

Live Notebook

Minor Computer Vision & Data Science

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# Programme

## Day 1

*Starting at 08:30*

**Registration (30 min)**

Name, NHL e-mail, phone

**Student introduction (10 min)**

**Course Introduction (30 min)**

**Lab tools setup (30 min)**

1. Chrome
2. Google Drive
3. Live Notebook
4. Github
5. SSH
6. Google Cloud
7. Udacity
8. Qwiklab

**Deep Learning Libraries (45 min)**

LAB 1.1: [Applications of Deep Learning with Caffe, Theano and Torch](https://spl-nvlabs.qwiklab.com/focuses/223)

**Coffee break (15 min)**

**Introduction to Image Classification (Udacity, 90 min)**

Link to [course](https://classroom.udacity.com/courses/ud730/lessons/6370362152/concepts/63798118150923)**.**

LAB 1.2: Image Classification with DIGITS

**Lunch break (45 min)**

**Introduction to Keras (3 hours)**

LAB 1.3: Udacity assignment - notMNIST

LAB 1.4: Use Keras + TensorFlow on Google Cloud

LAB 1.5: [Optical character recognition](https://github.com/wxs/keras-mnist-tutorial/blob/master/MNIST%20in%20Keras.ipynb)

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# Day 1

## Slides:

On the Google Drive shared folder or on Github:

<https://github.com/nhldatascience/minor-deep-learning/tree/master/slides>

## Introductory Quiz

Go to drive.google.com.

Open Live Notebook.gdoc

What is wrong with this image? Insert a comment in the Google doc. (Hint: you do not have to be a medical expert to tell…)

## Course introduction

Slides: https://github.com/nhldatascience/minor-deep-learning/blob/master/slides/2017-09-11%20NHL%20Minor%20CVDS.pptx

### Lab 1.1 [Applications of Deep Learning with Caffe, Theano and Torch](https://spl-nvlabs.qwiklab.com/focuses/223)

You can revisit the lab here:

<https://github.com/nhldatascience/minor-deep-learning/blob/master/labs/Lab%201.1%20-%20Intro%20to%20DL.ipynb>

## Lab tools setup

### Initial Steps

Install Google Chrome

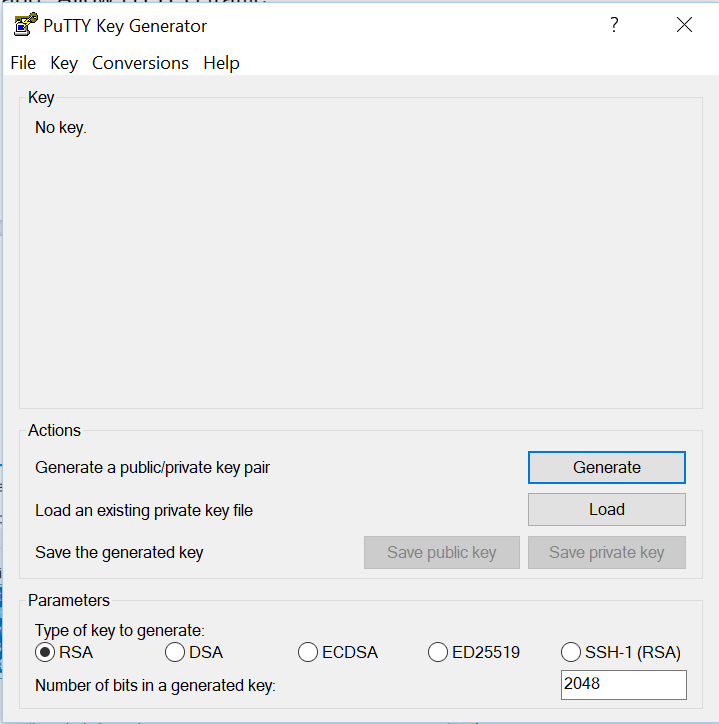
Make a Github account and go to the Github repository: <https://github.com/nhldatascience/minor-deep-learning>

Install SSH client:

<https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>

<https://the.earth.li/~sgtatham/putty/latest/w64/putty-64bit-0.70-installer.msi>

Generate SSH Key (Windows only):



1. Click “Generate”
2. Follow the instructions
3. Click “Save private key” then “Save public key”
4. Save the private key with a .ppk extension
5. Save the public key with e.g. a .pub extension.
6. You will need these later.

Login to Google Cloud:

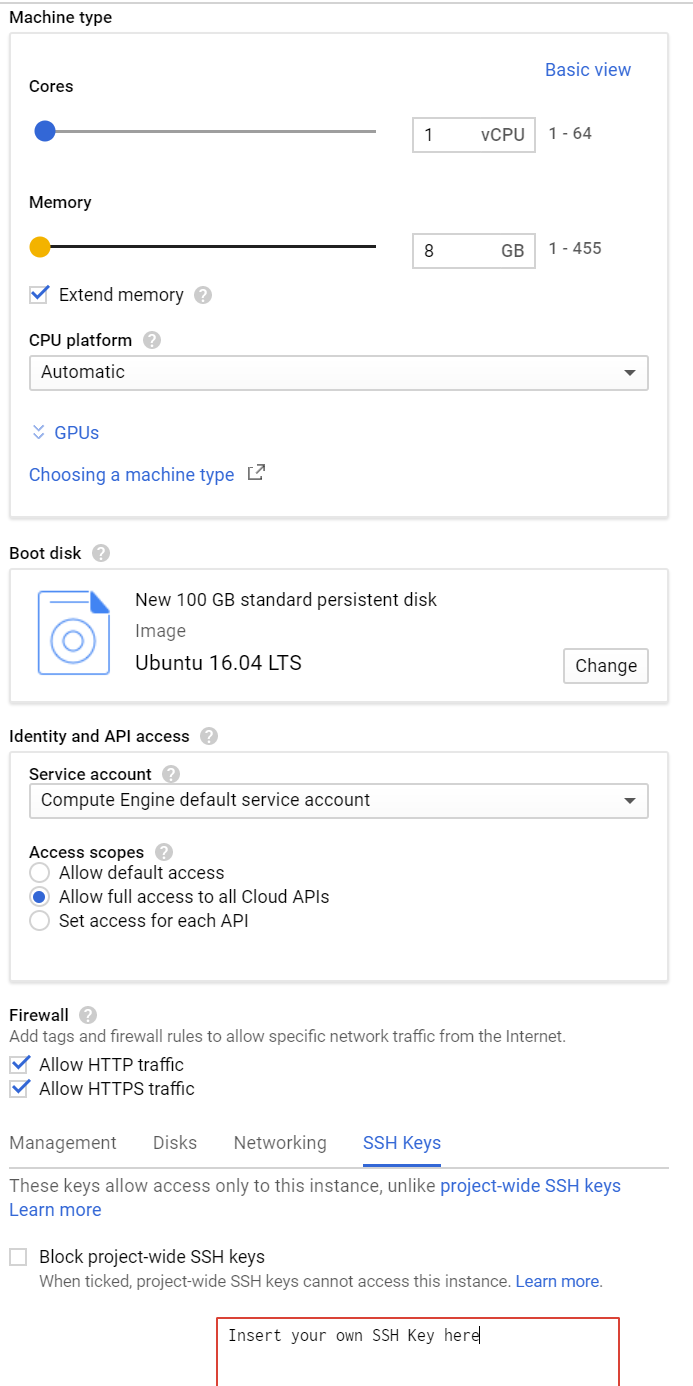
<https://cloud.google.com/>

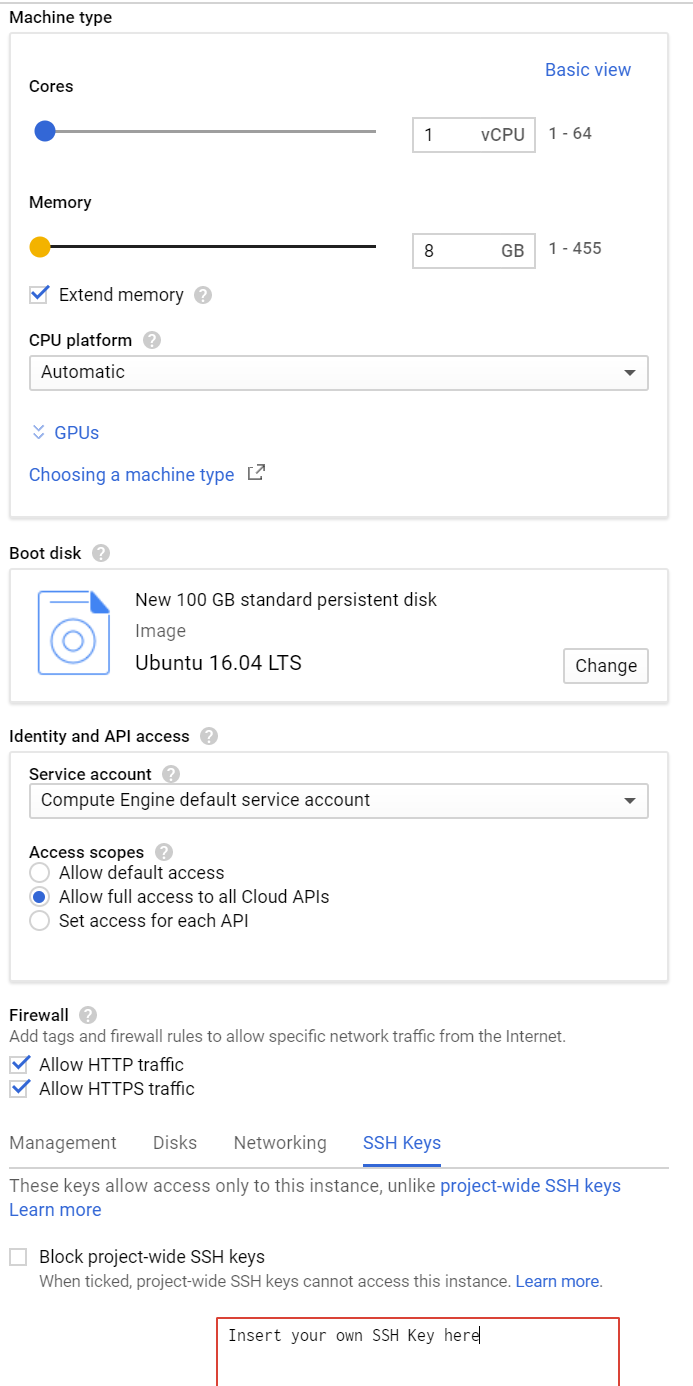
Setup Udacity account:

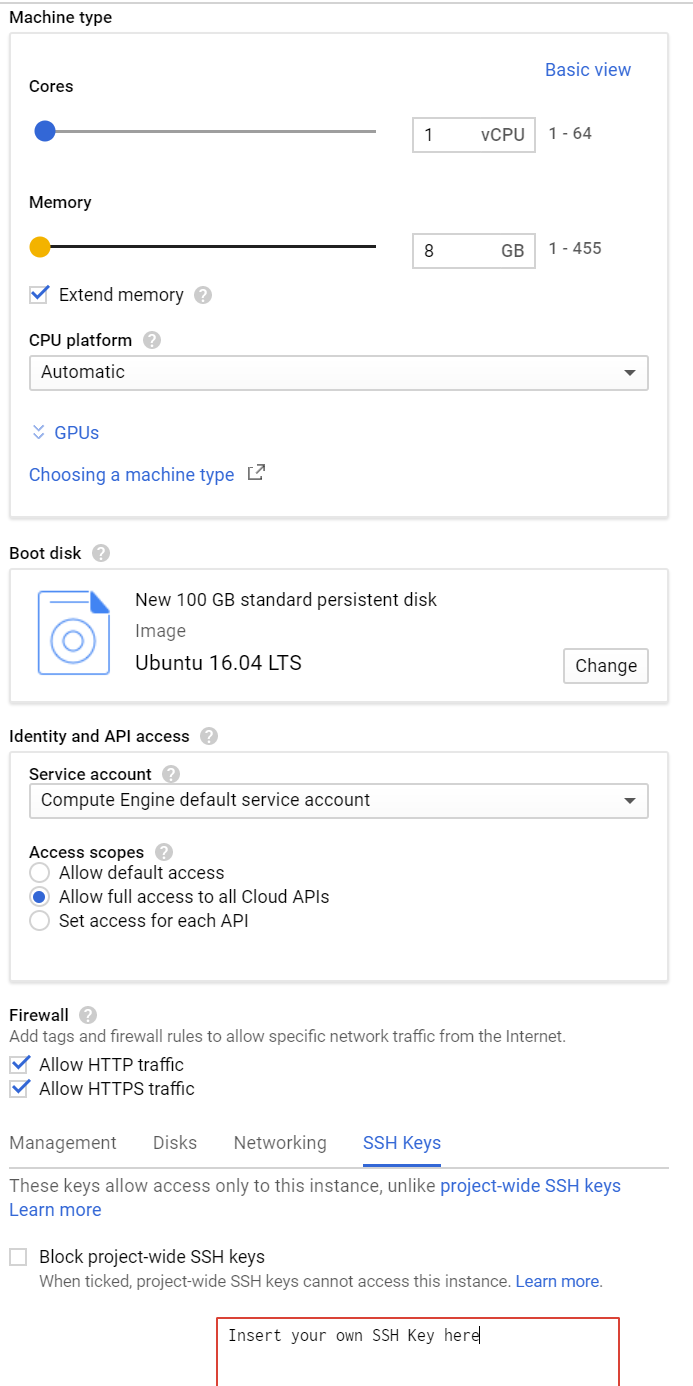
<https://classroom.udacity.com/courses/ud730>

### Google Cloud Setup

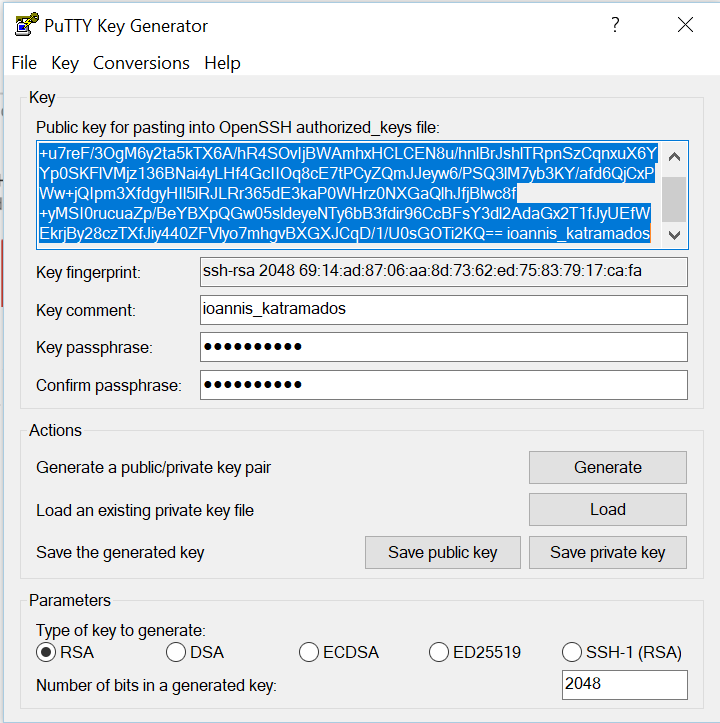
1. Select project “Select Computer Vision & Data Science”
2. Create a VM instance
3. Name the instance as “name-surname”
4. Select 1 x vCPU with 8GB RAM
5. Select Ubuntu 16.04 LTS boot disk with 100GB permanent disk storage
6. Select “Allow full access to all Cloud APIs”







1. Select “Allow HTTP traffic” and ”Allow HTTPS traffic”
2. Click on the “Management…” option → SSH Key
3. Insert your SSH key
   1. For Windows users copy/paste the key from PuttyGen (see below).



* 1. For Mac/Linux users: <https://confluence.atlassian.com/bitbucketserver/creating-ssh-keys-776639788.html>

Once the VM instance is ready, click on the SSH button. A new window will open with an SSH client. In the terminal enter:

1. sudo apt-get update
2. sudo apt-get upgrade

These commands upgrade linux with the latest updates.

## Introduction to Image Classification (Udacity, 90 min)

Link to [course](https://classroom.udacity.com/courses/ud730/lessons/6370362152/concepts/63798118150923)**.**

## LAB 1.2: [Image Classification with DIGITS](https://spl-nvlabs.qwiklab.com/focuses/1579)

You can revisit the lab: [Part A](https://github.com/nhldatascience/minor-deep-learning/blob/master/labs/Lab%201.2a%20-%20Image%20Classification%20with%20DIGITS%20-%20Training%20a%20model.ipynb) and [Part B](https://github.com/nhldatascience/minor-deep-learning/blob/master/labs/Lab%201.2b%20-%20Image%20Classification%20with%20DIGITS%20-%20Improving%20performance.ipynb).

## LAB 1.3: Udacity assignment - notMNIST

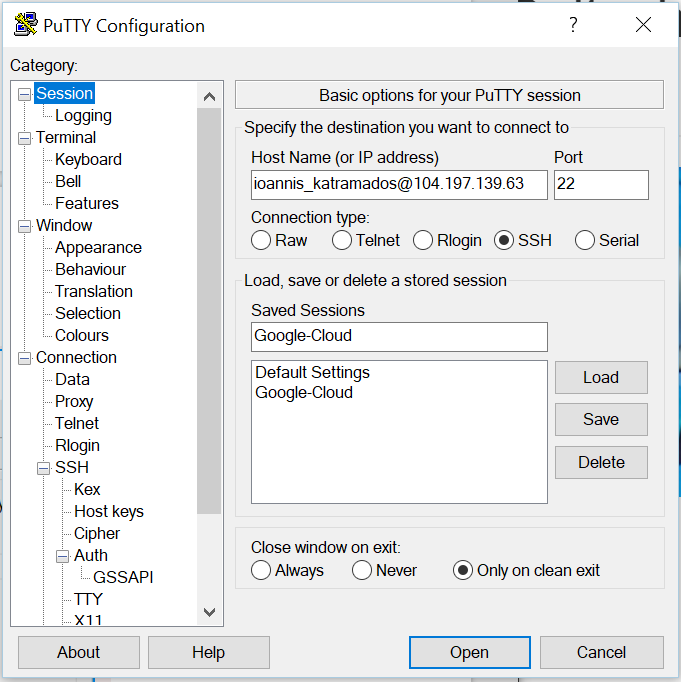
* Install Docker:

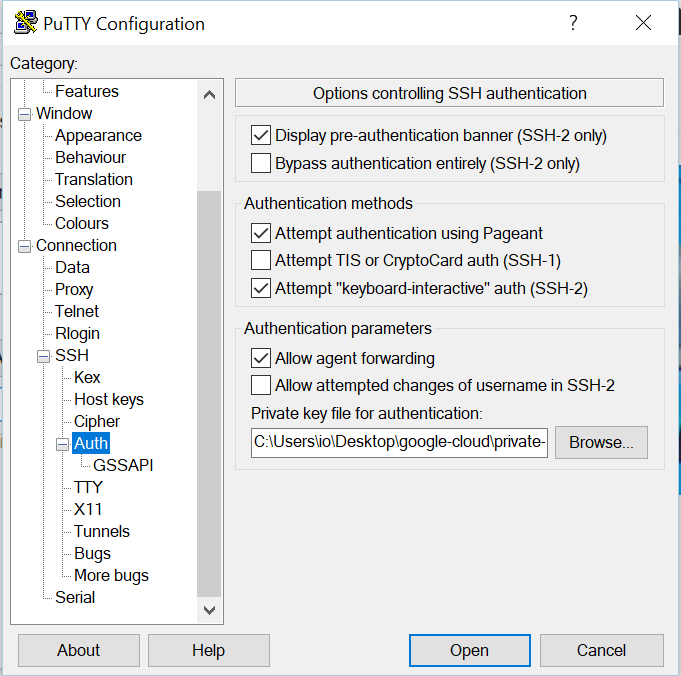
<https://docs.docker.com/engine/installation/linux/docker-ce/ubuntu/#install-using-the-repository>

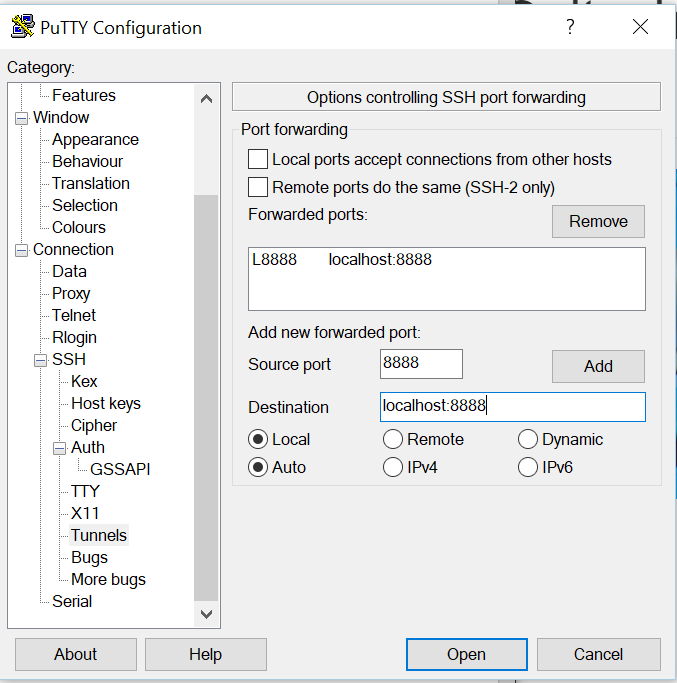
* Run udacity docker image:

<https://github.com/tensorflow/tensorflow/tree/master/tensorflow/examples/udacity>

* Start an SSH tunnel:

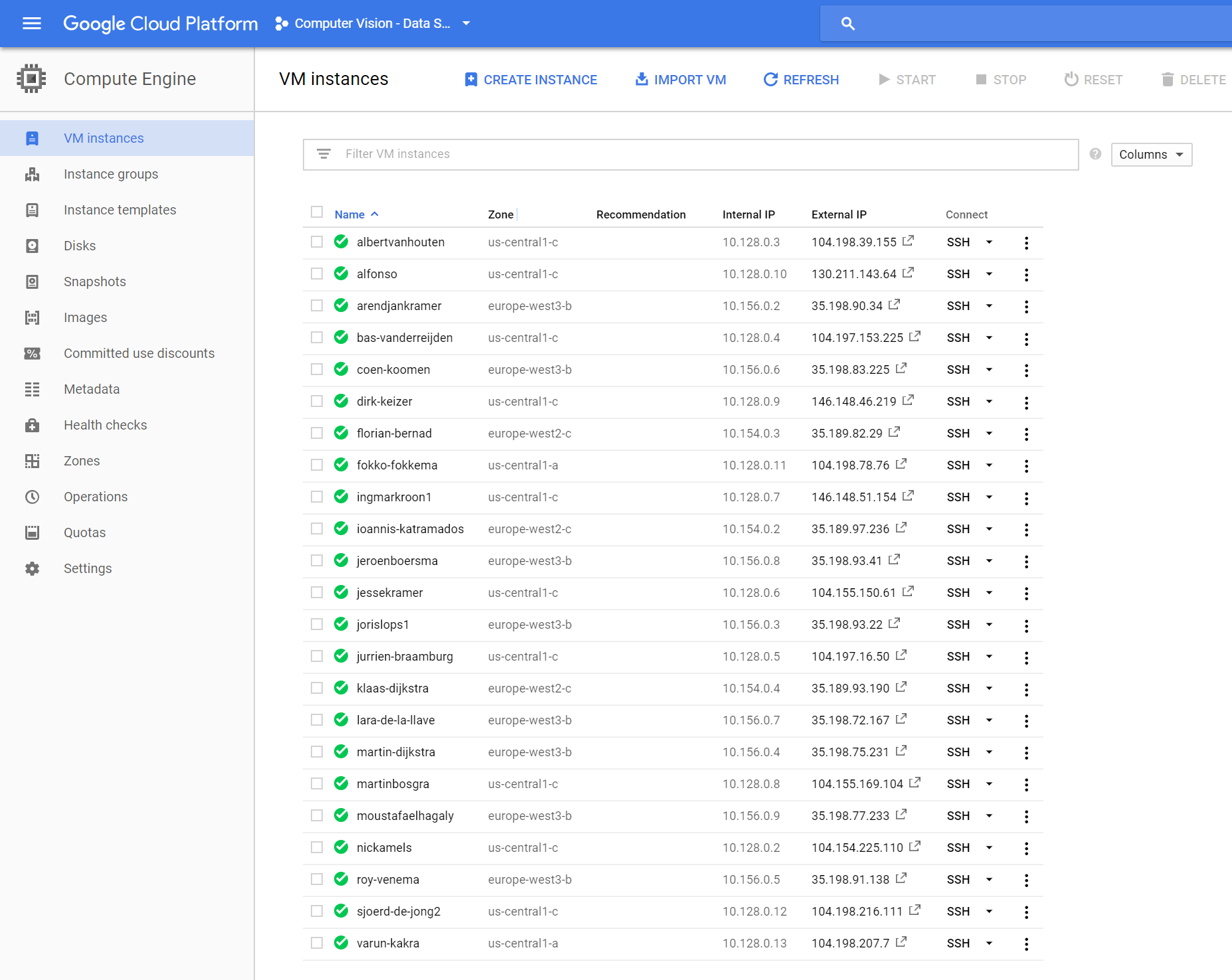






* Go to <http://localhost:8888/tree?token=23b382809b4d836d089d45ba00e02342c7192bf6a89d885f>
* Click on [1\_notmnist.ipynb](http://localhost:8888/notebooks/1_notmnist.ipynb).
* Try first for yourself… if you need help a possible answer is [here](http://corpling.uis.georgetown.edu/shuoz/neural_network/notMNIST_code/1_notmnist.html).

End of Day 1 with a picture :-):



How did you find? Please leave your name and comments here: