

Start Lab 01:00:00

Introducing the Keras Functional API

1 hour Free ★★★★★ 1 Rate Lab

- Overview
- Setup
- Launch AI Platform Notebooks
- Clone course repo within your AI Platform Notebooks instance
- Keras Functional API
- End your lab

Overview

Duration is 1 min

In this lab, you will use feature columns to build a Wide & Deep model.

The idea behind Wide & Deep models is to join the two methods of learning through memorization and generalization by making a wide linear model and a deep learning model to accommodate both.

What you learn

In this lab, you will:

- Understand embeddings and how to create them with the feature column API
- Understand Deep and Wide models and when to use them
- Understand the Keras functional API and how to build a deep and wide model with it

Setup

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

- Make sure you signed into Qwiklabs using an **incognito window**.
- Note the lab's access time (for example, **02:00:00**) and make sure you can finish in that time block.

- When ready, click **START LAB**.

- 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!](#)

- Click **Open Google Console**.
- 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**.

- Accept the terms and skip the recovery resource page.

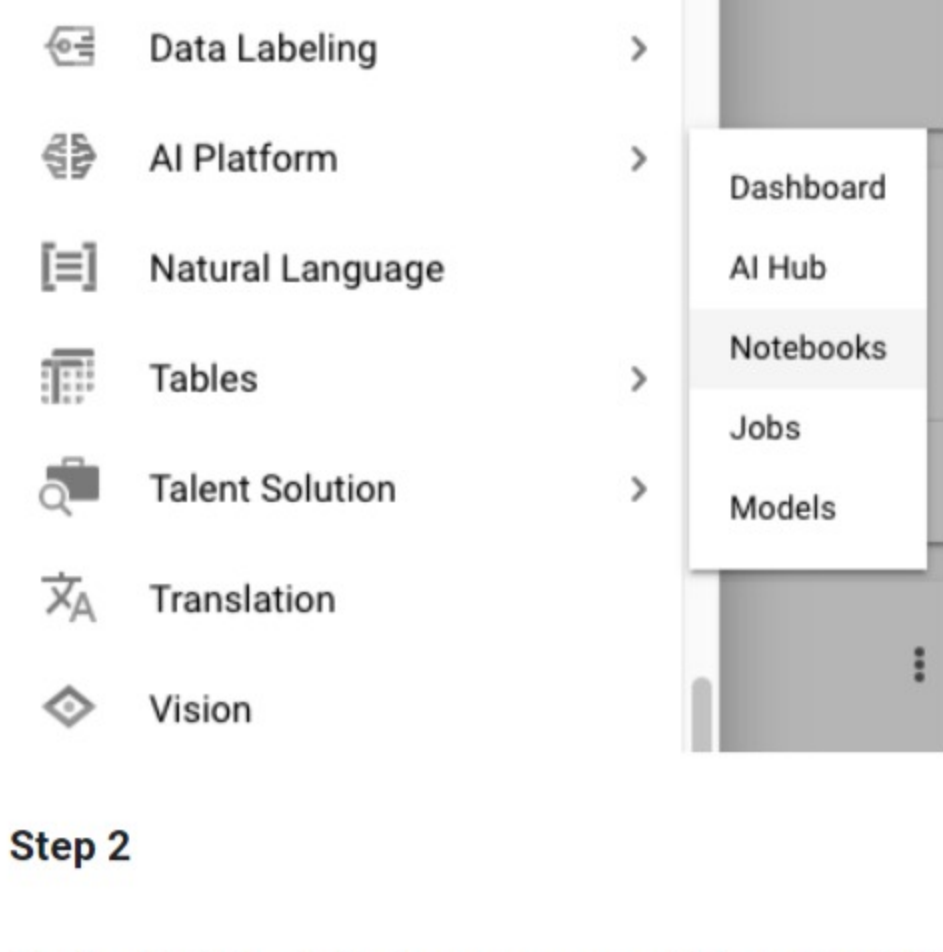
Do not click **End Lab** unless you are finished with the lab or want to restart it. This clears your work and removes the project.

Launch AI Platform Notebooks

To launch AI Platform Notebooks:

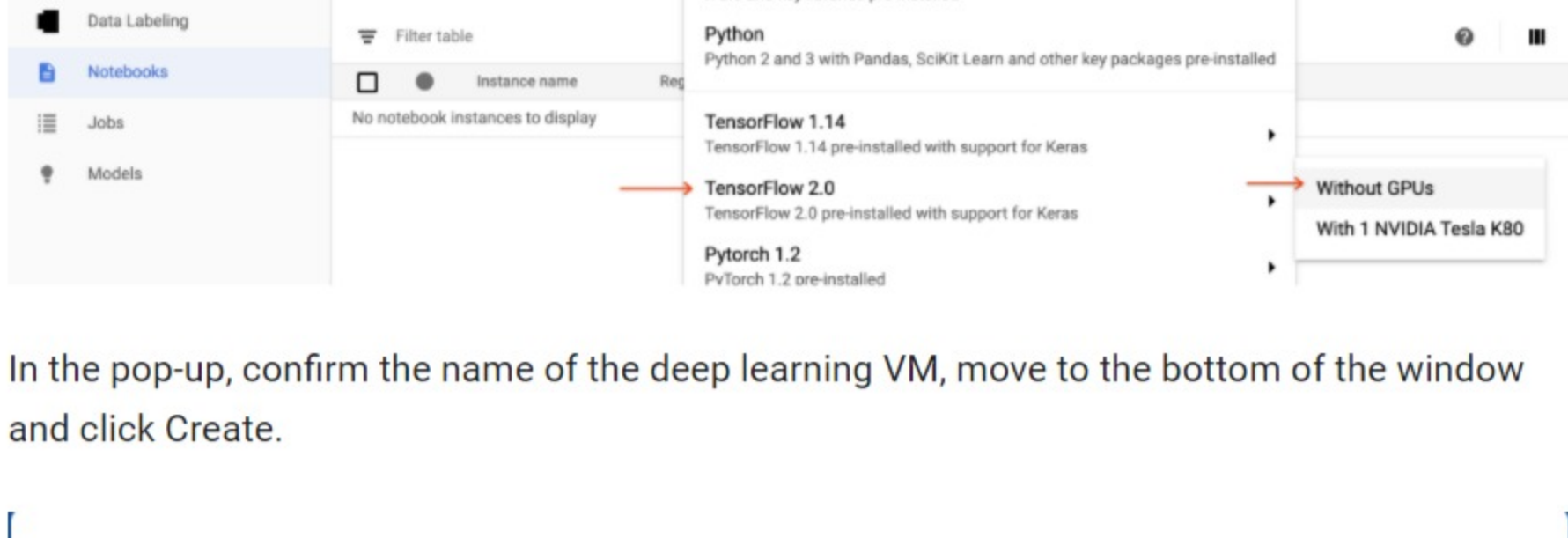
Step 1

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



Step 2

On the Notebook instances page, click **+ NEW INSTANCE**. Select 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-20191031-100408

Environment:

Image: TensorFlow 2.0 (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

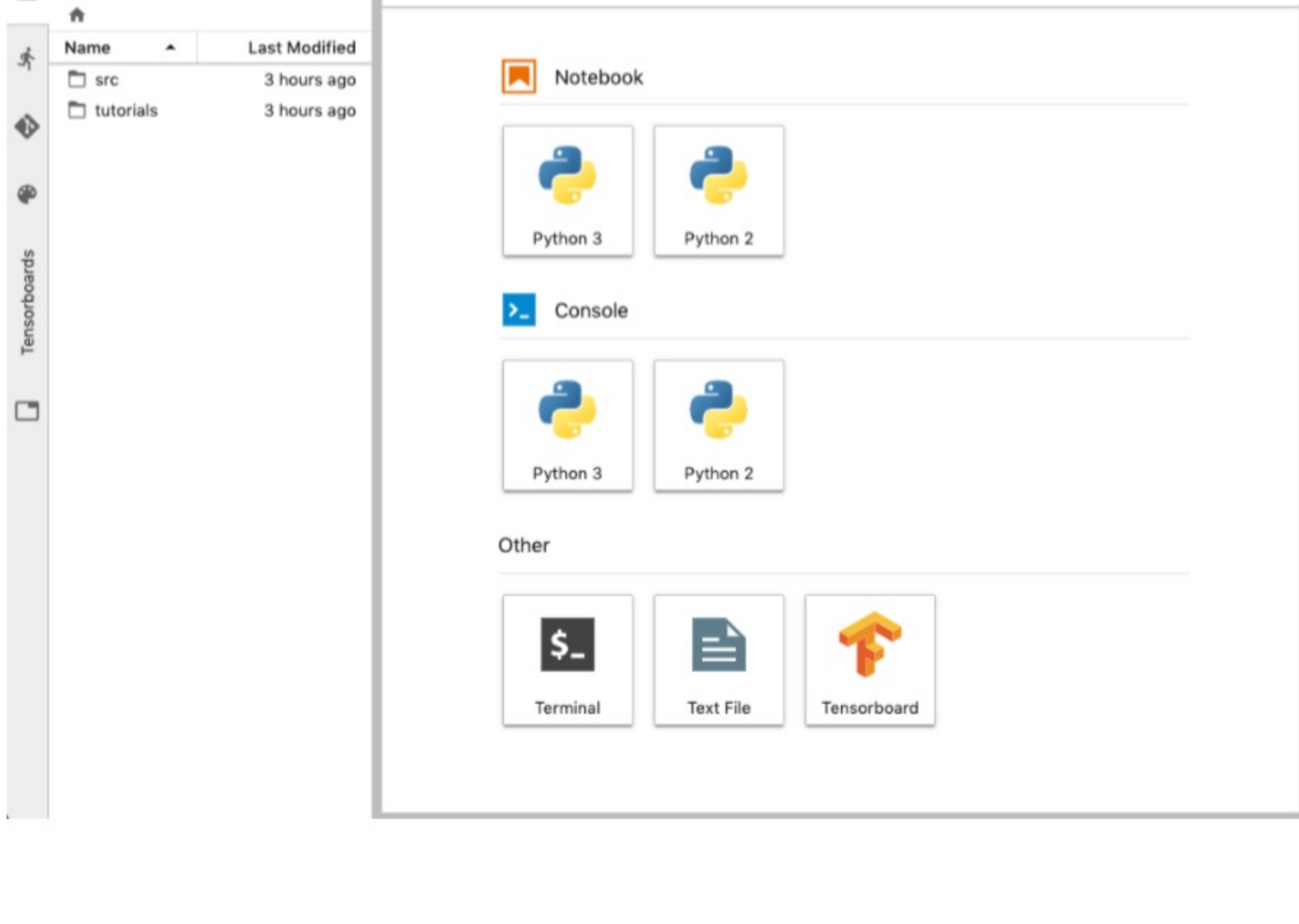
CANCEL

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.

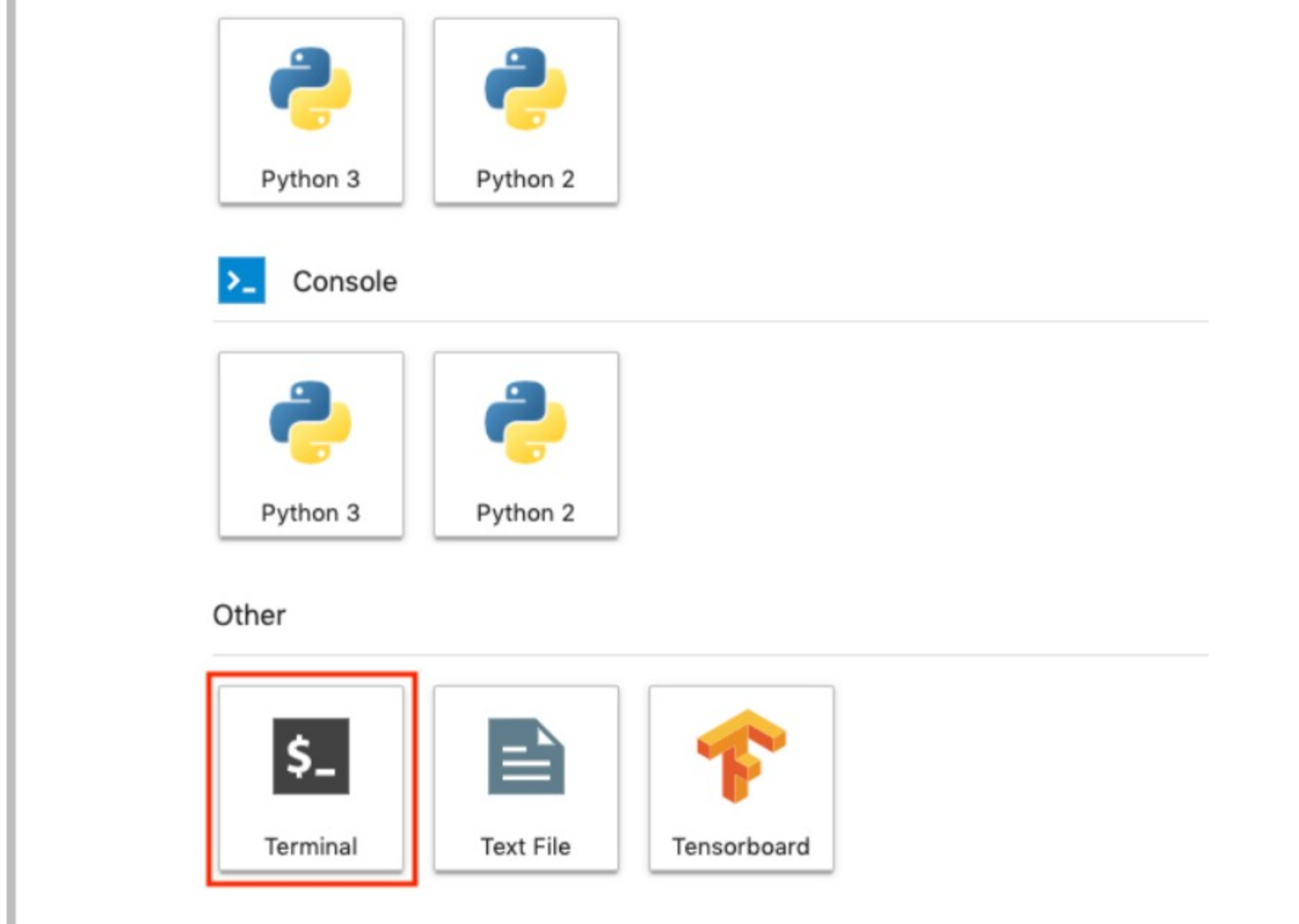


Clone course repo within your AI Platform Notebooks instance

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

Step 1

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



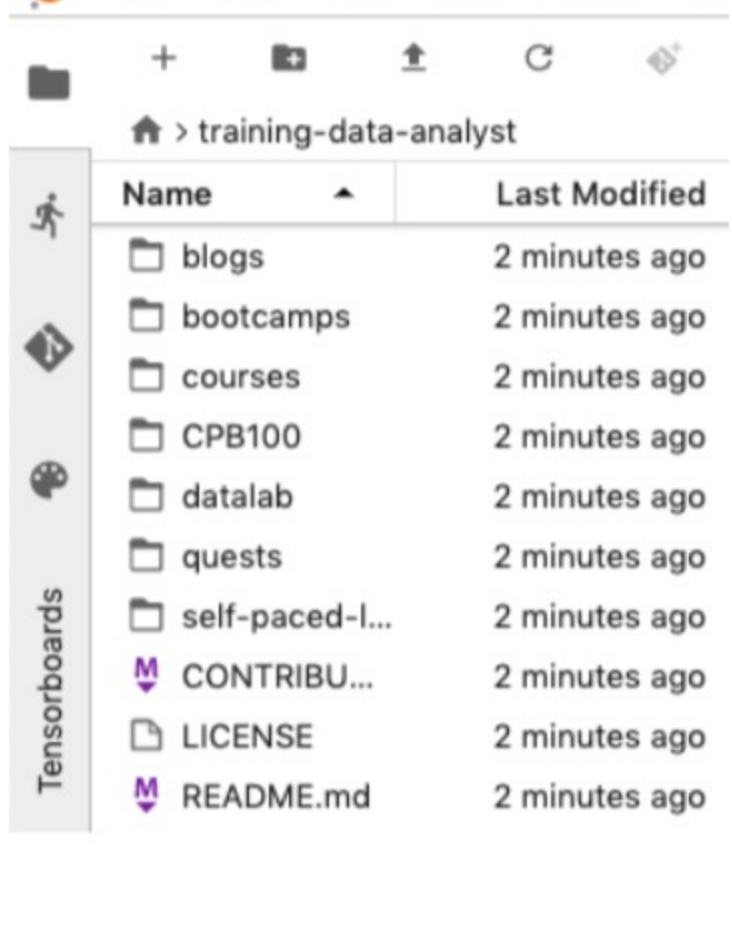
Step 2

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.



Keras Functional API

Duration is 45 min

Step 1

In the notebook interface, click on Edit > **training-data-analyst > courses > machine_learning > deepdive2 > introduction_to_tensorflow > Labs** and open `4_keras_functional_api.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 under you click the cell and hit shift+enter. Other cell commands are found in the notebook UI under Run.

- 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 > introduction_to_tensorflow > solutions** and open `4_keras_functional_api.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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