AI Deep Learning with TensorFlow on Google Cloud Platform (GCP)

Set up Deep Learning Virtual Machine (VM)

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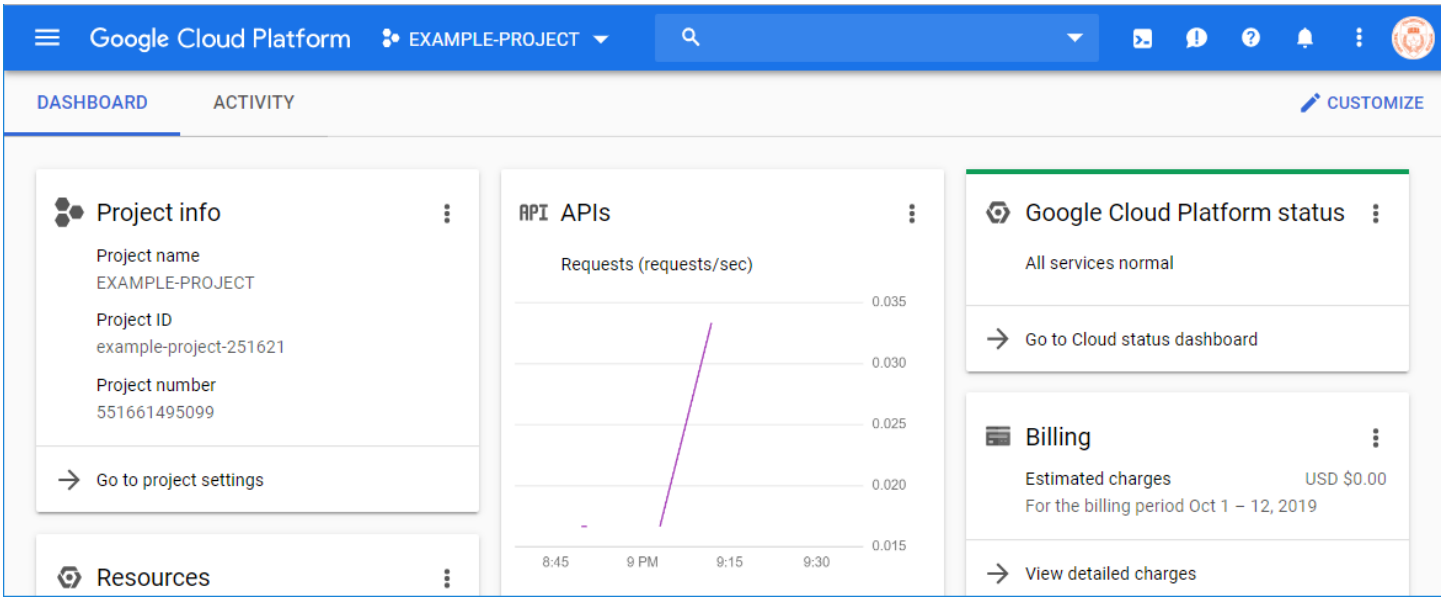
1. Get Free-Credit and Create Project in GCP

See the document: gcp_get_free_credit.pdf

2. Access GCP Console

- Open Chrome browser
- Type: Google Cloud Console into the URL search box



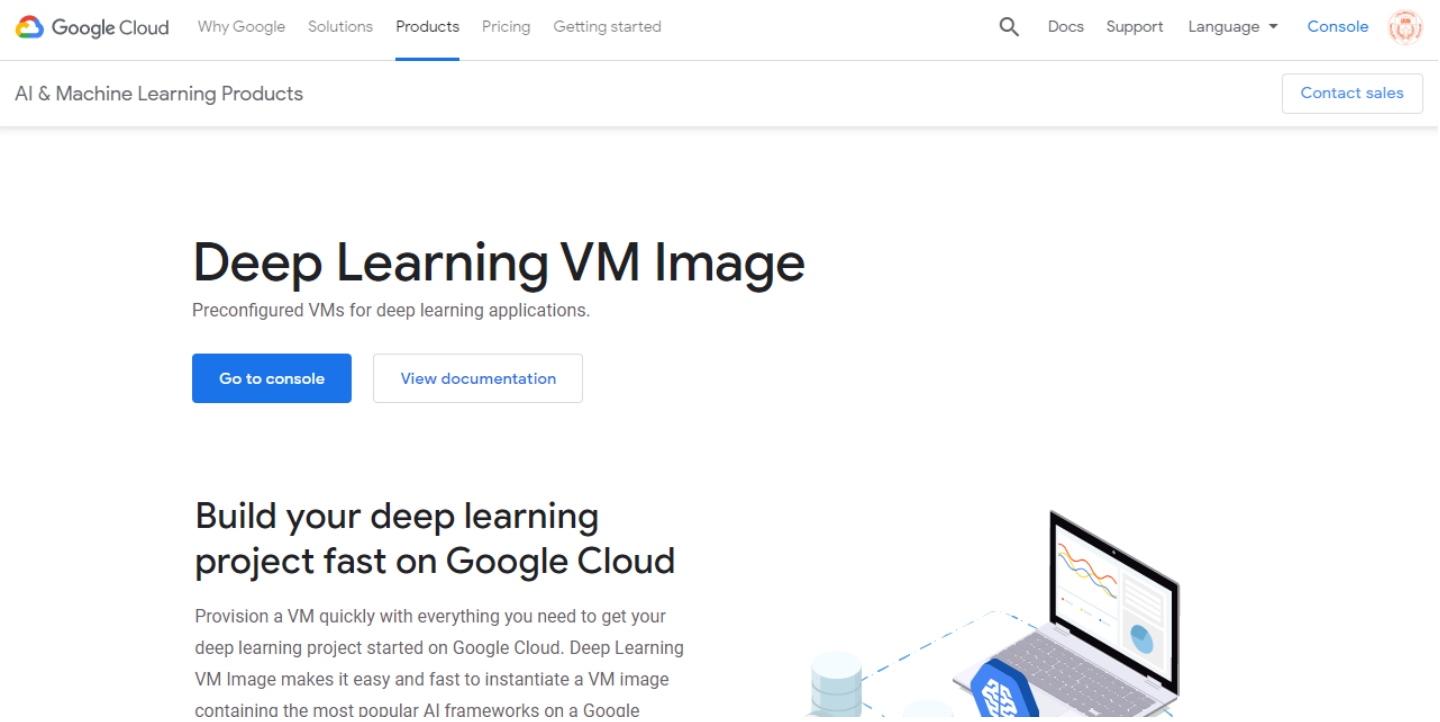
IMPORTANT NOTES:

--) 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.

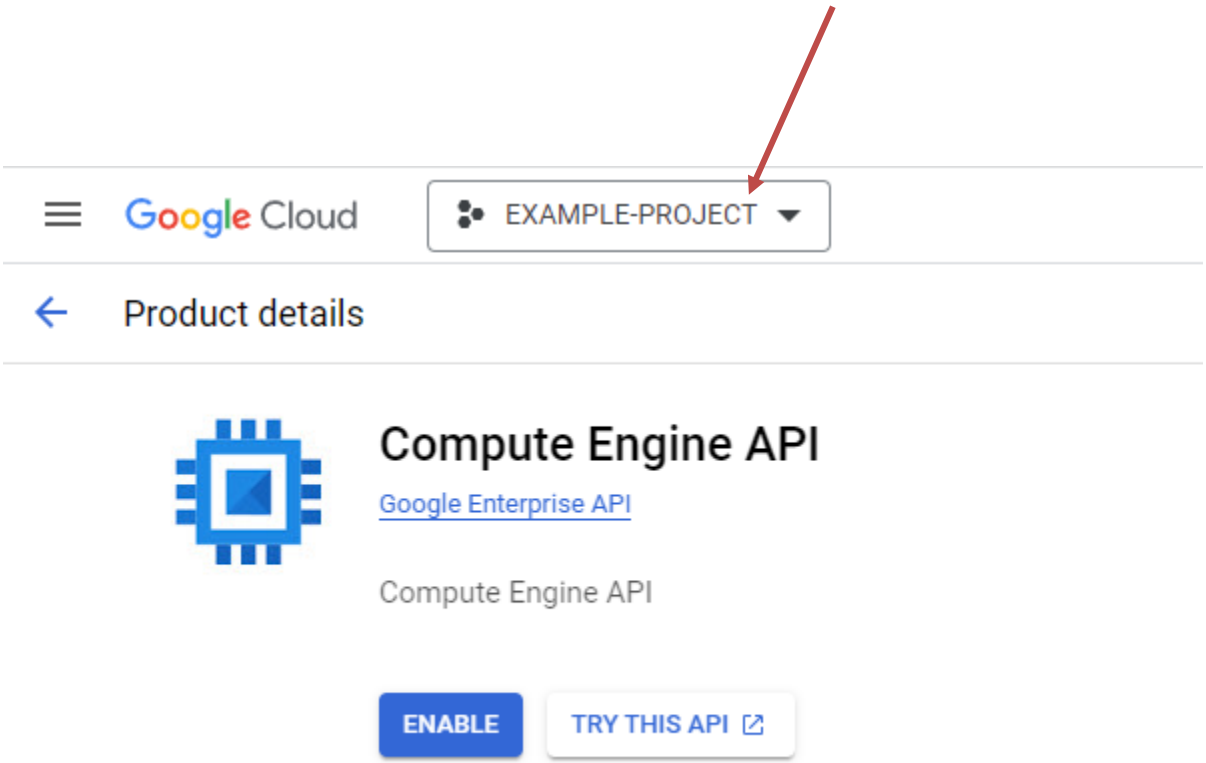
3. Create Deep Learning VM Using GCP Deep Learning Images

Cloud Deep Learning VM Image
https://cloud.google.com/deep-learning-vm/

Access the link:

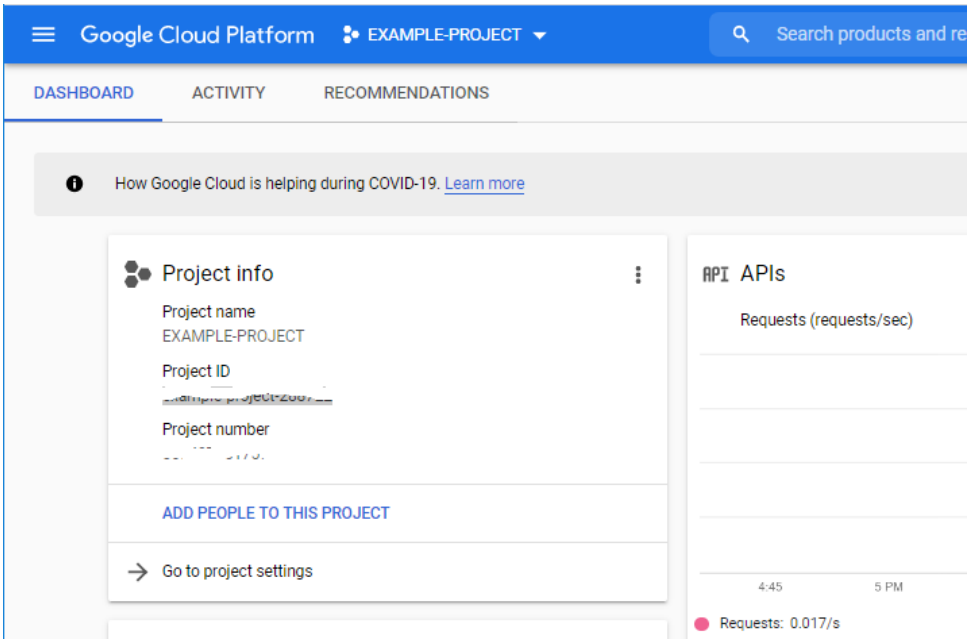


Click Go to console



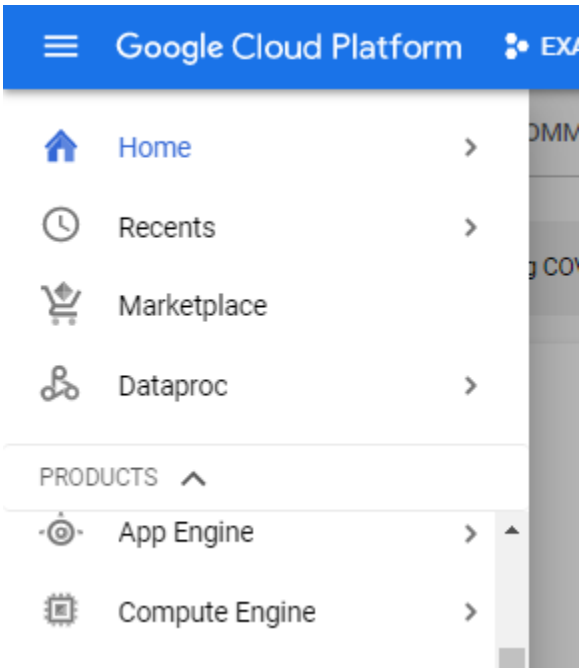
IMPORTANT NOTES:

- ***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.*

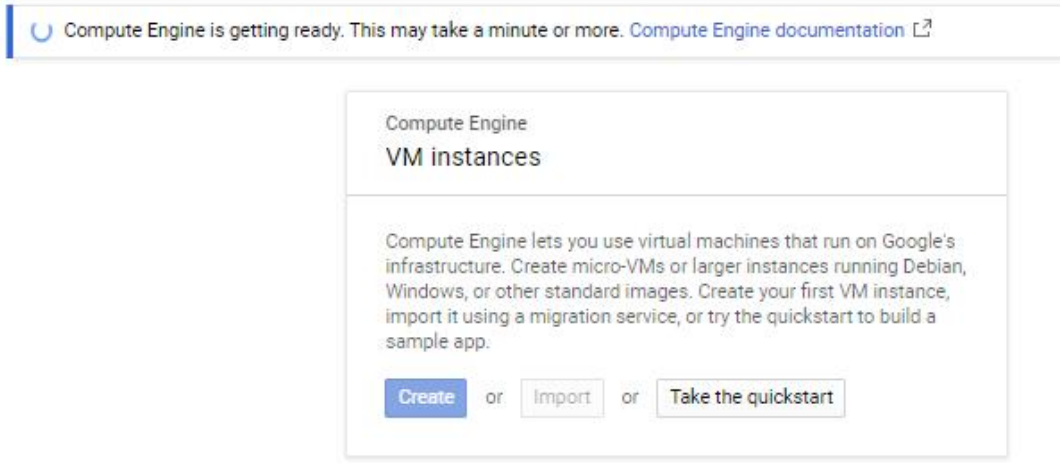


Click to open a menu: Three-Lines icon (on the top left corner)

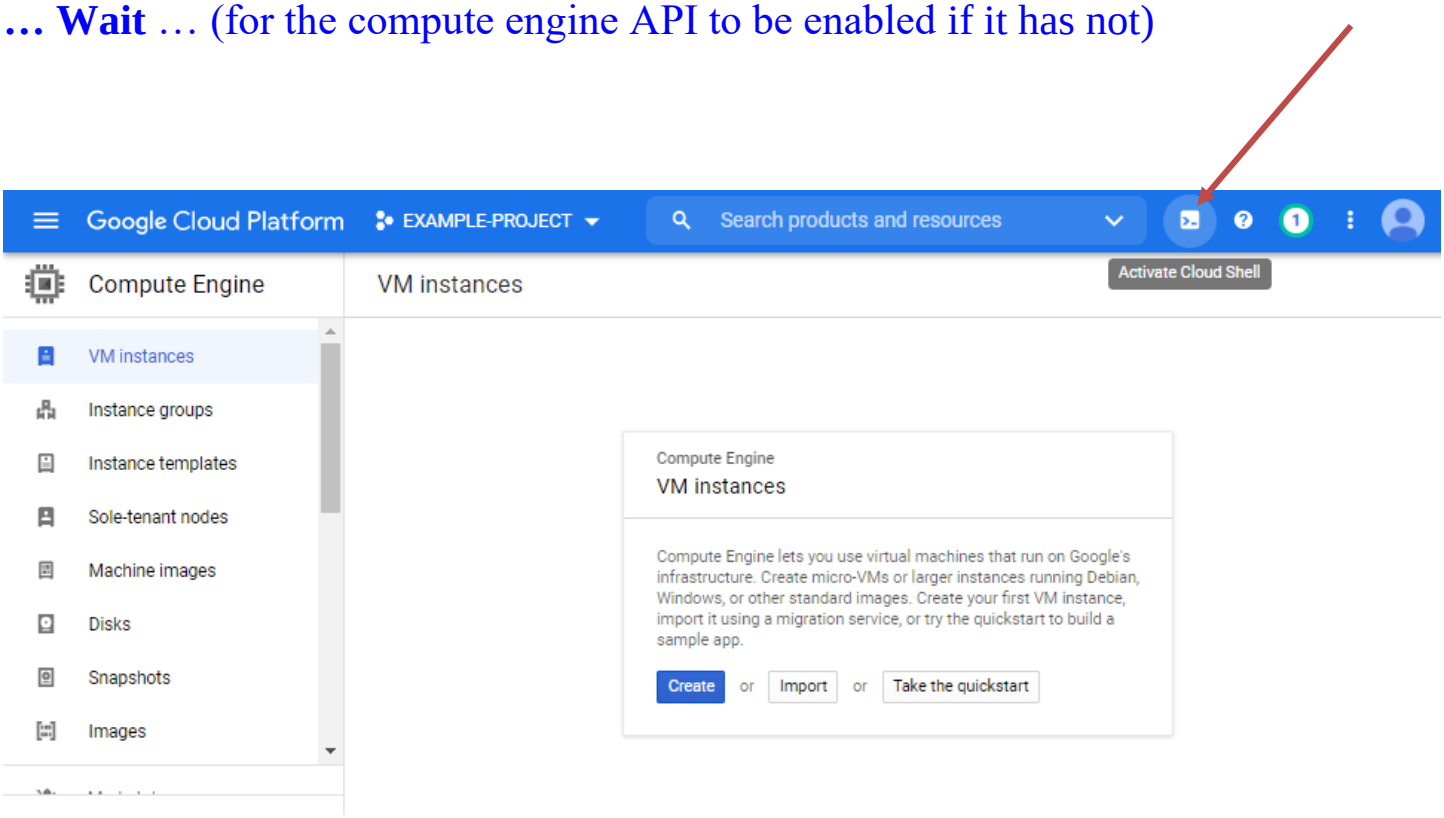
Scroll down and look for: Compute Engine



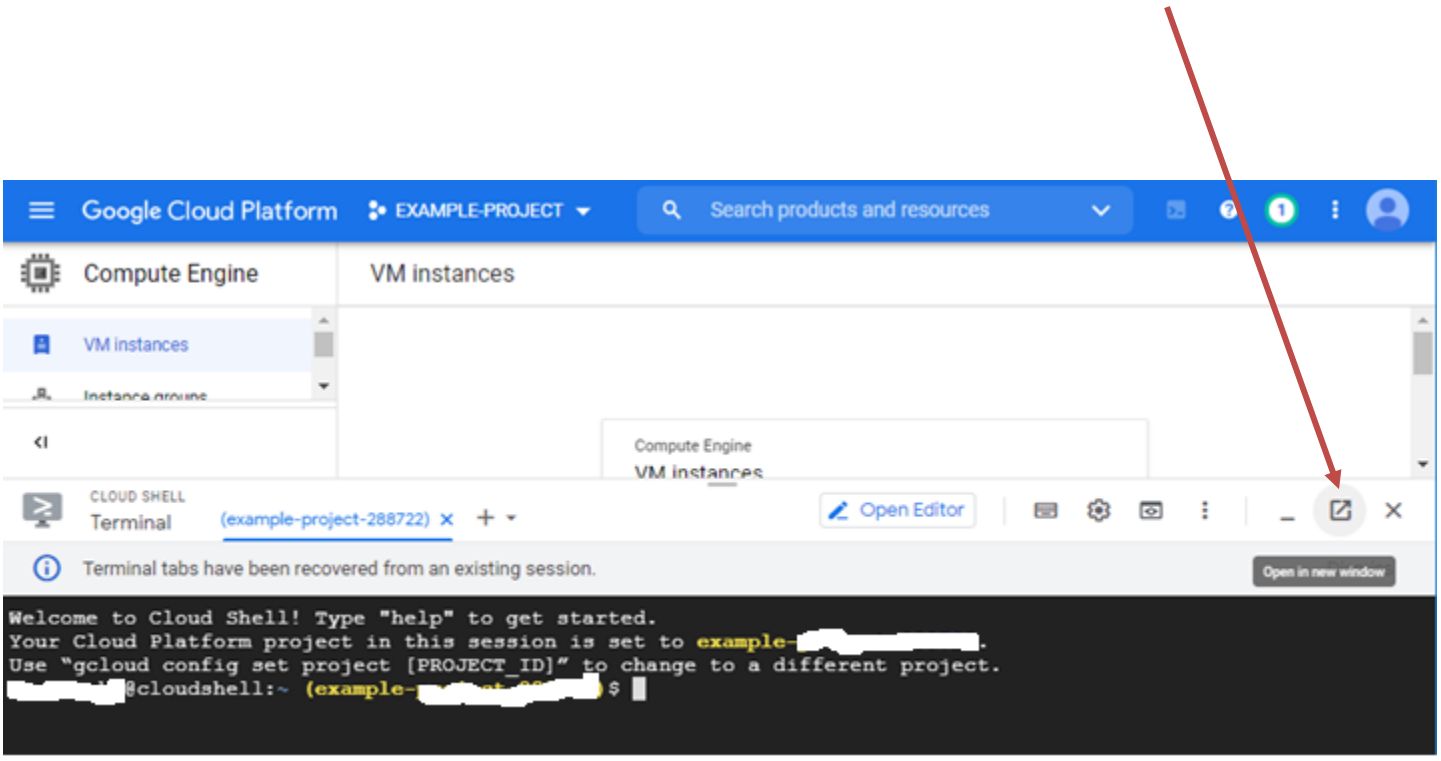
Click: Compute Engine



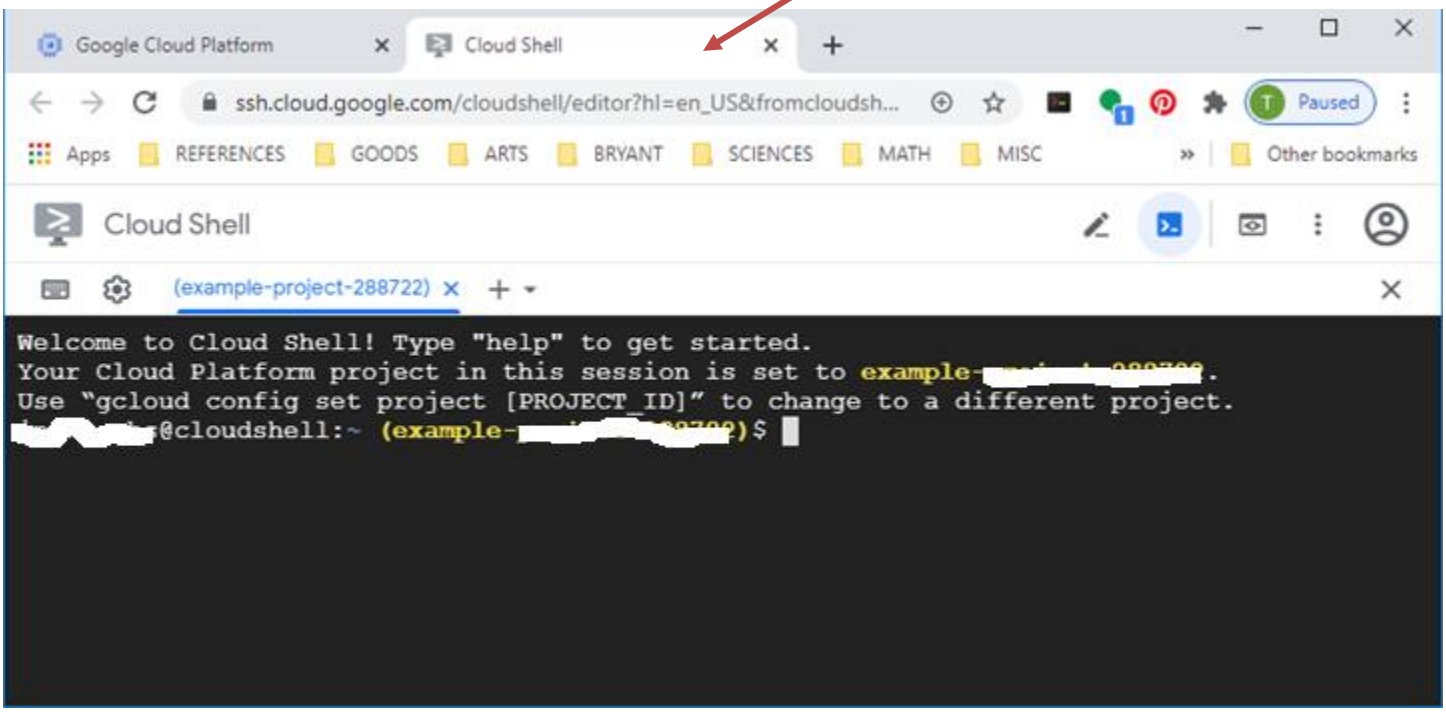
… Wait … (for the compute engine API to be enabled if it has not)



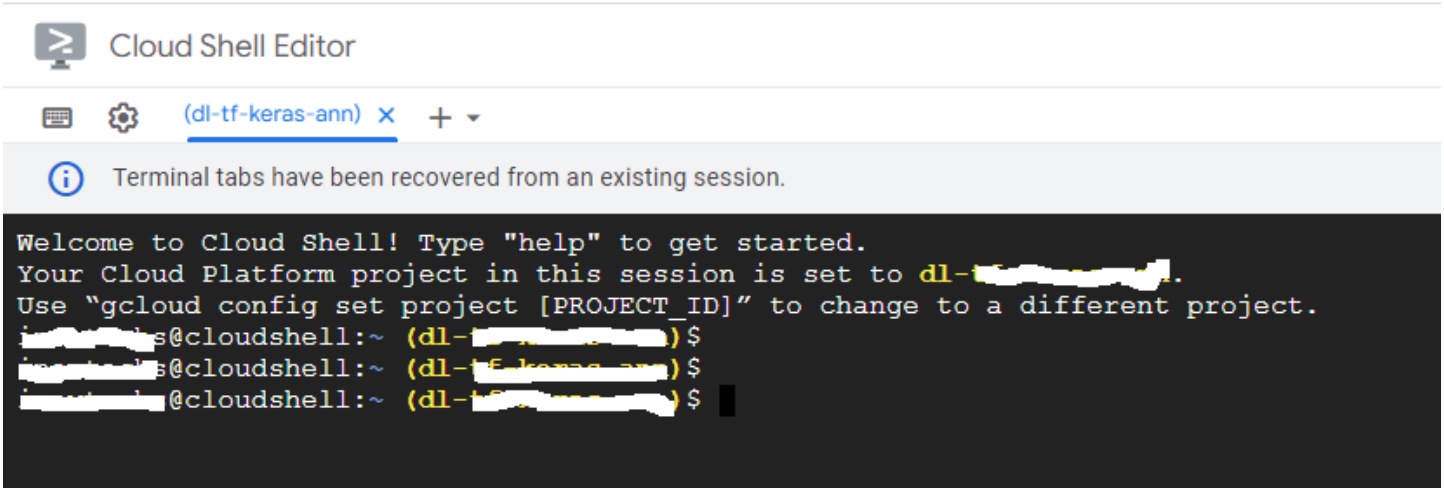
Click to activate: Cloud Shell icon (top bar menu)



Click to open Cloud Shell in a new window



Drag the tab to a new window



IMPORTANT NOTES:
--) The prompt of the cloud shell should be:

<google account>**@cloudshell**~(<**project name**>)$

4. Set Up Deep Learning VM Using CLI (Command Line Interface) on CloudShell

- **Type** the following **script** of command lines into **Notepad** or any **pure-text** editor

IMPORTANT NOTES:
--) *In Windows, **Notepad** must be used.*
- *Other pure-text editor must be used in other platforms like MAC OS.*

--) *The user must be sure that there is no typo.*
--) ***ANY NAME MUST BE**:*
- ***lower case, only letters (a – z), digits (0 -9), and hyphen** (**NOT** underscore)*

```
export IMAGE_FAMILY="tf-ent-latest-cpu"
export ZONE="us-south1-c"
export DISK_TYPE="pd-standard"
export INSTANCE_NAME="deep-learning-vm-tf2"
export INSTANCE_TYPE="e2-standard-8"
gcloud compute instances create $INSTANCE_NAME \
        --zone=$ZONE \
        --image-family=$IMAGE_FAMILY \
        --image-project=deeplearning-platform-release \
        --machine-type=$INSTANCE_TYPE \
        --boot-disk-type=$DISK_TYPE \
        --boot-disk-size=1024GB
```

IMPORTANT NOTES:
--) Replace "Name of the Instance" with the real name of the instance.
--) The user can name the instance whatsoever he/she wants.
--) The name MUST be embedded in the quotes as shown.
--) The user **MUST take note of this piece of information** that will be needed later.

IMPORTANT NOTES:
--) The GCP region and zone: us-south1-c (Region: us-south1; Zone: c)
--) The user can select other regions and zones.
- **us-east1-c** OR **us-south1-c** OR **us-central1-c**

--) The user **MUST take note of this piece of information** that will be needed later.

Copy and paste the command line (from Notepad) into the cloud shell terminal

```
[redacted]@cloudshell:~ ([redacted])$
[redacted]@cloudshell:~ ([redacted])$ export IMAGE_FAMILY="tf-ent-latest-cpu"
export ZONE="us-south1-c"
export DISK_TYPE="pd-standard"
export INSTANCE_NAME="deep-learning-vm-tf2"
export INSTANCE_TYPE="e2-standard-8"
gcloud compute instances create $INSTANCE_NAME \
        --zone=$ZONE \
        --image-family=$IMAGE_FAMILY \
        --image-project=deeplearning-platform-release \
        --machine-type=$INSTANCE_TYPE \
        --boot-disk-type=$DISK_TYPE \
        --boot-disk-size=1024GB
```

Press ENTER to **run** the command line in the cloud shell terminal

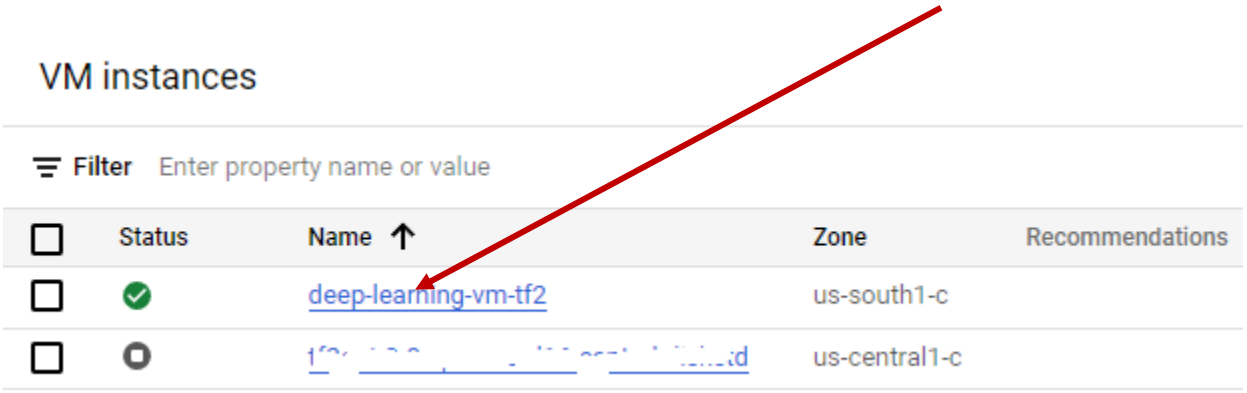
… **Wait** … (for the new deep learning server instance to be created)

```
[redacted]@cloudshell:~ ([redacted])$
[redacted]@cloudshell:~ ([redacted])$ export IMAGE_FAMILY="tf-ent-latest-cpu"
export ZONE="us-south1-c"
export DISK_TYPE="pd-standard"
export INSTANCE_NAME="deep-learning-vm-tf2"
export INSTANCE_TYPE="e2-standard-8"
gcloud compute instances create $INSTANCE_NAME \
        --zone=$ZONE \
        --image-family=$IMAGE_FAMILY \
        --image-project=deeplearning-platform-release \
        --machine-type=$INSTANCE_TYPE \
        --boot-disk-type=$DISK_TYPE \
        --boot-disk-size=1024GB
Created [https://www.googleapis.com/compute/v1/projects/[redacted]s/zones/us-south1-c/instances/deep-learning-vm-tf2].
WARNING: Some requests generated warnings:
 - Disk size: '1024 GB' is larger than image size: '50 GB'. You might need to resize the root repartition manually if the operating system does not support automatic res
 https://cloud.google.com/compute/docs/disks/add-persistent-disk#resize_pd for details.

NAME: deep-learning-vm-tf2
ZONE: us-south1-c
MACHINE_TYPE: e2-standard-8
PREEMPTIBLE:
INTERNAL_IP: [redacted]
EXTERNAL_IP: [redacted]
STATUS: RUNNING
[redacted]@cloudshell:~ ([redacted])$
```

5. Access New Deep Learning Server in Google Cloud Console

Access Google Cloud Console: Compute Engine: VM Instances



Google Cloud Console: Compute Engine: VM Instance

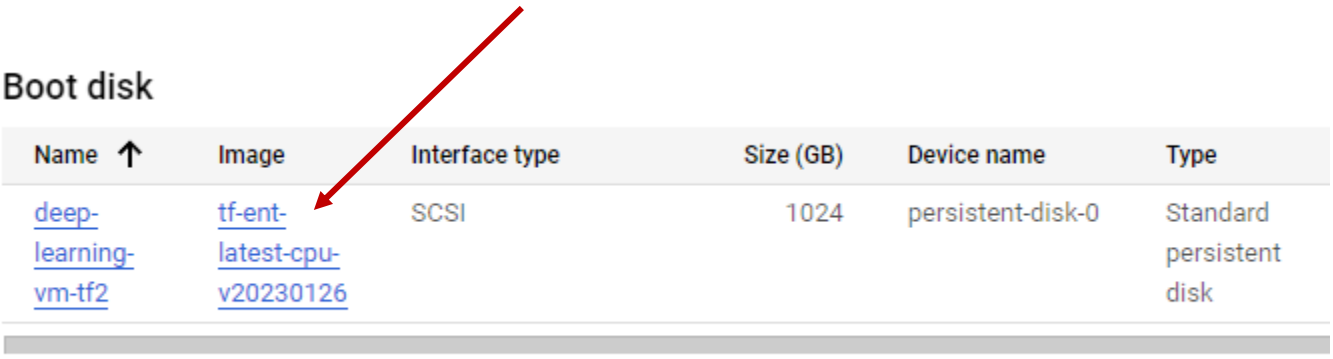
- New **Deep Learning VM** shows up in the console

Double Click deep learning vm name (*deep-learning-vm-example*)

Scroll down & look for **Boot Disk**

Verify TensorFlow Enterprise version of the VM image:

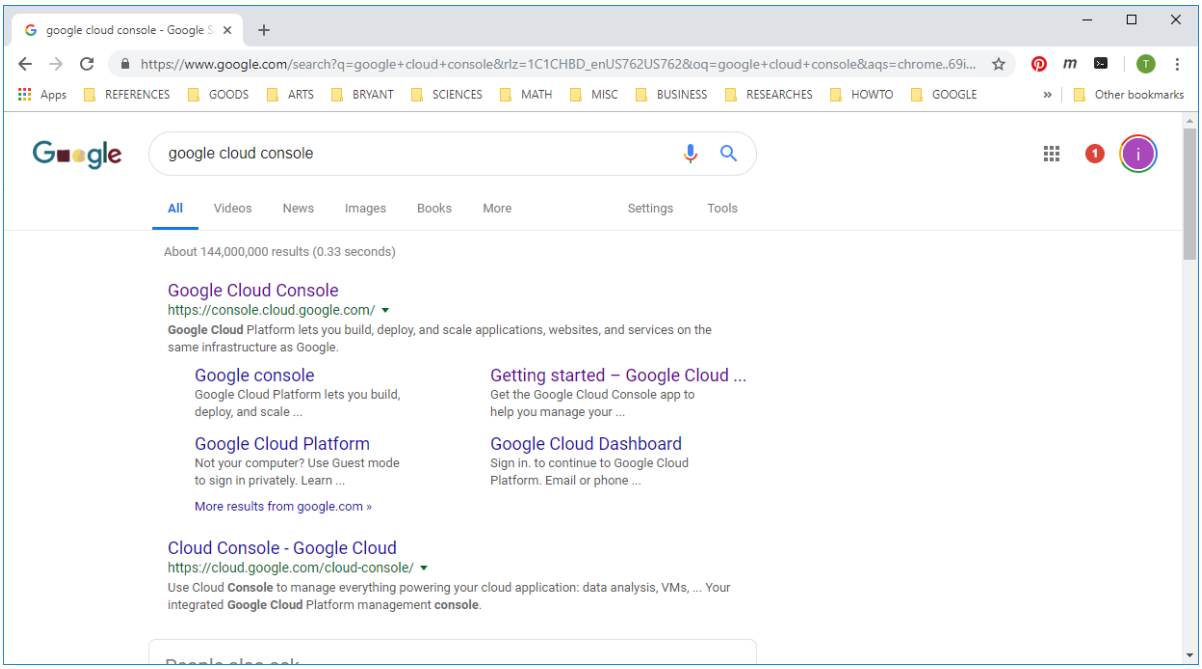
- **TensorFlow Enterprise Lastest Version for CPU**



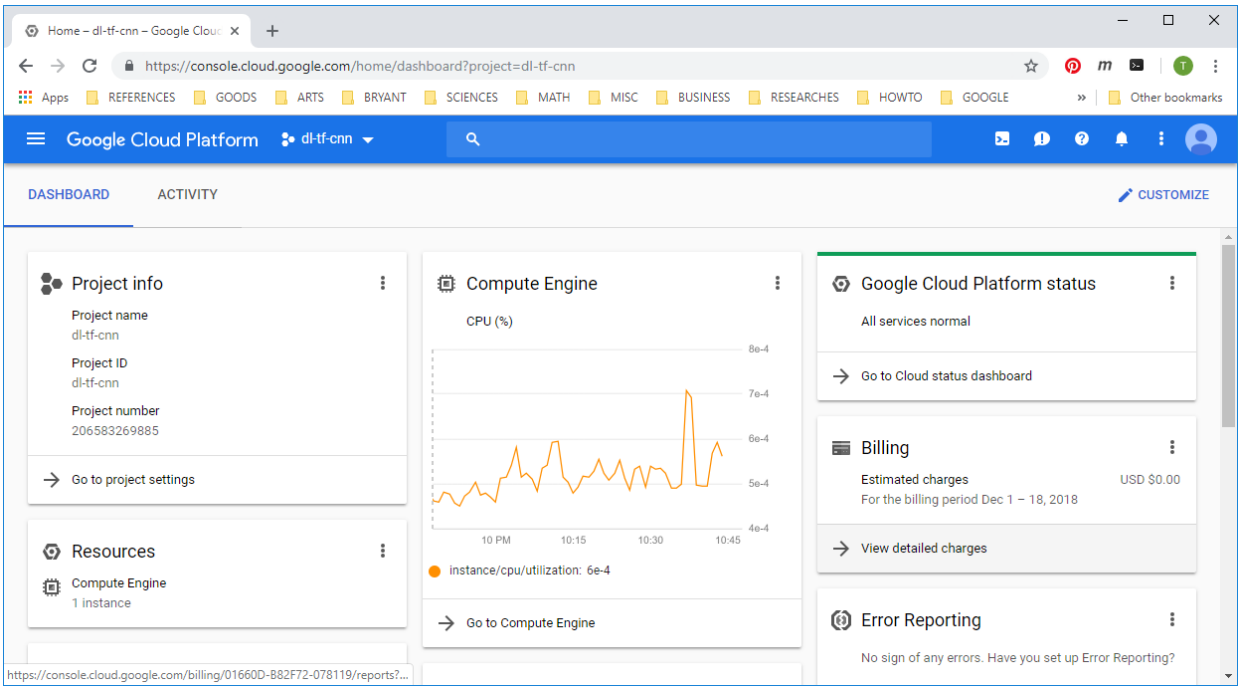
IT'S DONE!
DEEP LEARNING VM ON GCP HAS BEEN SET UP SUCCESSFULLY!

6. Access GCP Remote VM in the Console

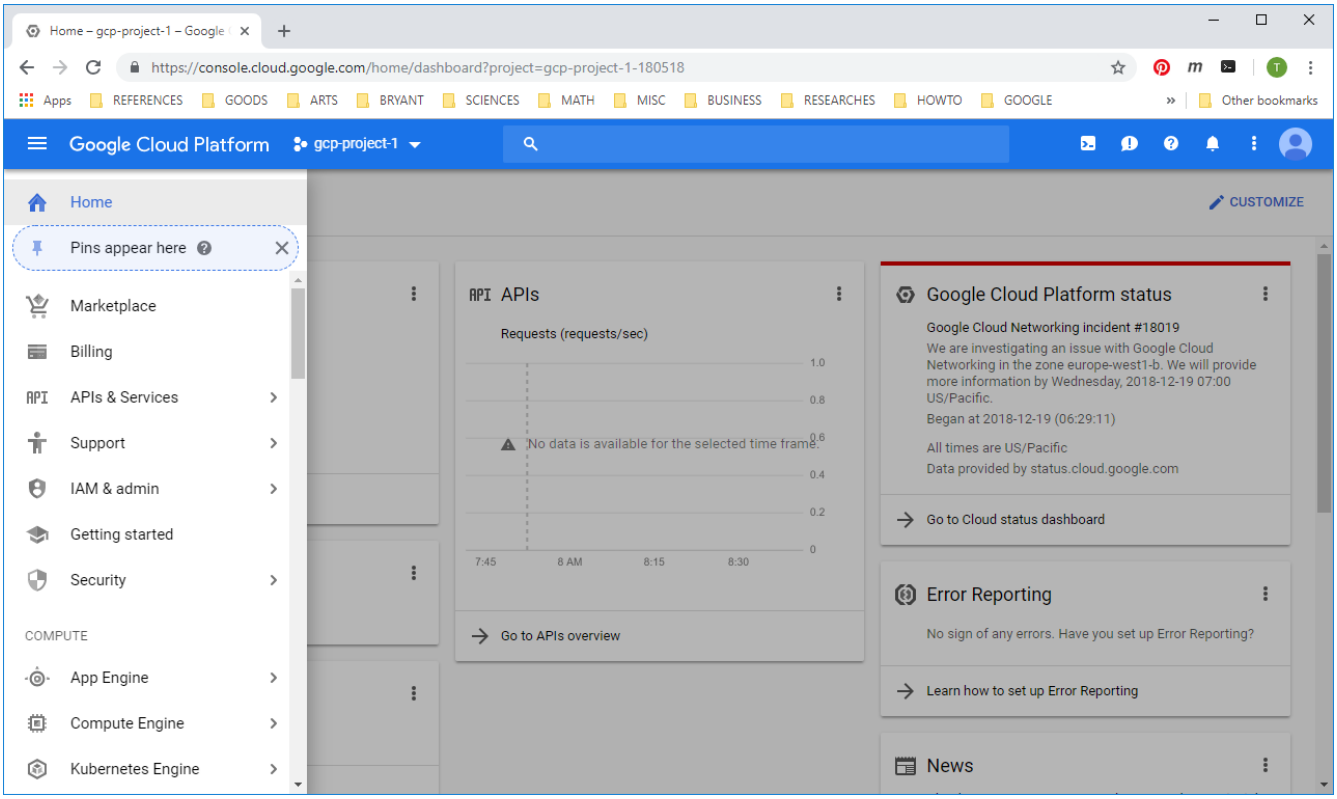
- Access GCP Console
  - Log in the Google account or Gmail account
  - Open Chrome browser
  - Enter: the text of "Google cloud console" into the URL search box



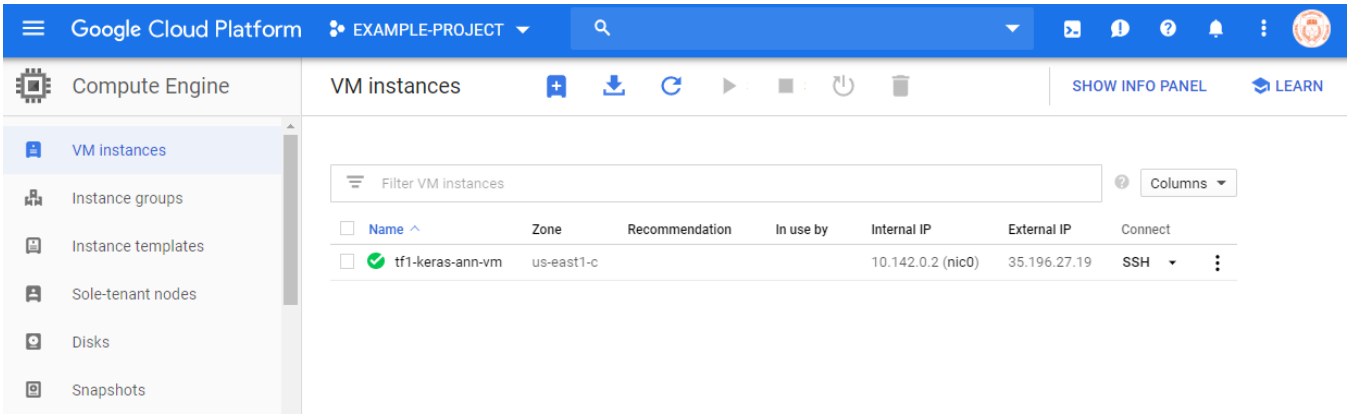
- **Click** Google Cloud Console



- **Click** on  in the top left corner.

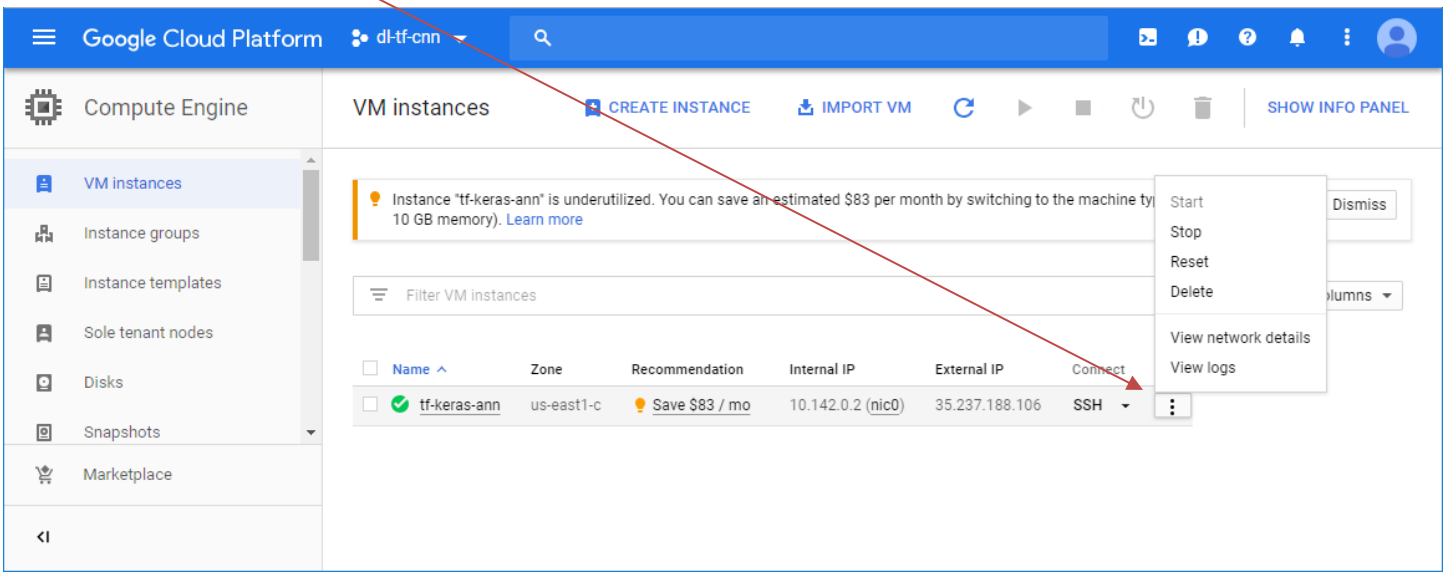


- **Click** Computer Engine



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

7. Start and Stop GCP Remote Virtual Machine



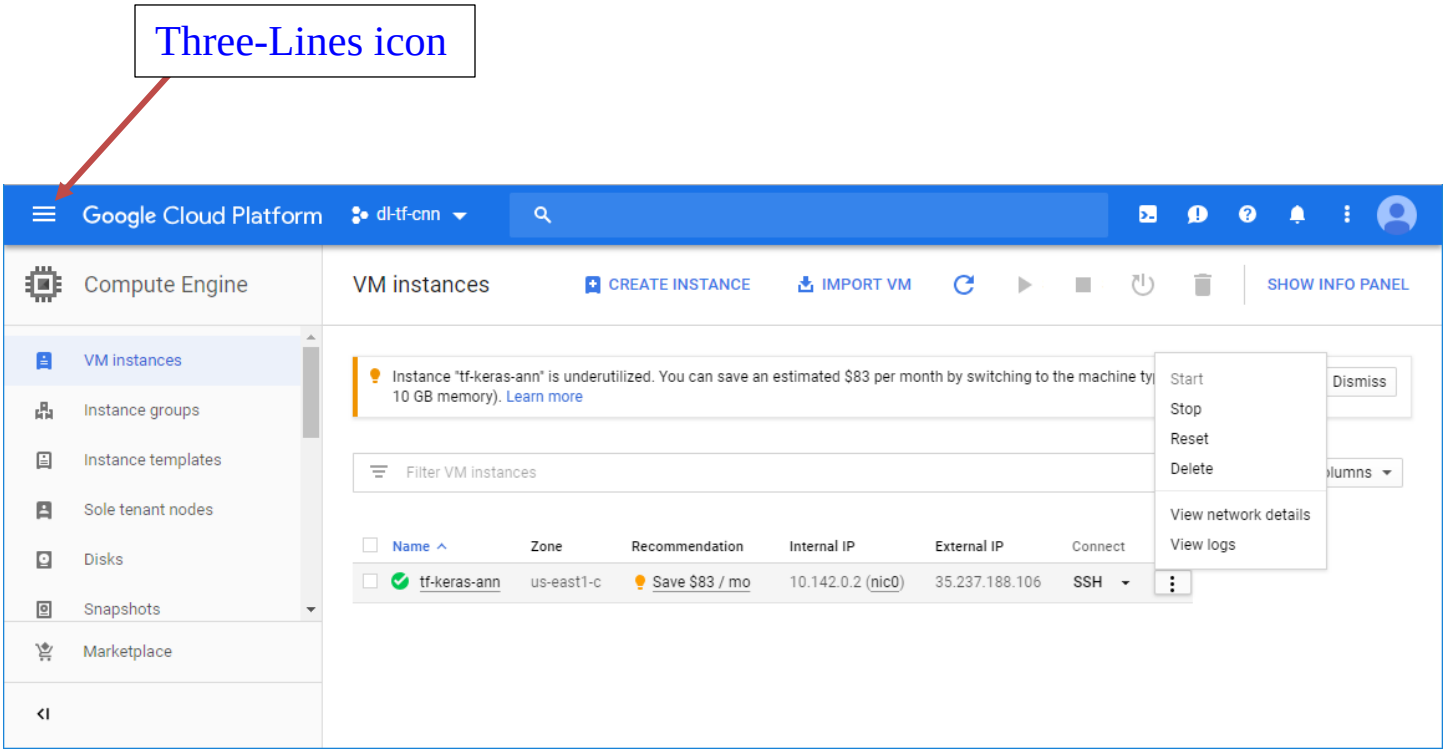
IMPORTANT NOTES:

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

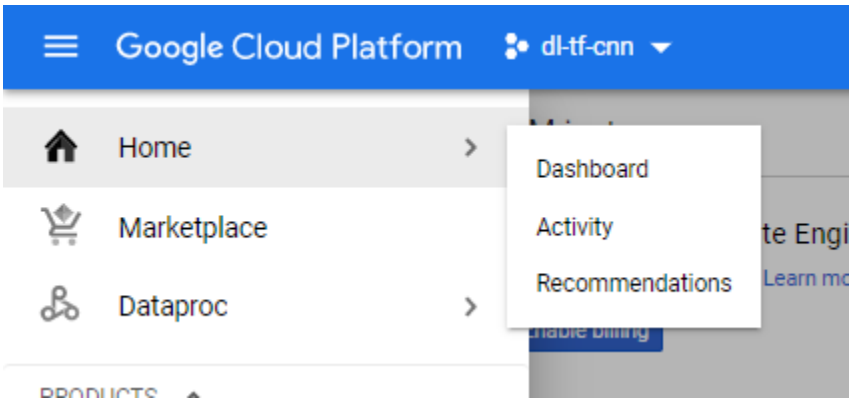
8. Access GCP Project Information

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:

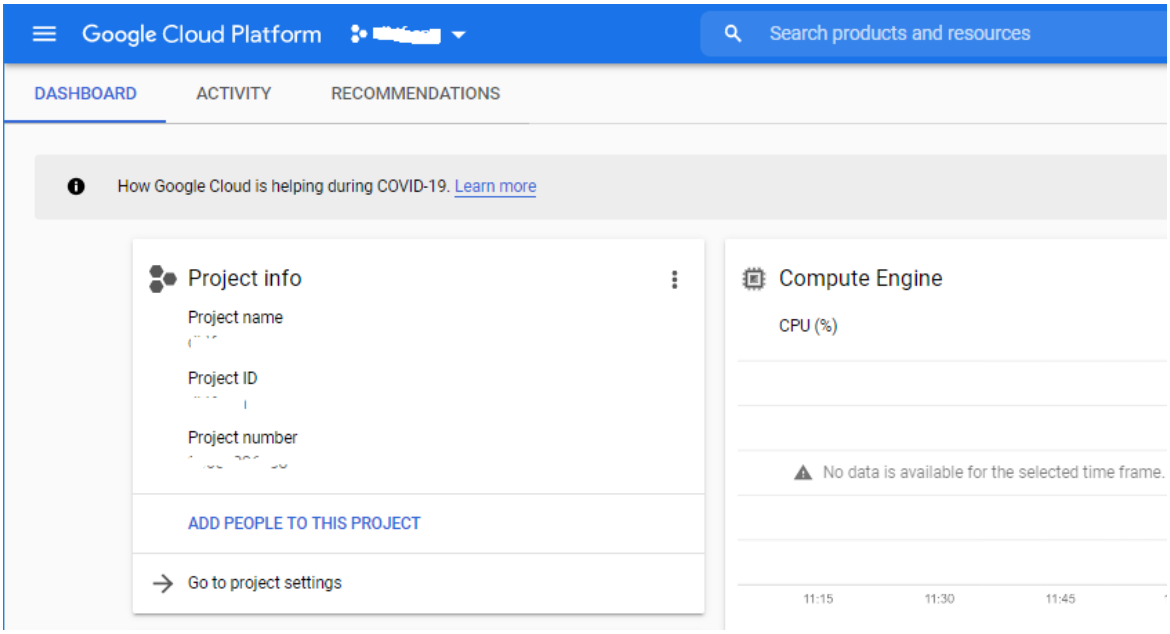


Click to open a menu: Three-Lines icon

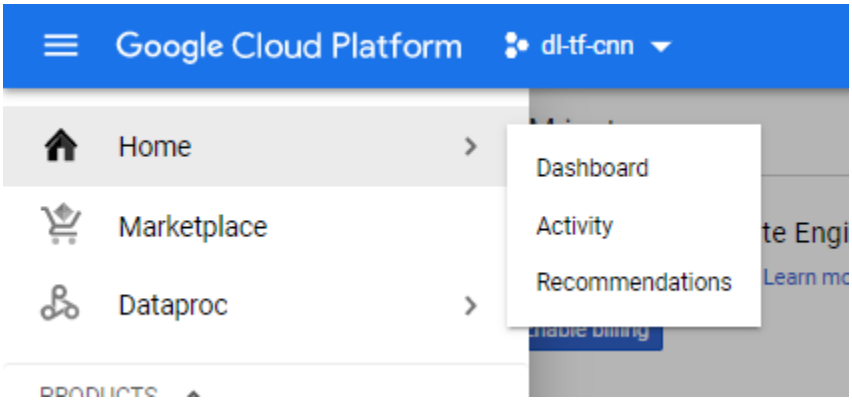


Click **Home**

Click to select: **Dashboard**

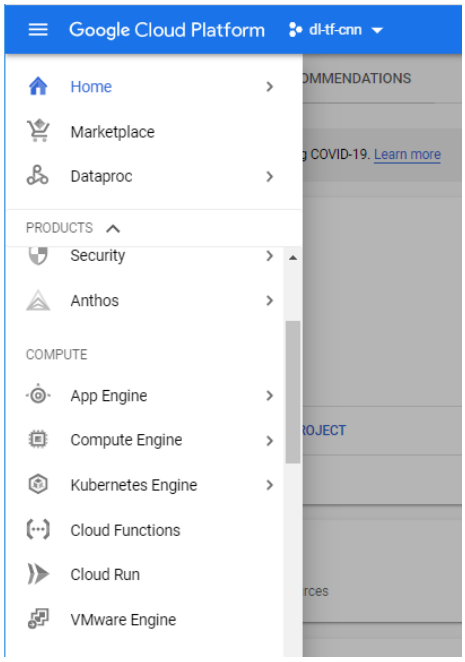


9. Access GCP VM Instance Information: Name, Zone, External IP

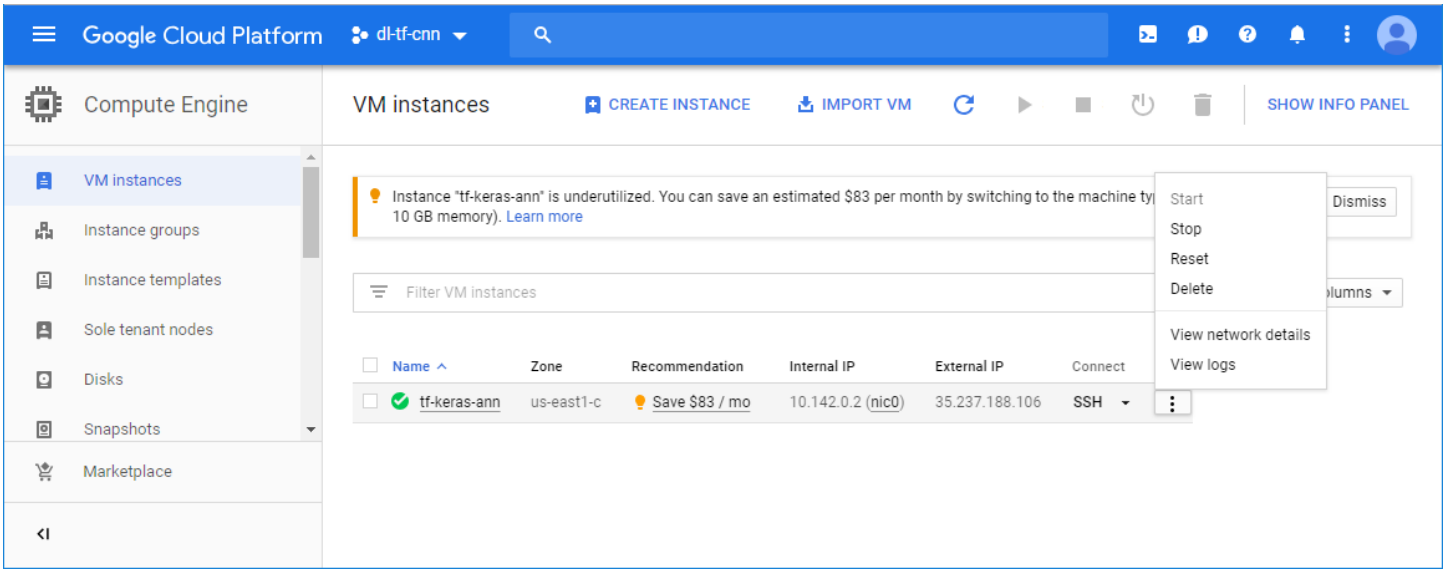


Click to open a menu: Three-Lines icon

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.