:

```
[core]  
project = <project_ID>
```

Example output:

```
[core]  
project = qwiklabs-gcp-44776a13dea667a6
```

Full documentation of **gcloud** is available on [Google Cloud gcloud Overview](#).

Create Storage Bucket

Duration is 2 min

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

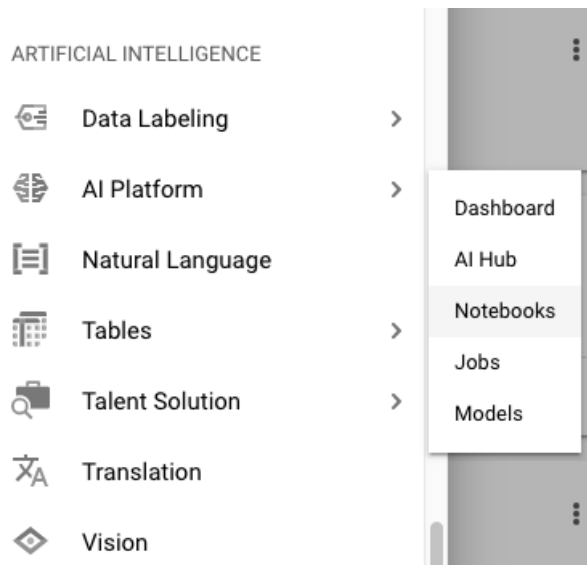
unique). Then, click **Create**.

Launch AI Platform Notebooks

To launch AI Platform Notebooks:

Step 1

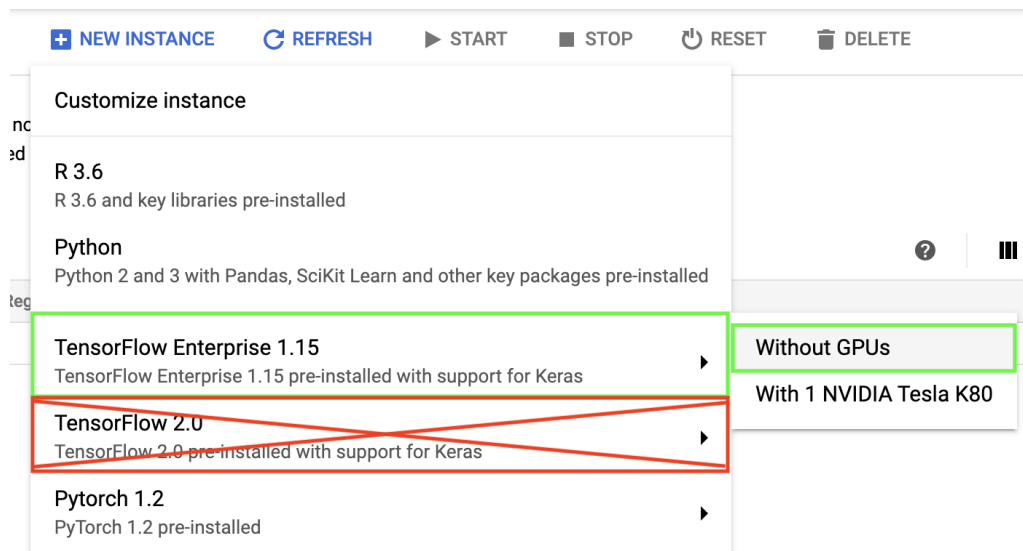
Click on the **Navigation Menu**. Navigate to **AI Platform**, then to **Notebooks**.



Step 2

On the Notebook instances page, click **+ NEW INSTANCE**. Select a **1.XX** version of

TensorFlow (not a 2.0) *without GPUs*. In the following example, you would select **Tensorflow Enterprise 1.15 > Without GPUs**:



Tensorflow 1.XX versions change semi-frequently, so the version you pick may be different.

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

New notebook instance

Instance name *

tensorflow-20190910-173036

Environment:

Image: TensorFlow 1.14 (with Intel® MKL-DNN/MKL and CUDA 10.0)

Packages: python2, python3, scikit-learn, pandas, and nltk.

Machine configurations: ?

Region and zone: us-west1-b

Machine type: 4 vCPUs, 15 GB RAM

Boot disk: 100 GB Disk

Networking:

Subnetwork *

default(10.138.0.0/20)

External IP: Ephemeral(Automatic)

Permission:

Compute Engine default service account

Estimated cost: ?

\$99.89 monthly, \$0.137 hourly

CUSTOMIZE

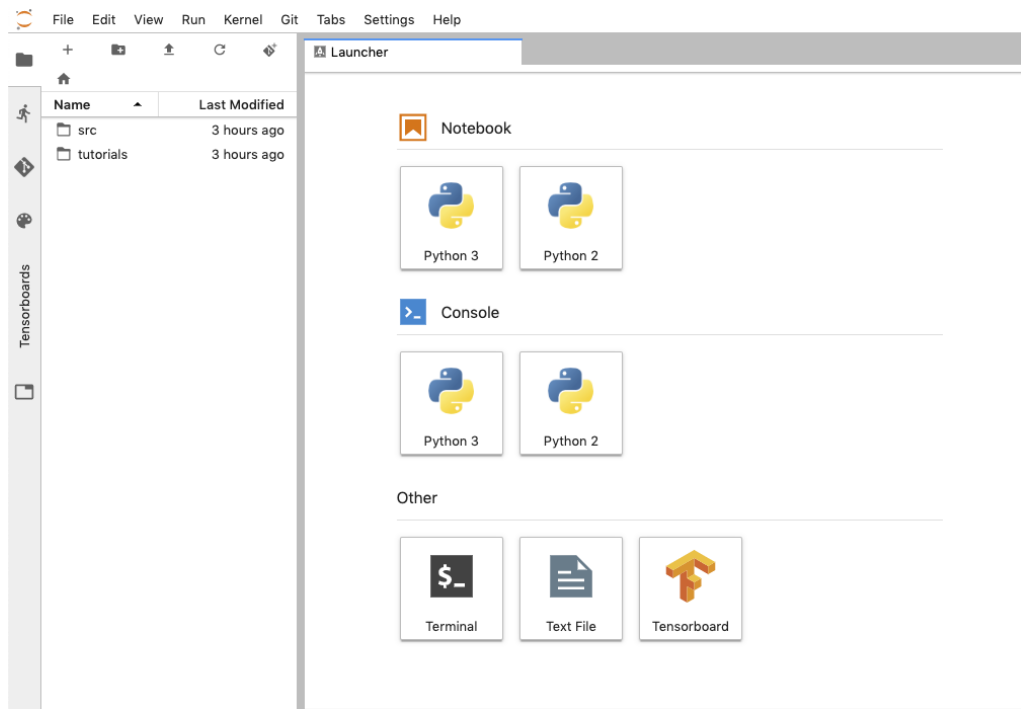
CANCEL

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.

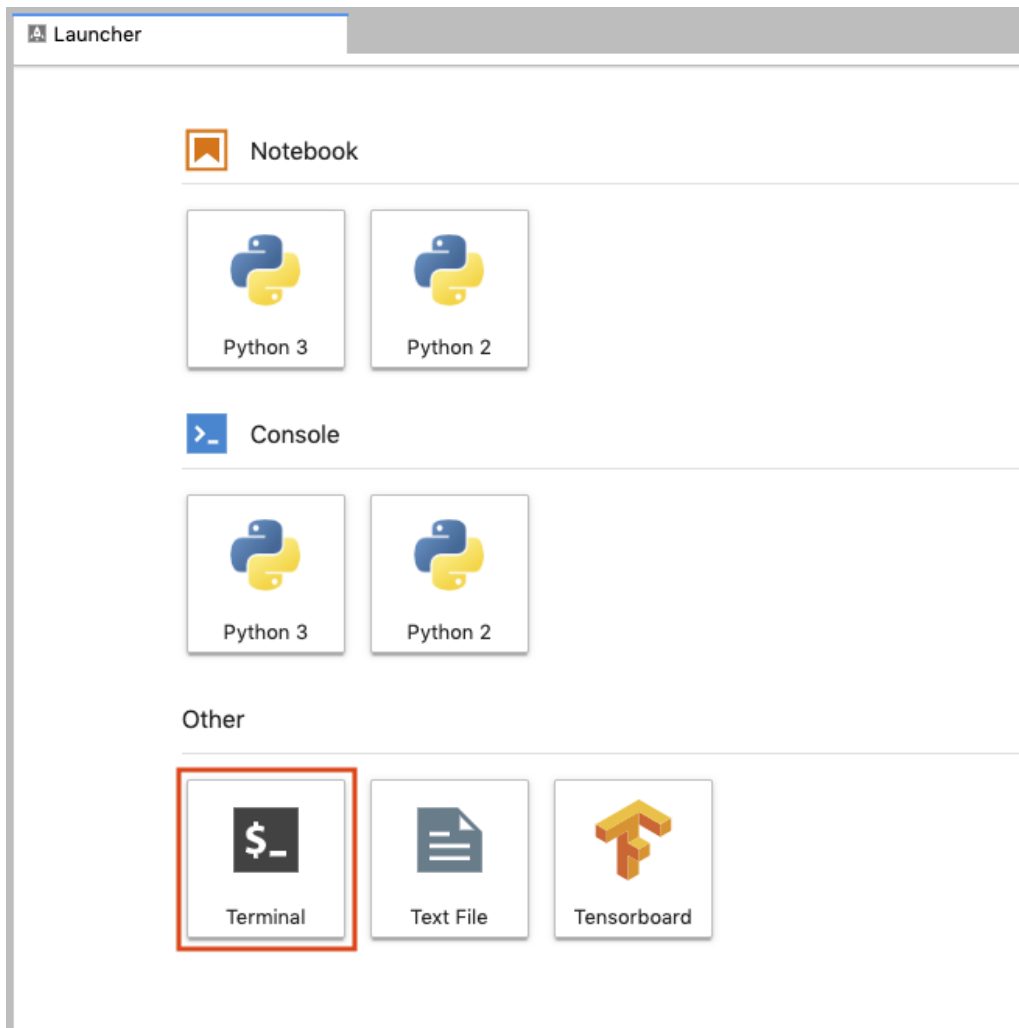


Clone course repo within your AI Platform Notebooks instance

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

Step 1

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



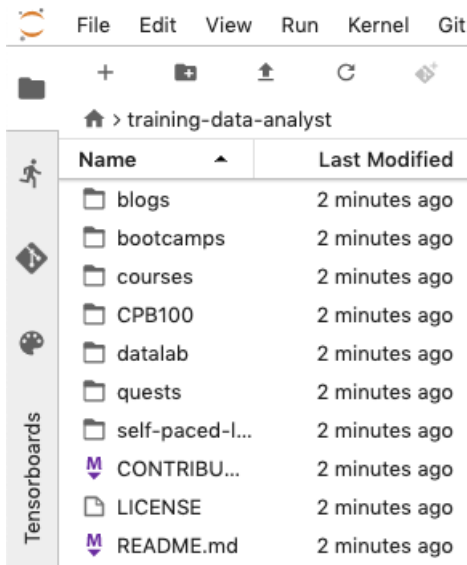
Step 2

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

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

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.



Feature Engineering

Duration is 15 min

Step 1

In the notebook interface, navigate to **training-data-analyst > courses > machine_learning > feateng** and open **feateng.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).

Read the narrative and execute each cell in turn.

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.

Manual Last Updated: December 03, 2019

Lab Last Tested: December 03, 2019

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