2. When the instance is no longer needed, click 'DELETE' to permanently remove the instance. Note that this option is non-recoverable (see Figure 6-8).

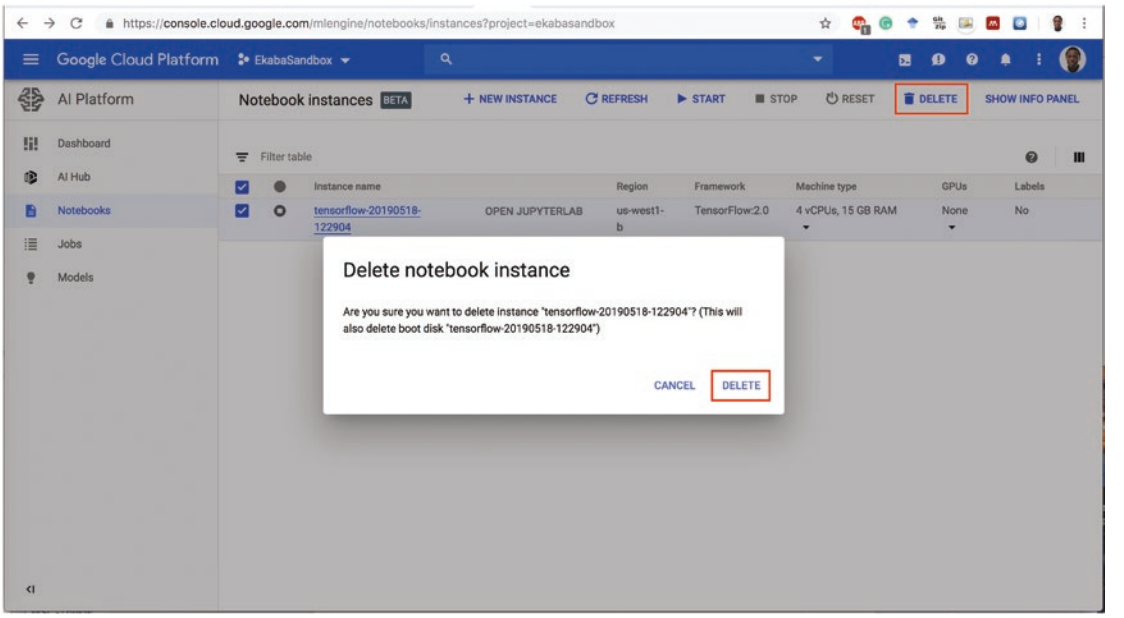

Figure 6-8. *Delete a Notebook instance*

Starting a Notebook Instance from the Command Line

In this section, we'll examine how the command line is used to launch and shut down a pre-configured deep learning VM integrated with JupyterLab.

Create a Datalab instance: To create a Notebook instance, execute the code

```
export IMAGE_FAMILY="tf-latest-cpu-experimental"
export ZONE="us-west1-b"
export INSTANCE_NAME="my-instance"
```

```
gcloud compute instances create $INSTANCE_NAME \
  --zone=$ZONE \
  --image-family=$IMAGE_FAMILY \
  --image-project=deeplearning-platform-release
```

where

- --image-family can be any of the available images supported by Google Deep Learning VM; `"tf-latest-cpu-experimental"` launches an image with TensorFlow 2.0 pre-configured.
- --image-project must be set to `deeplearning-platform-release`

Here's the output when the instance is created:

```
Created [https://www.googleapis.com/compute/v1/projects/ekabasandbox/zones/
us-west1-b/instances/my-instance].
NAME         ZONE        MACHINE_TYPE   PREEMPTIBLE  INTERNAL_IP
EXTERNAL_IP   STATUS
my-instance  us-west1-b  n1-standard-1               10.138.0.6
34.83.90.154  RUNNING
```

Connect to the instance: To connect to JupyterLab running on the instance, run the command

```
export INSTANCE_NAME="my-instance"
gcloud compute ssh $INSTANCE_NAME -- -L 8080:localhost:8080
```

Then on your local machine, visit `http://localhost:8080` in your browser (see Figure 6-9).

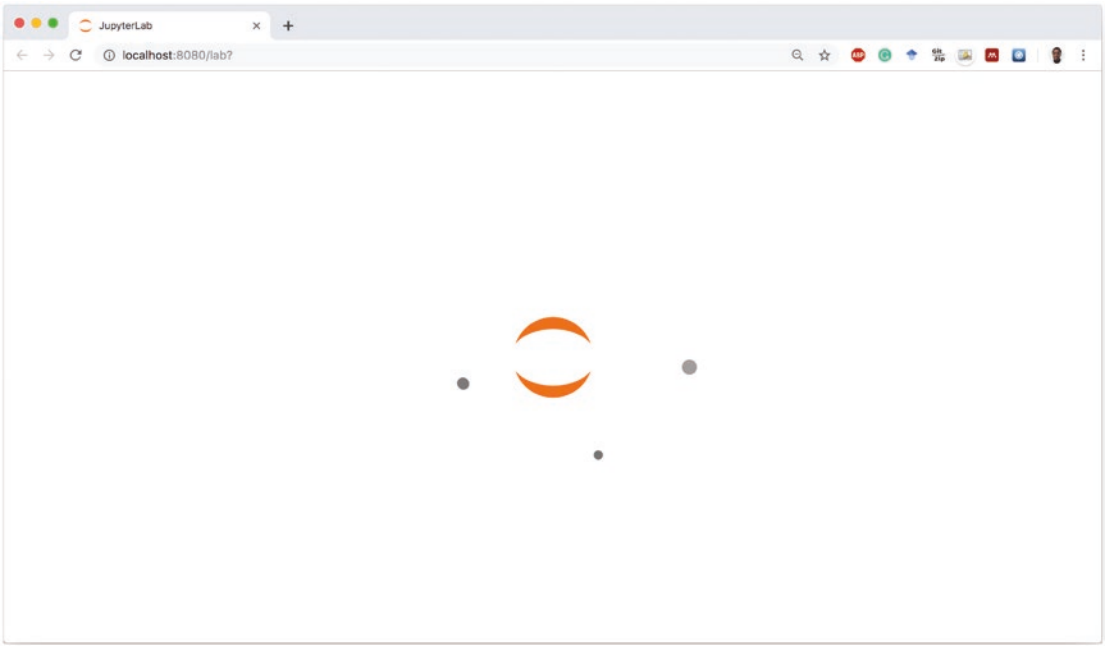

Figure 6-9. *JupyterLab instance launched from terminal*

Stop the instance: To stop the instance, run the following command from your local terminal (not on the instance):

```
gcloud compute instances stop $INSTANCE_NAME
Stopping instance(s) my-instance...done.
Updated [https://www.googleapis.com/compute/v1/projects/ekabasandbox/zones/
us-west1-b/instances/my-instance].
```

Delete the instance: The Notebook instance is basically a Google Compute Engine. Hence, the instance is deleted the same way a Compute Engine VM is deleted.

```
gcloud compute instances delete $INSTANCE_NAME
The following instances will be deleted. Any attached disks configured
 to be auto-deleted will be deleted unless they are attached to any
other instances or the `--keep-disks` flag is given and specifies them
 for keeping. Deleting a disk is irreversible and any data on the disk
 will be lost.
 - [my-instance] in [us-west1-b]
```

```
Do you want to continue (Y/n)?  Y

Deleted [https://www.googleapis.com/compute/v1/projects/ekabasandbox/zones/
us-west1-b/instances/my-instance].
```

This chapter introduces Jupyter notebooks running on Google Deep Learning VMs for interactive programming of data science tasks and prototyping deep learning and machine learning models.

In the next chapter, we will introduce another product for programming and rapid prototyping of learning models called Google Colaboratory.

CHAPTER 7

Google Colaboratory

Google Colaboratory more commonly referred to as "Google Colab" or just simply "Colab" is a research project for prototyping machine learning models on powerful hardware options such as GPUs and TPUs. It provides a serverless Jupyter notebook environment for interactive development. Google Colab is free to use like other G Suite products.

Starting Out with Colab

The following steps provide a walk-through for launching a Notebook on Google Colab:

1. Go to https://colab.research.google.com/ and log in using your existing Google account to access the Colab homepage (see Figure 7-1).

E. Bisong, *Building Machine Learning and Deep Learning Models on Google Cloud Platform*,
https://doi.org/10.1007/978-1-4842-4470-8_7