**AWS log in and using the EC2 instance:**

Very useful video and great resource to get started. [Introductory Video](https://youtu.be/SZrz5fkiDpM) By Dr. Nathen George from Regis university.

**Note:** The following instruction assume a student account AWS services. However, as long as you have access to AWS and have an account should work the same once signed in. This document is written to be used by **SPOT PRICING** for the GPU service. If the price is not important then, other methods can be utilized.

Login to the AWS.amazon.com use [<Email](mailto:fnavid@regis.edu) address> and password <xxxx>.

Steps:

1. Select the EC2
2. Select Spot pricing let hand side
   1. **First time login**
      1. Check the AMI in the dialog box Use the “udacity” as key word and select from “community AMI”.
         1. Look for udacity machine learning AMI and select
      2. Delete the CPU instance type and select the instance type.
         1. GPU compute (p2Xlarge) or better price. I used this it was cheaper.
      3. Scroll own and in EBS volume Uncheck the EBS delete column. Please note You should select the size of the drive you need (default 40 G).
      4. Scroll down and in security group if you done have one then create one. otherwise chose your security group.
         1. Create security group if one is not already there already. Make sure this group does have the SSH anywhere option.
         2. Refresh and select the newly created Security Group in EC2 screen
      5. Scroll own key pair. If you already have a keypair then select otherwise create one
         1. Create a Key Pair or import from download folder. Once created then a copy of the \*.pem will be on your download folder. (**kp-regis.pem**)
         2. If creating new one then need to copy the \*.pem file into the local ~/.ssh location. (mv ~/Downloads/kp-regis.pem ~/.ssh ). This will move the file
         3. Then need to change the permission to (chmod 600 **kp-regis.pem in .ssh directory**)
      6. Launch the request. This will take few minutes to get validated. (**go to step 3**)
   2. **Subsequent login**
      1. If you have created AMI previously and saved an instance on prior logins, then select my AMI and choose the one you previously created.
      2. Follow steps (**ii to vi**)
3. Click on **instances** on left hand side on the main page wait for ready. **Please note** on this page in the bottom half there are “IP” and “location of the instance”. Keep these in mind for the next few steps.
4. Establishing connection between the laptop and remote server.
   1. Need two terminal one will be local (creating the tunnel) and the other will be connected to remote server.
      1. On first terminal: **(remote Window)**~$ ssh -i ~/.ssh/**kp-regis**.pem ubuntu@your\_remote\_host\_name (this part is the IP address we need to recover from EC2 instance window.
      2. This will start the remote server. you will see $ ubuntu@ <ip address>. Use command “pwd” you should see (/home/ubuntu). This is your home directory.
      3. Highly recommend using the tmux capability. Normally the programs take a long time to run and if your computer or laptop goes to sleep then you lose the work. tmux will keep the connections open.
      4. Start a tmux session  
         ~$ tmux new -s regis-tmux1 (regis-tmux1 is a name for the tmux session in case we use multiple instances. [Link](http://hyperpolyglot.org/multiplexers) for tmux details and command.
      5. You will notice you are gone to a NEW window.   
         Following are the steps to exit and enter **tmux** session at any time. Please note one can have many tmux session open and can manage/switch between them by naming them.
         1. To **exit** out of tmux window (note the tmux stays active). **^b then d (**on key board <control>b and d). 🡺 Back into remote server.
         2. To **go back** to a tmux session:   
            ~$ tmux ls will show all available tmux sessions.  
            ~$ tmux attach -t name\_of\_tmux(regis-tmux1)
         3. To close the tmux session just in tmux window type **exit.**
      6. Run the following command in the newly created tmux window:   
         ~$ **jupyter notebook --no-browser --port=8889**. Start the notebook on the server. Please note once the connection is establish (you will see the **ubuntu@< IP >:~$**). Also you will see just above it a Token: make a copy of the token only. You need this in the next steps.
      7. Second window: (**local**)
         1. Create the tunnel between the laptop and remote server.   
            **~$ ssh -i ~/.ssh/kp-regis.pem -N -L localhost:8888:localhost:8889 ubuntu@**your\_remote\_host\_name (IP address)
   2. Now in a browser search window type “**localhost:8888**”. You will be asked for a token Please use the one you copied in previous step (**vi**)
      1. Should see the files and can start the jupyter notebook.

**Loading the files**

There are two options to load the files. 1) With file upload of Jupyter notebook. Second option much faster than Jupyter notebook upload is the secure copy command to copy file from terminal to remote. Assuming the data set or the files are on your computer.

~$ **scp -i ~/.ssh/kp-regis.pem ~/Downloads/all.zip ubuntu@18.224.172.222:/home/ubuntu**

This assumes your files are in download and you are copying them to /home/ubuntu. You can copy the zip file as is then unzip at the remote server (much faster going through terminal)

**Save an image of the instance on AWS:**

Image of instance will keep a copy of the files on amazon’s EBS. This way you don’t have to keep the instance running and can exit when you are done after executing the program.

1. Select the instance from left side bar
2. Now in the main page select **actions** and then select **image** then **create image**
3. In the dialog box check the **no boot option**. This way you don’t need a reboot for it to save the image.
4. Give the image a name and description. I recommend writing something you will remember what you saved. This will take few minutes (depending on the directory size).
5. Create image. This will create the image and save a copy AMI as well. (next time logging in to AWS you should use this AMI to get back please see section (b subsequent login).
6. Check the snapshot (left command bar) you should see your snapshot.
7. Volume will have the same information ( there is a field to write name or description You should use them for identification of the volume). Please note these are two steps saving the image of the work and snap shot of volume.
8. Now you can exit from EC2 and all you get charged for is the storage.
9. Starting the EC2 instance again.
10. Follow the steps (**b subsequent login**) Please pay attention this time you have an AMI and need to select from My AMI.

This document is created to get someone start a session on AWS EC2 instance and use. This is my personal notes and by no means is guaranteed in all cases. For more detail description please refer to AWS website.