

AI Deep Learning with TensorFlow on Google Cloud Platform (GCP) Set up Deep Learning Virtual Machine (VM)

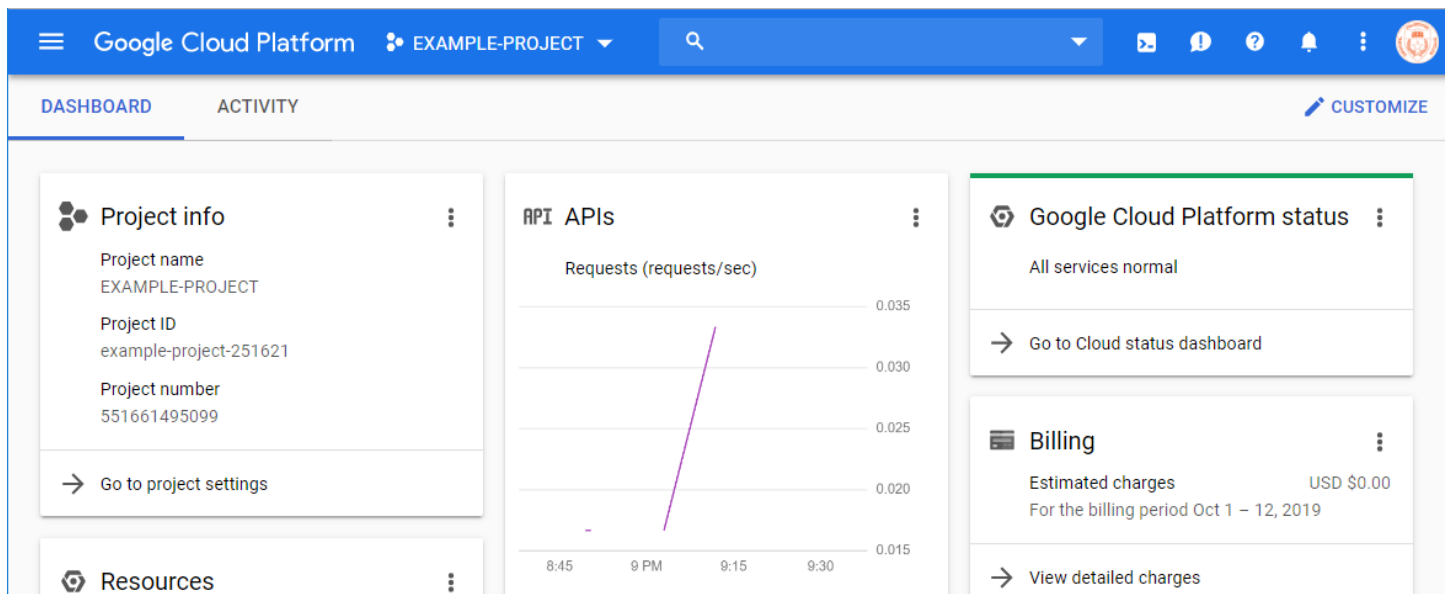
Thuan L Nguyen, Ph.D.

1. Get Free-Credit and Create Project in GCP

See the document: [gcp_dls_get_free_credit.pdf](#)

2. Access GCP Console

- Open Chrome browser
- Type: [Google Cloud Console](#) into the URL search box



IMPORTANT NOTES:

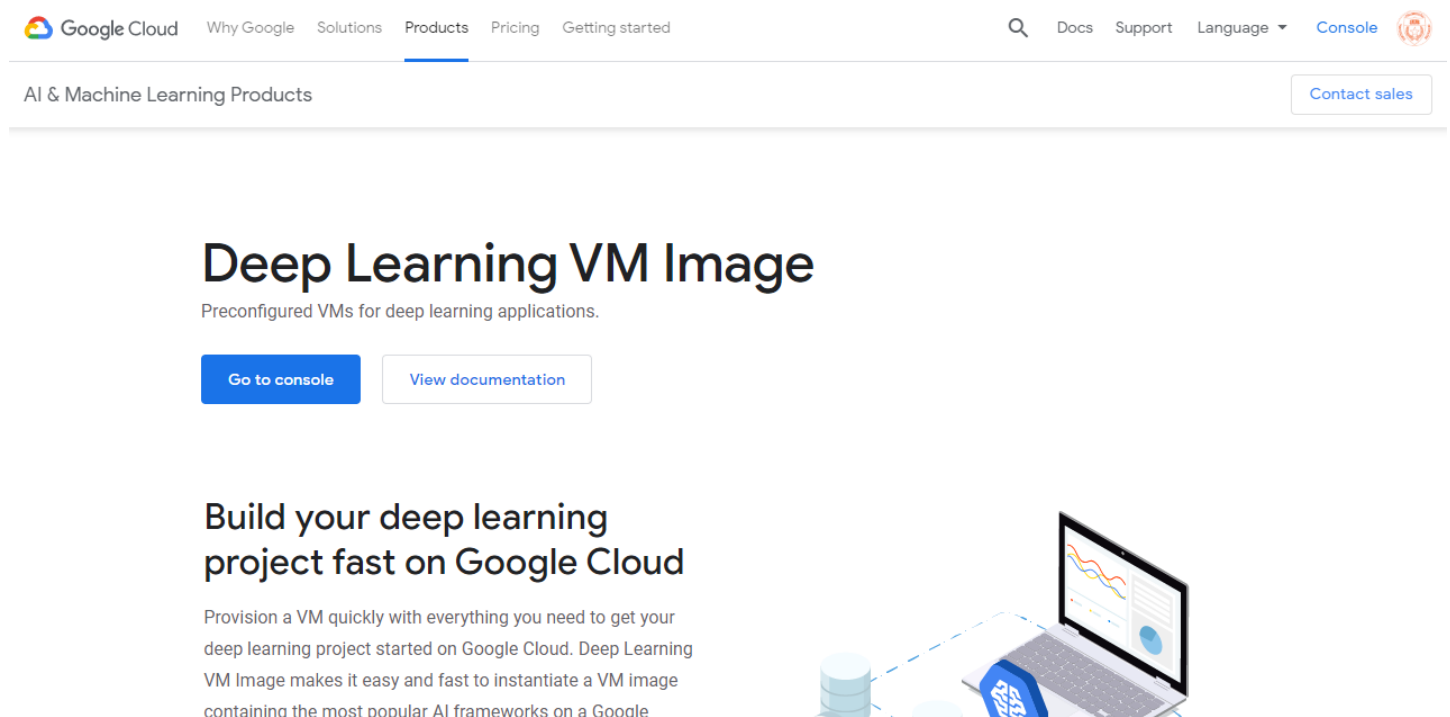
--> The student should be sure that billing on the project has been enabled and associated with the billing account that has the free-trial credits.

3. Create Deep Learning VM Using GCP Deep Learning Images

Cloud Deep Learning VM Image

<https://cloud.google.com/deep-learning-vm/>

Access the link:



The screenshot shows the Google Cloud website's page for Deep Learning VM Images. The header includes the Google Cloud logo and navigation links: Why Google, Solutions, Products (which is underlined), Pricing, and Getting started. On the right, there are links for Docs, Support, Language, Console, and a user profile icon. Below the header, a sub-header reads 'AI & Machine Learning Products' with a 'Contact sales' button. The main heading is 'Deep Learning VM Image', followed by the subtext 'Preconfigured VMs for deep learning applications.' Below this are two buttons: 'Go to console' and 'View documentation'. A section titled 'Build your deep learning project fast on Google Cloud' contains a paragraph about provisioning VMs quickly. To the right of this text is an illustration of a laptop displaying charts, connected by dashed lines to a database icon and a server rack icon.

Google Cloud Why Google Solutions **Products** Pricing Getting started

Search Docs Support Language Console

AI & Machine Learning Products [Contact sales](#)


Deep Learning VM Image

Preconfigured VMs for deep learning applications.

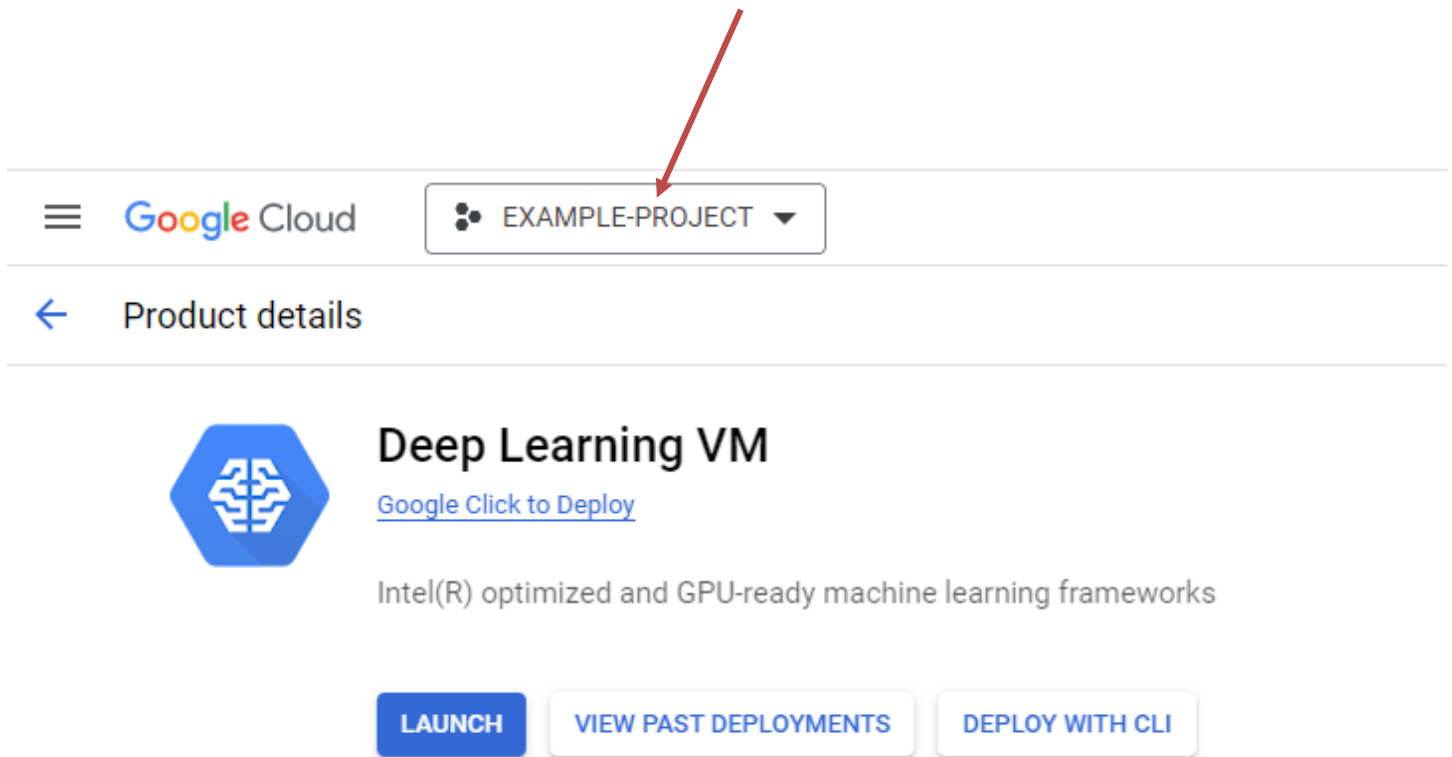
[Go to console](#) [View documentation](#)

Build your deep learning project fast on Google Cloud

Provision a VM quickly with everything you need to get your deep learning project started on Google Cloud. Deep Learning VM Image makes it easy and fast to instantiate a VM image containing the most popular AI frameworks on a Google



Click [Go to console](#)



IMPORTANT NOTES:

- ***Be sure*** that the ***project name*** displayed in the above text field refers to the project that you have created.
- *Otherwise,*
 - ***Click the arrow to open a drop-down menu and select the correct one.***

Click **LAUNCH**

New Deep Learning VM deployment

! You've gone over GPUs (all regions) quota by 1 GPU. Please increase your quota in the [quotas page](#). [Learn more](#)

Deployment name

tensorflow-1

Zone ?

GPU availability is limited to certain zones. [Learn more](#)

us-west1-b

Enter for Deployment name: tf2-keras-ann

(**NOTES:** *The user can name the instance as he/she wants. This is only an example.*)

Select for Zone: **us-east1-c** OR **us-south1-c** OR **us-central1-c**

Machine type

Machine family

GENERAL-PURPOSE

COMPUTE-OPTIMIZED

MEMORY-OPTIMIZED

GPU

Machine types for common workloads, optimized for cost and flexibility

Series

N1

Powered by Intel Skylake CPU platform or one of its predecessors

Machine type

n1-highmem-2 (2 vCPU, 13 GB memory)



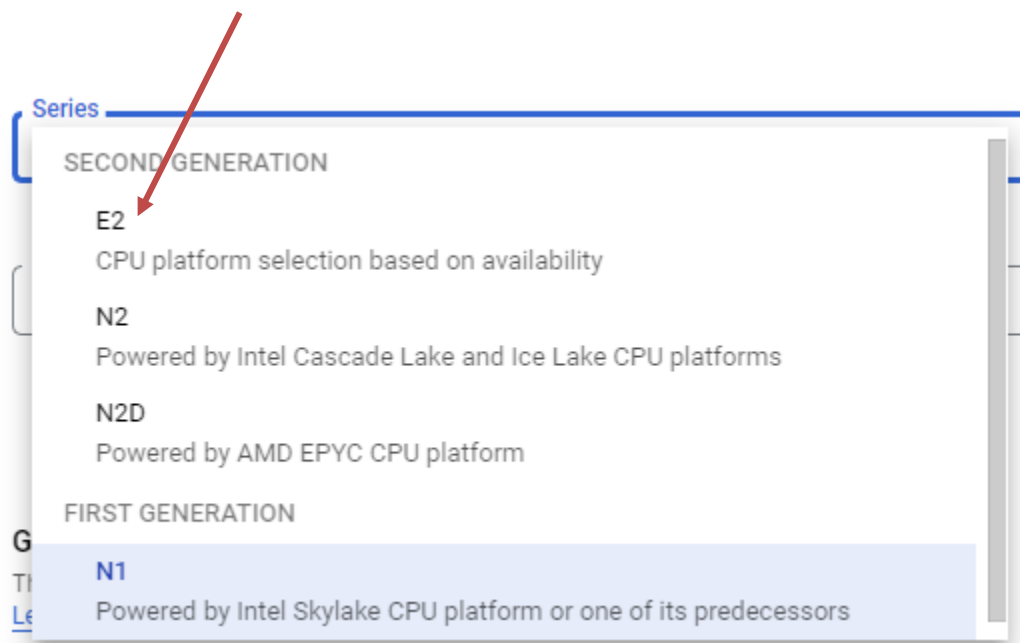
vCPU

2

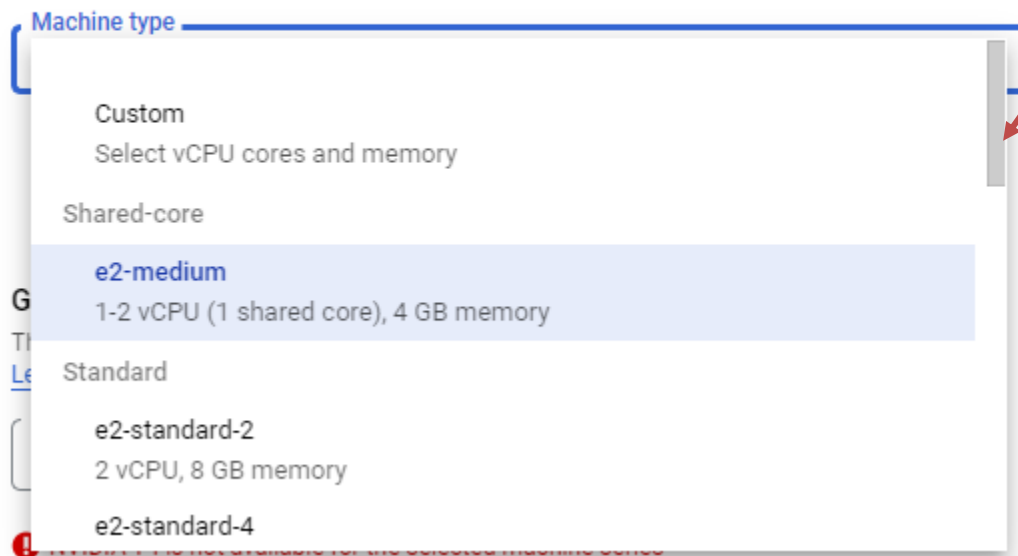
Memory

13 GB

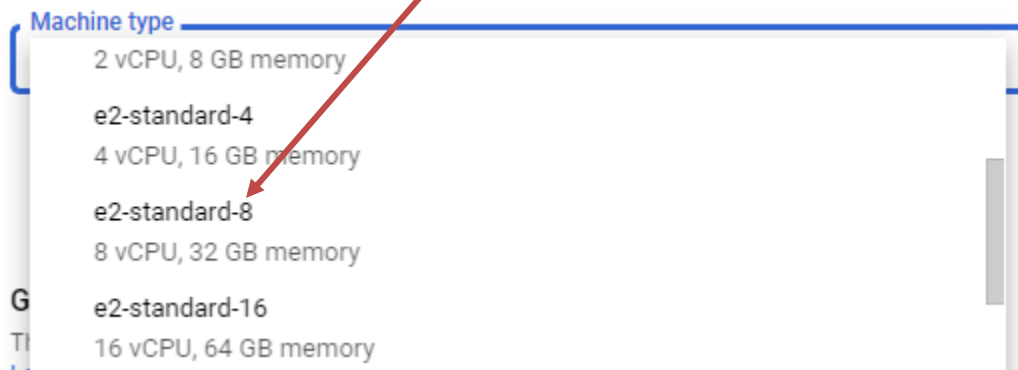
Click the arrow to open a drop-down menu



CPU platform selection based on availability



Scroll down to show more options of **e2**-standard machine types



--> **e2-standard-8**: 8 vCPUs, 32 GB memory

IMPORTANT NOTES:

--> Cost-saving is the **best** with **e2-standard-x**

GPUs

The number of attached GPUs affects the VM's maximum number of memory and CPUs.

[Learn More](#)

GPU type NVIDIA T4 ▼	Number of GPUs 1
--------------------------------	----------------------------



❗ NVIDIA T4 is not available for the selected machine series

☐ Enable Virtual Workstation (NVIDIA GRID)

Click to select **None**: NO GPU

NOTES:

--> To select **"NONE"** for GPU, click the trash can to delete the option of specifying the number of GPUs.

^ CPU PLATFORM AND GPU

Framework *

TensorFlow Enterprise 2.9 (CUDA 11.3)

Choose the primary machine learning framework you will be using. If the library you would like to use is not listed, choose the base image, which provides core packages.

BE SURE: TensorFlow **Enterprise 2.7** or LATER is selected.

Boot Disk

Boot disk type *

Standard Persistent Disk

Boot disk size in GB *

1024

Select for Boot disk type: **Standard** Persistent Disk

Enter for Boot disk size in GB: **1024** GB (1 TB)

Networking

Network interfaces


default default (10.138.0.0/20)

[ADD NETWORK INTERFACE](#)

DEPLOY

Click **DEPLOY**

... Wait for the deployment of the Deep Learning Server to be deployed

 deeplearning-3 has been deployed, but contains warnings

[VIEW DETAILS](#)

Overview - deeplearning-3

- tensorflow tensorflow.jinja
 - tensorflow-vm-tmpl vm_instance.py
 - deeplearning-3-vm vm instance
 - software-status software_status.py
 - deeplearning-3-config config
 - deeplearning-3-software config waiter



Deep Learning VM

Solution provided by Google Click to Deploy

Instance [deeplearning-3-vm](#)

Instance zone us-east1-c

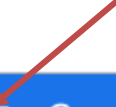
Instance machine type e2-standard-8


[MORE ABOUT THE SOFTWARE](#)

Get started with Deep Learning VM


SSH

Click [Products and Services icon](#) to open a drop-down menu

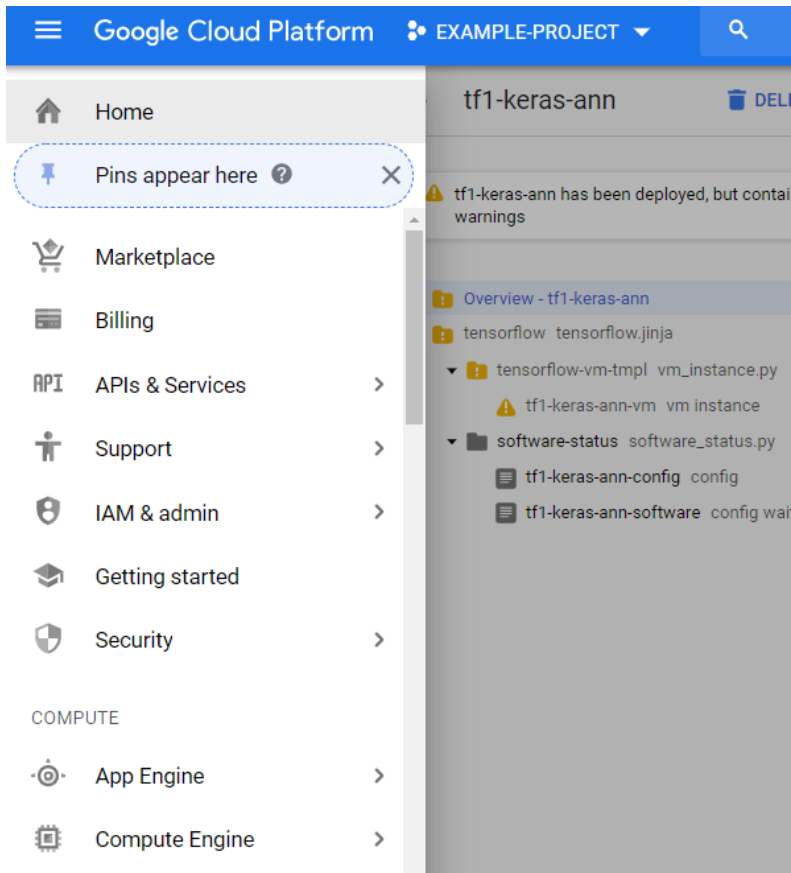


 Google Cloud Platform

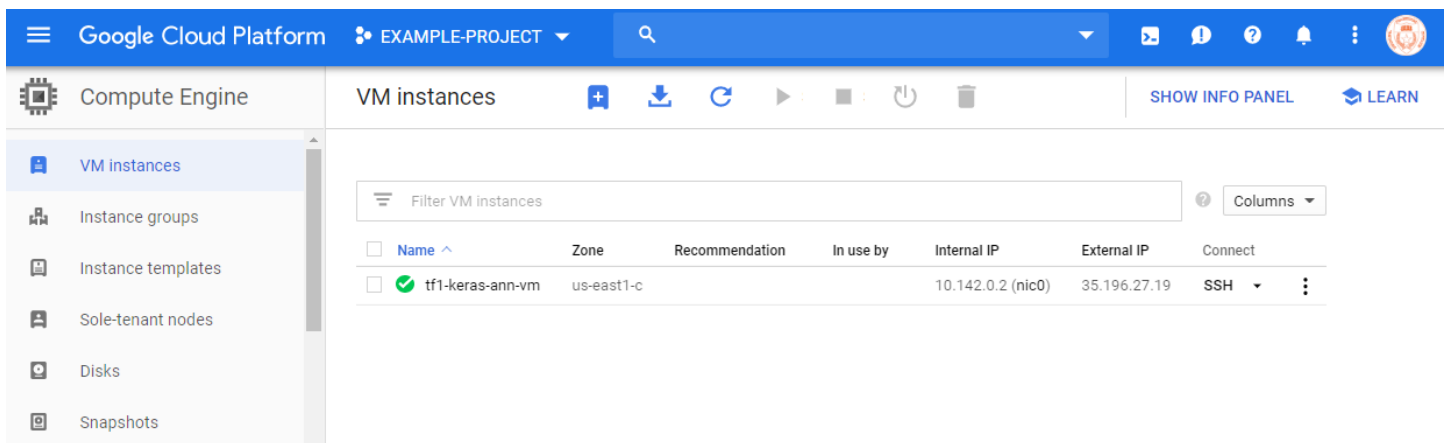
[Manage resources](#) [+ CREATE PROJECT](#) [DELETE](#)

 Filter tree

<input type="checkbox"/>	Name	ID
--------------------------	------	----



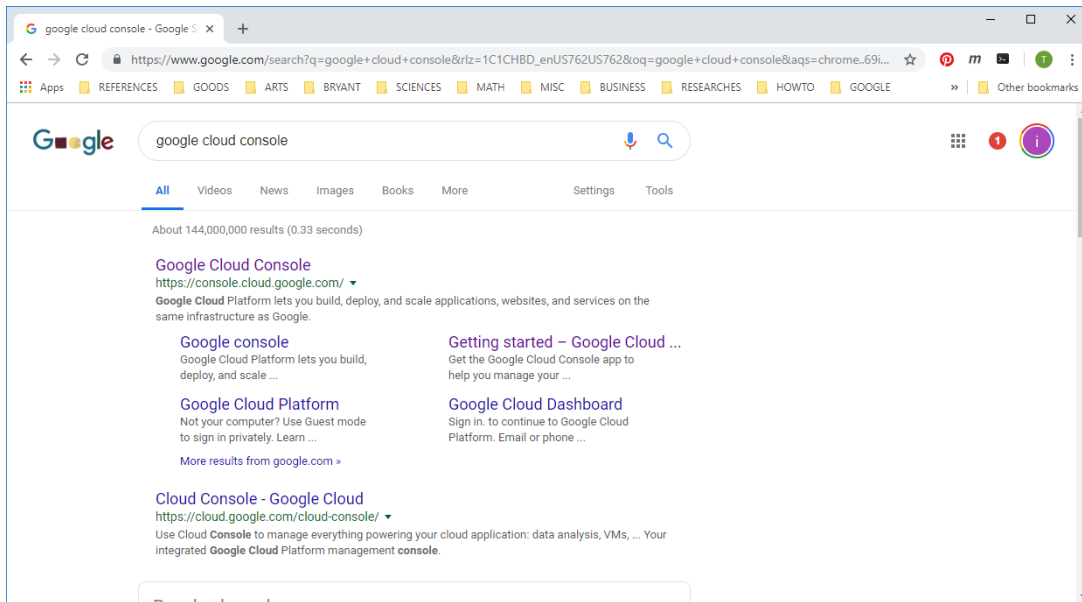
Click to select: Compute Engine



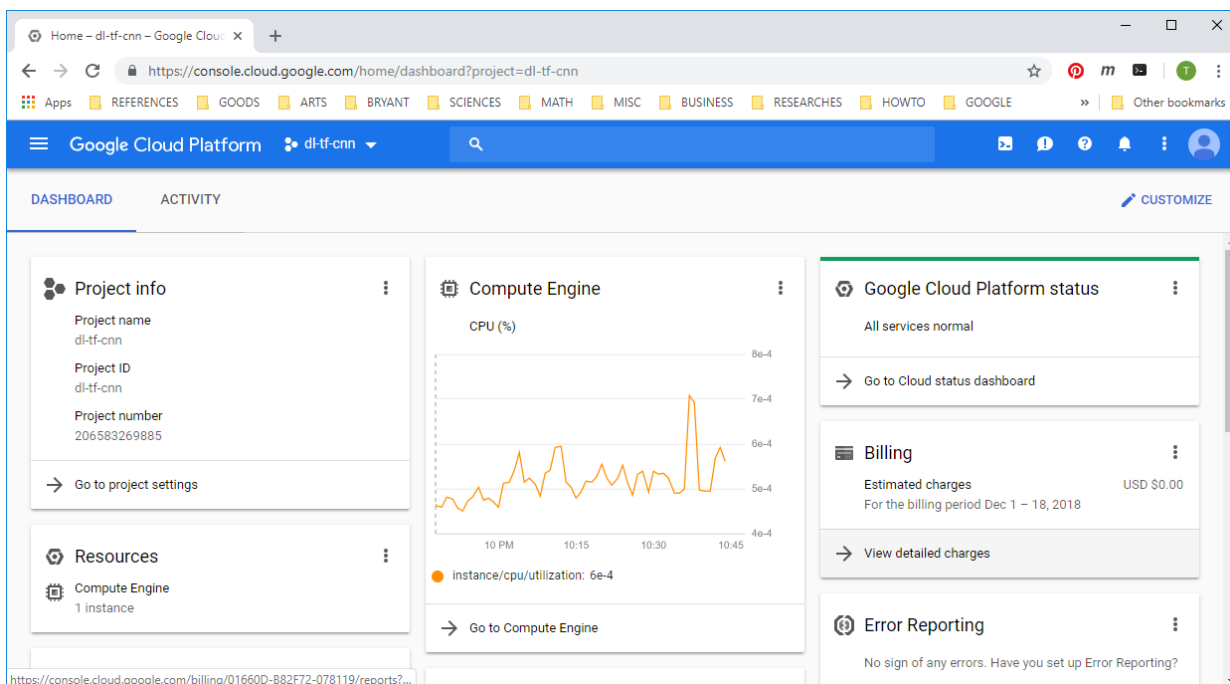
IT'S DONE!
DEEP LEARNING VM ON GCP HAS BEEN SET UP SUCCESSFULLY!

4. Access GCP Remote VM in the Console

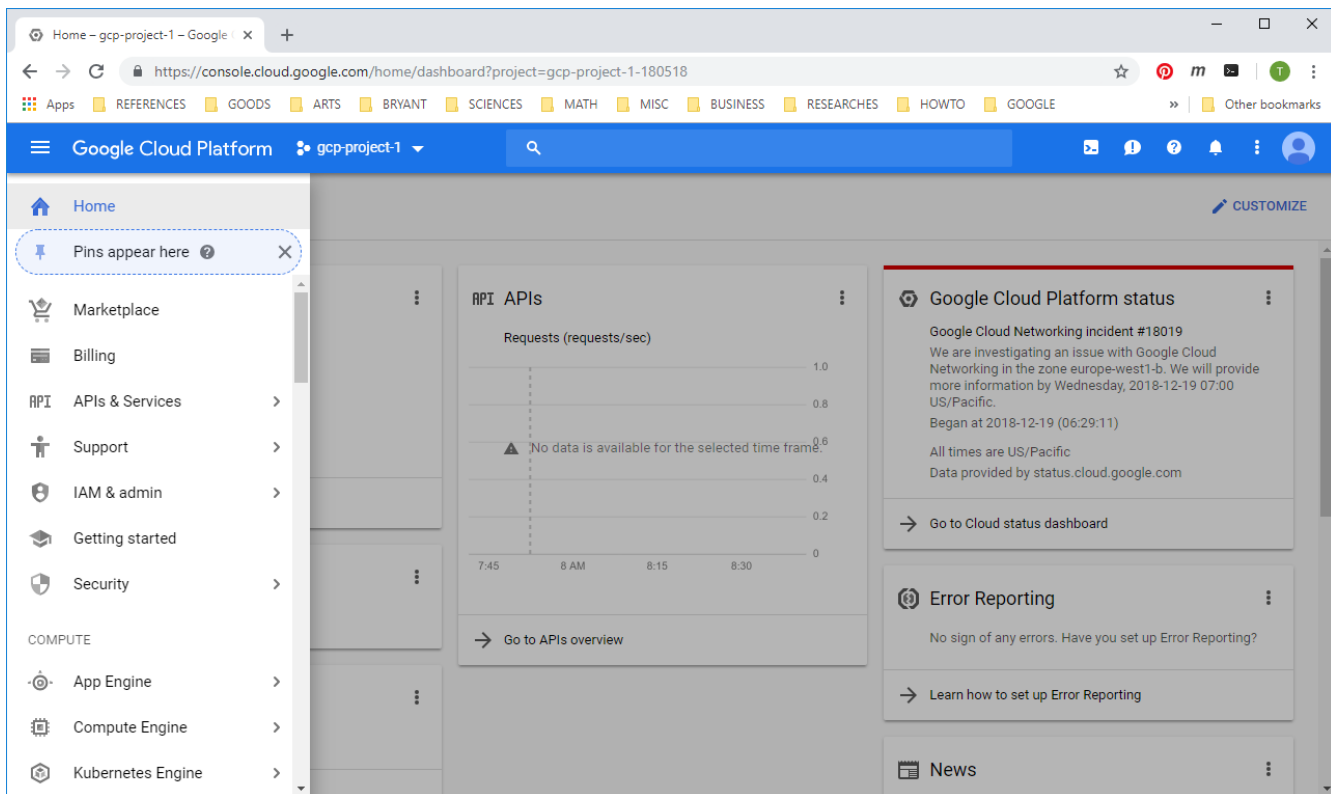
- Access GCP Console
 - Log in the Google account or Gmail account
 - Open Chrome browser
 - Enter: [Google cloud console](#) into the URL search box



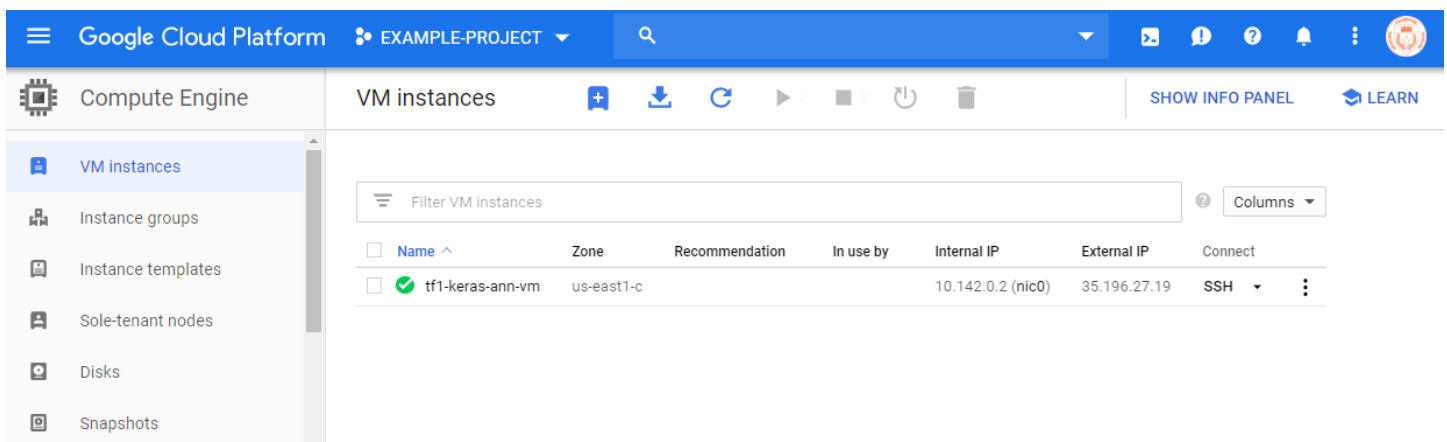
- Click [Google Cloud Console](#)



- Click on  on the top left corner.

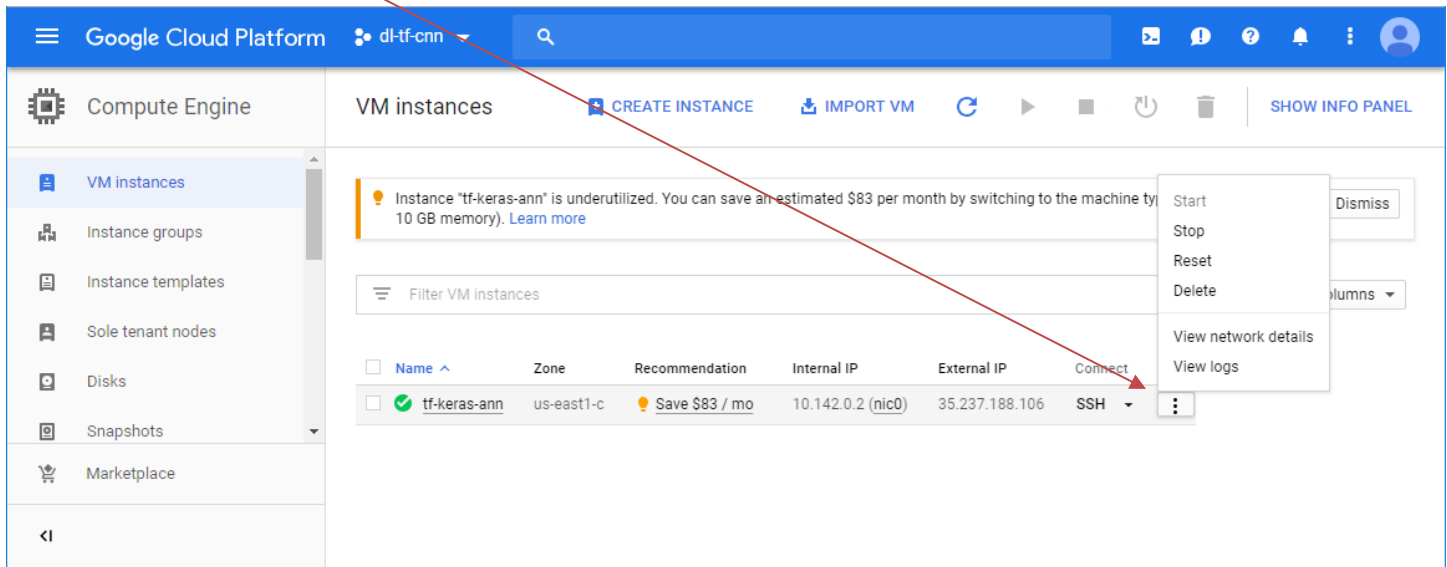


- Click **Computer Engine**



The remote virtual machine of the deep learning server shows up in the console.

5. Start and Stop GCP Remote Virtual Machine



IMPORTANT NOTES:

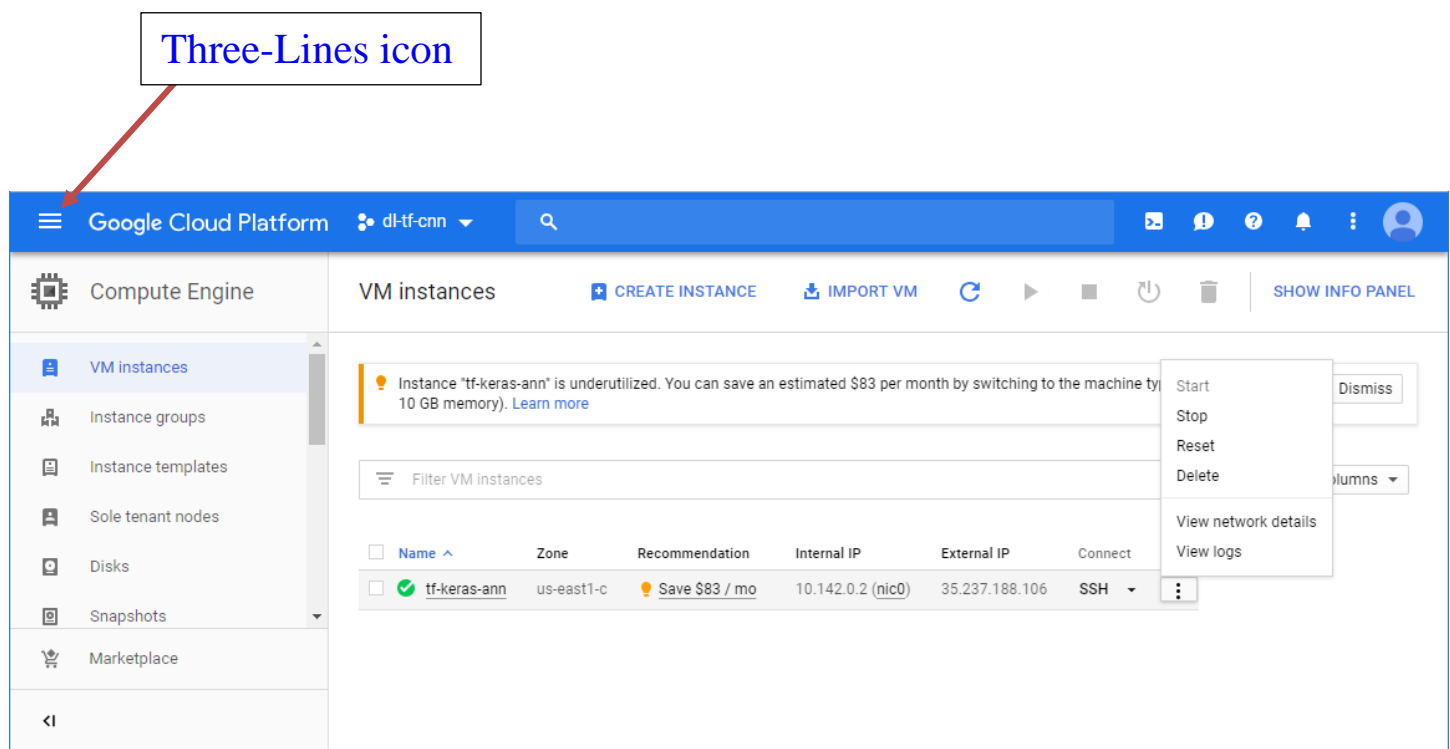
--> The user **MUST** stop the VM while not using it to avoid unnecessary charges.

6. Access GCP Project Information

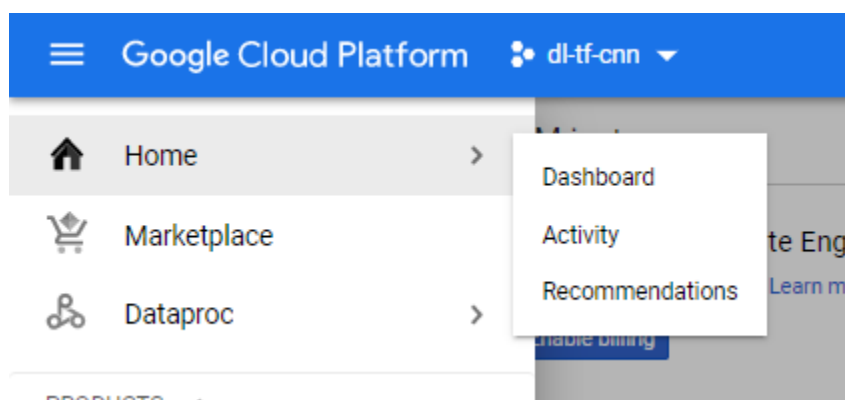
IMPORTANT NOTES:

--> The user should write down the project ID and project name that may be the same or different.

To get important information about a GCP project:

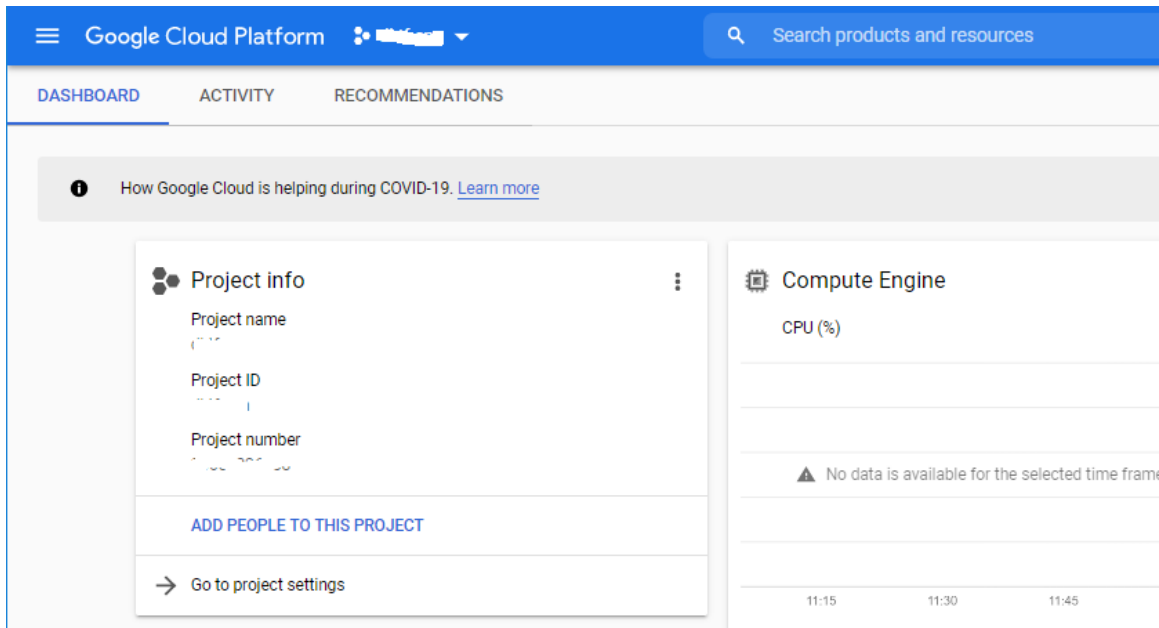


Click to open a menu: Three-Lines icon

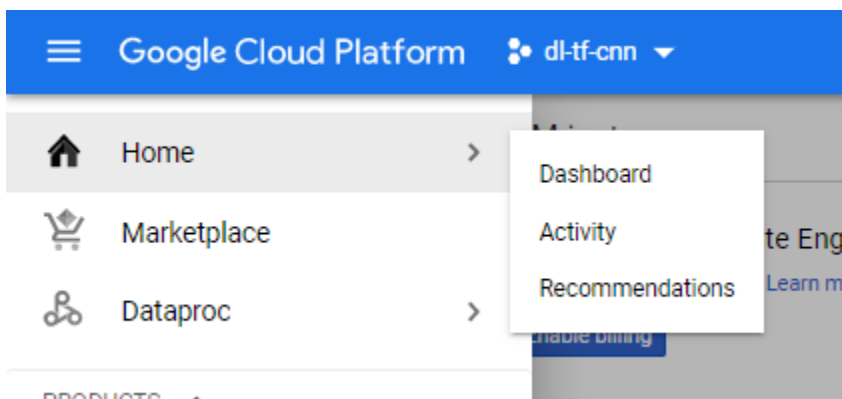


Click **Home**

Click to select: **Dashboard**

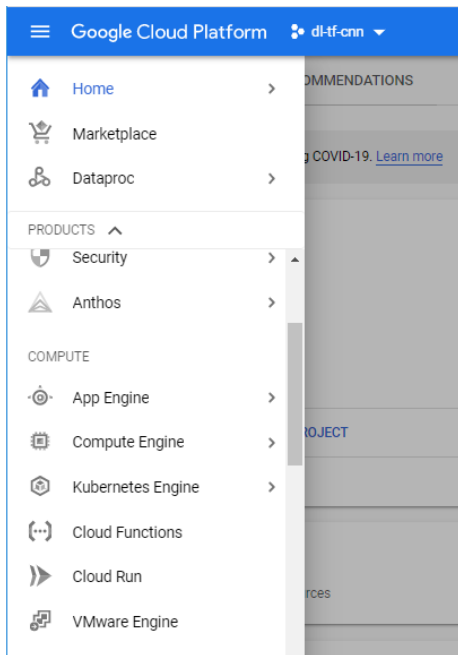


7. Access GCP VM Instance Information: Name, Zone, External IP

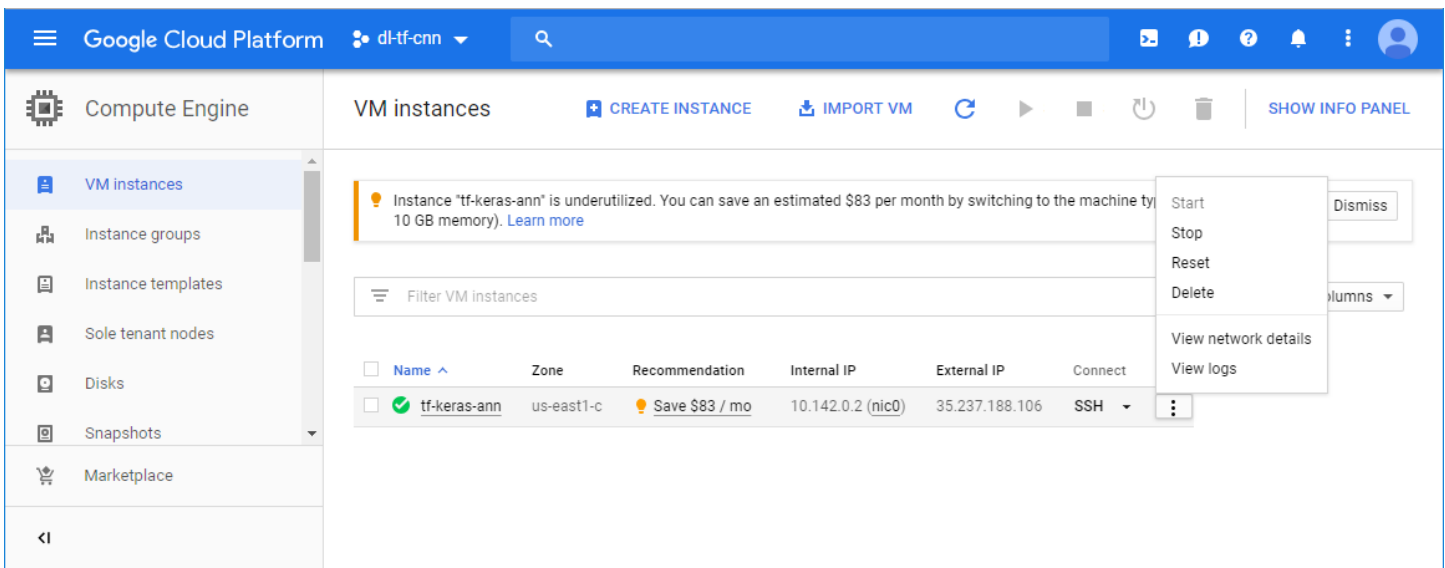


Click to open a menu: **Three-Lines icon**

Scroll down the menu and look for: **Compute Engine**



Click to select: **Compute Engine**



IMPORTANT NOTES:

--) The VM instance: name, zone, external IP are displayed in the console.