Installing Keras in R

Handbook Guide

September2020

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Python Installation

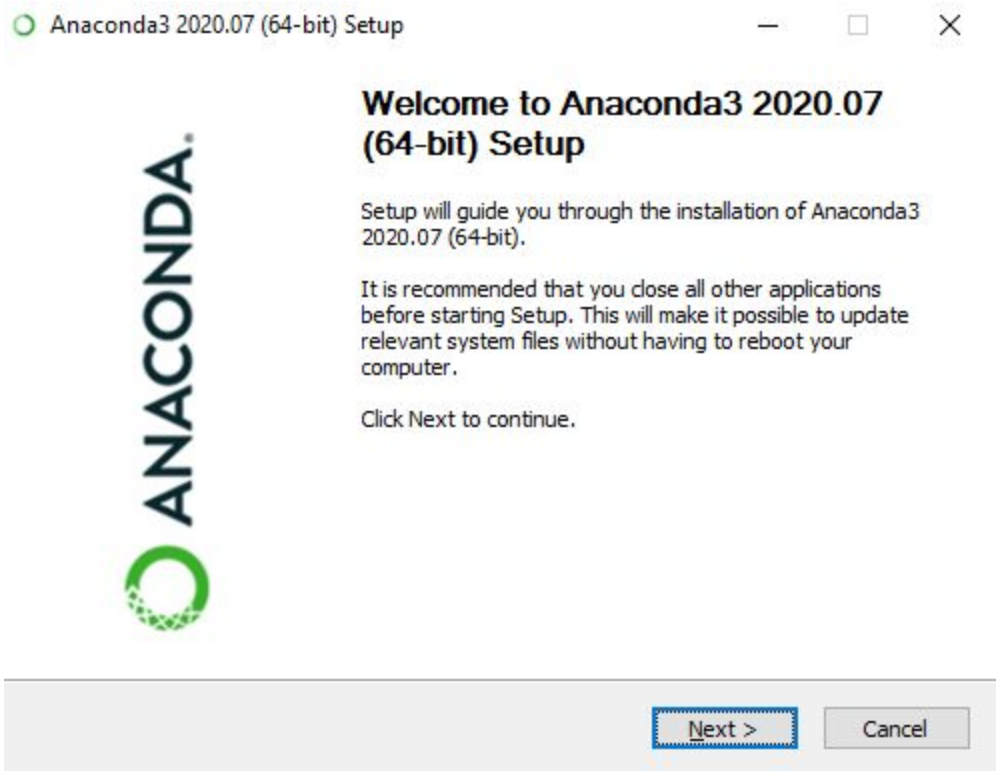
Installing Python using *Anaconda*

For our Python installation, we will be using and installing a package manager named ***Anaconda***. With *Anaconda*, users will not only have Python installed but also will have the necessary packages (i.e. numpy, pandas) utilized in our workshops. Also, *Anaconda* would have included the installation of ***Jupyter*** - an open-source web application that allows you to create and share Python code. Once opening the link below, **please choose Python version 3.8 for installation**.

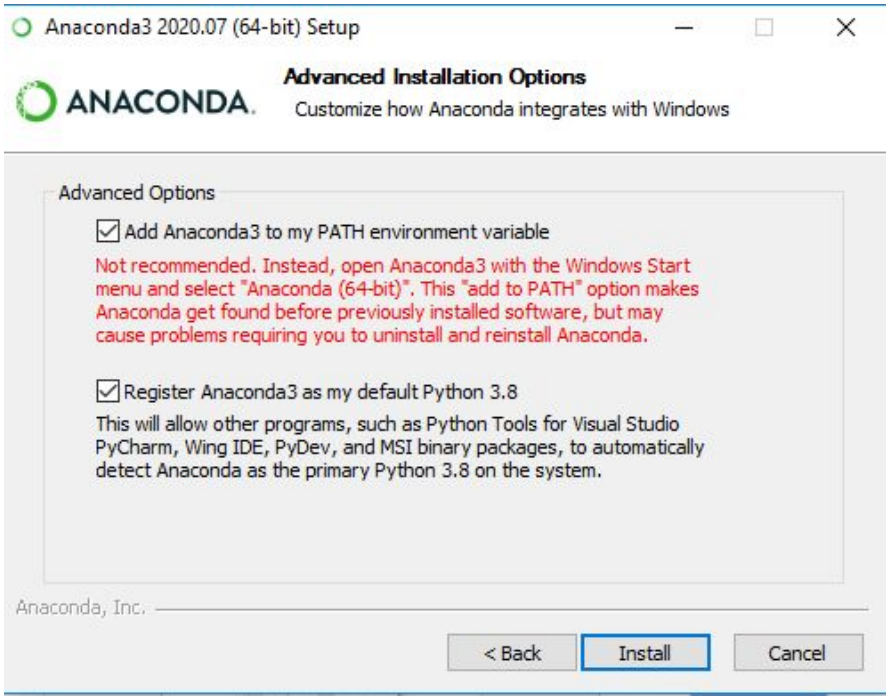
Use this link: https://www.anaconda.com/download

- Choose your appropriate Operating System, make sure you choose the version that is compatible with your pc's bit-rate

- Install **Anaconda**



- For **windows** users make sure you **check Add Anaconda to my PATH to the environment** and then wait until the installation finished.



More info on *Anaconda*:
https://docs.continuum.io/anaconda/#anaconda-navigator-or-conda

Warning: For Windows operating systems, if you can't find the conda command from your Command Prompt please add the **C:\User\Anaconda3** and the **C:\User\Anaconda3\Scripts** to the environment variable as shown here:
https://superuser.com/questions/949560/how-do-i-set-system-environment-variables-in-windows-10

- **For Mac OS X and Linux-based OS:** Open "*Terminal*"
- **For Windows:** Open "*Command Prompt*"

Verify Python Installation:

1. Type the command `python`
2. If the installation was completed successfully, there should be a response which includes information on which Python version was installed as shown below. In this case, it appears the user installed Python version 2.7.13. But make sure yours is 3.8
3. To exit, enter the command `quit()` or use Ctrl-D

Figure 1: python Response on Mac OS X Terminal

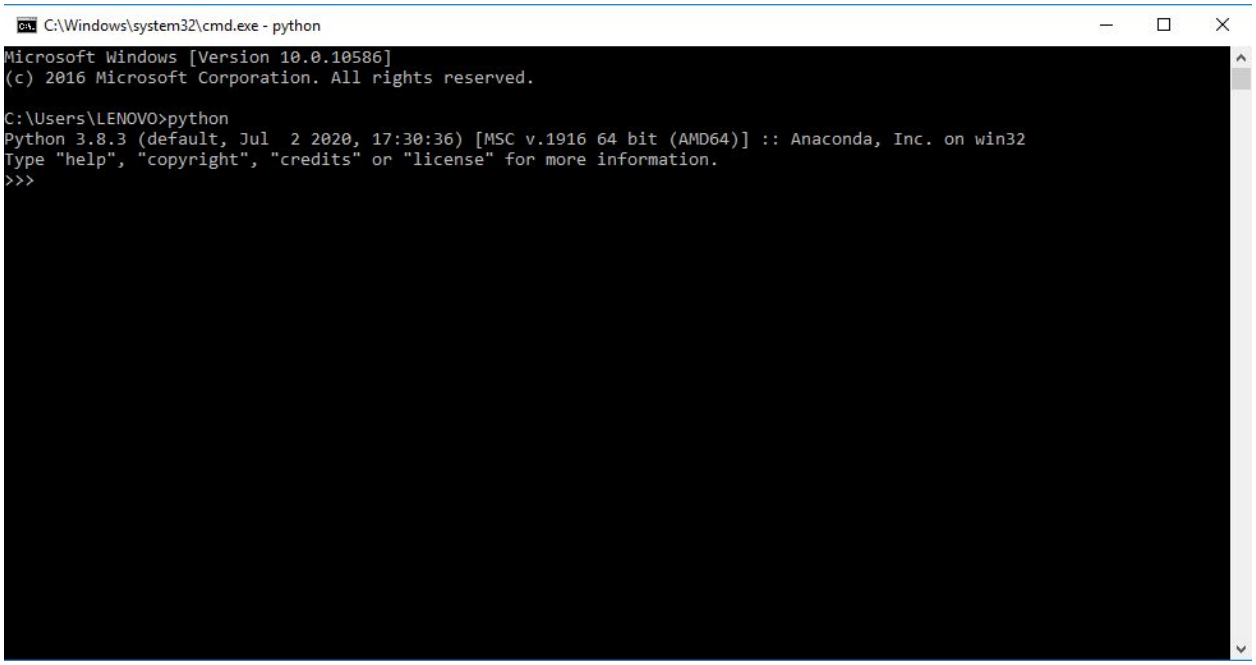


Figure 2: python Response on Windows Command Prompt

Verify Anaconda Installation

1. Type the command `conda list` in your *"Terminal"* or *"Command Prompt"*.
2. not give any response, please check the Warning in the installation section, if the problem still persists please contact our teaching assistants for help.

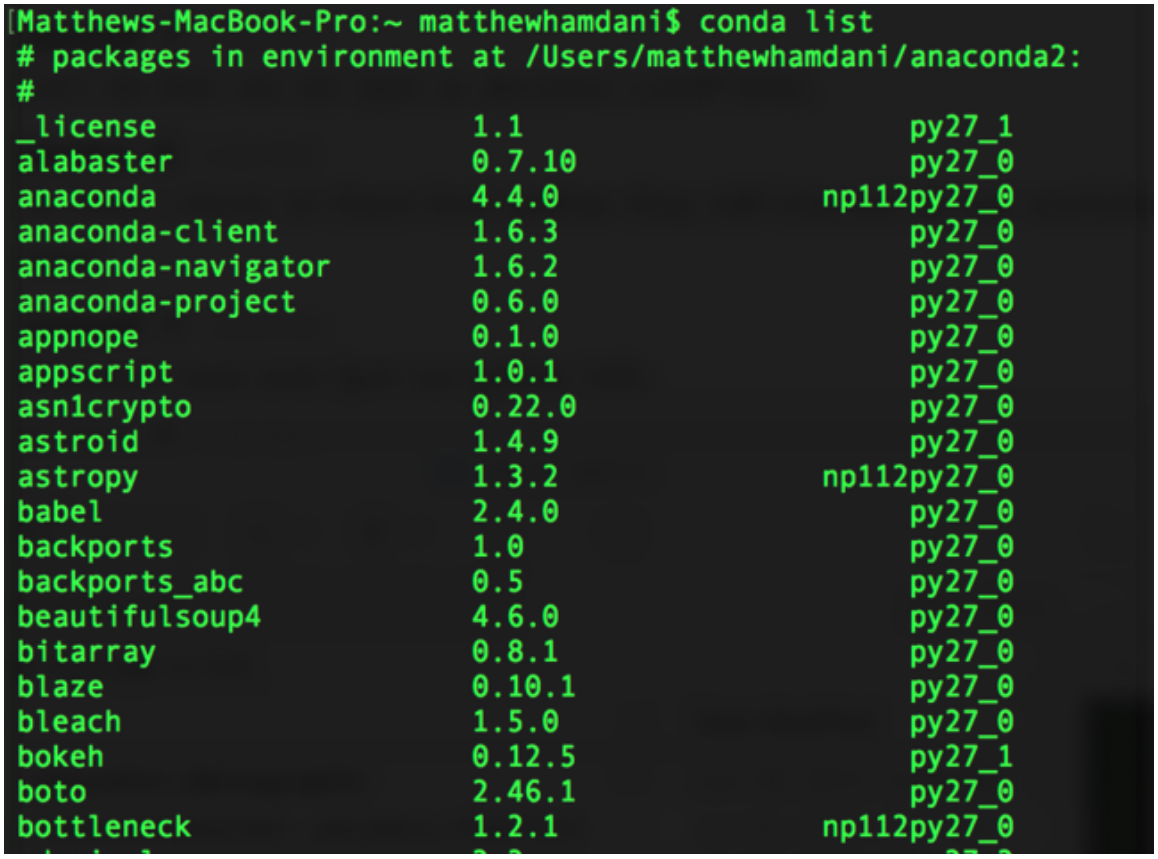


Figure 3: conda list Response on Mac OS X Terminal

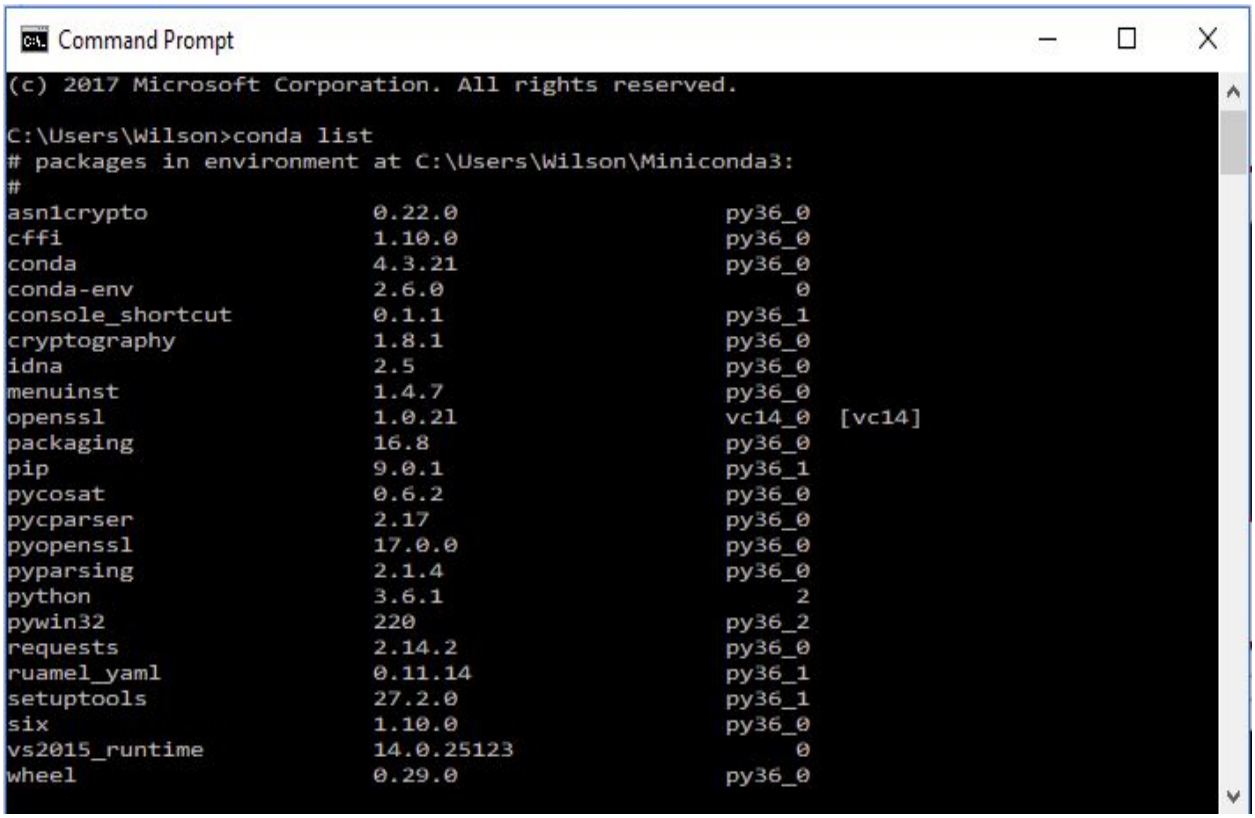


Figure 4: conda list Response on Windows Command Prompt

`keras` Installation

Installing `keras` in R

- Open your R or Rstudio and you can run:

1. Install `keras` package you can use your UI or type `install.packages("keras")`
2. Go to the terminal tab.
3. Call your anaconda there using `conda activate base` (skip step this if you using macOS or linux)

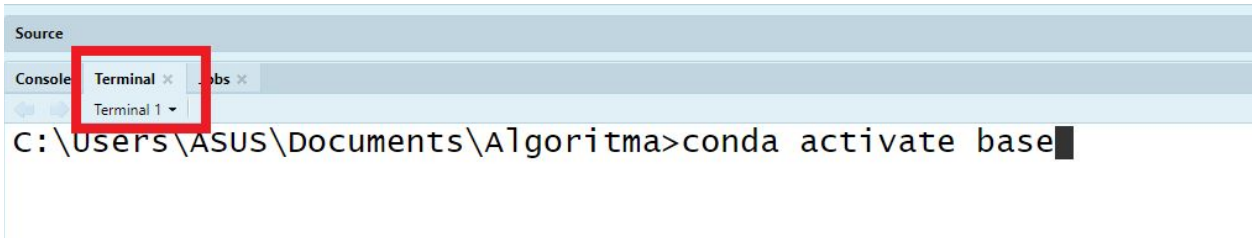


Figure 5 : Calling conda environment on terminal tab

4. Type `conda create -n r-tensorflow python=3.7` (python 3.8 is not yet compatible for tensorflow 2.0 (maybe tho))

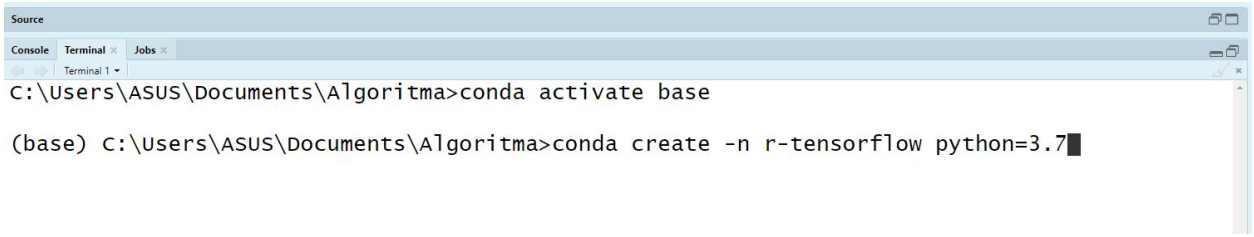


Figure 6 : creating new conda environment

5. Type `y`
6. Type `Conda activate r-tensorflow`

7. Type `pip install tensorflow==2.0`

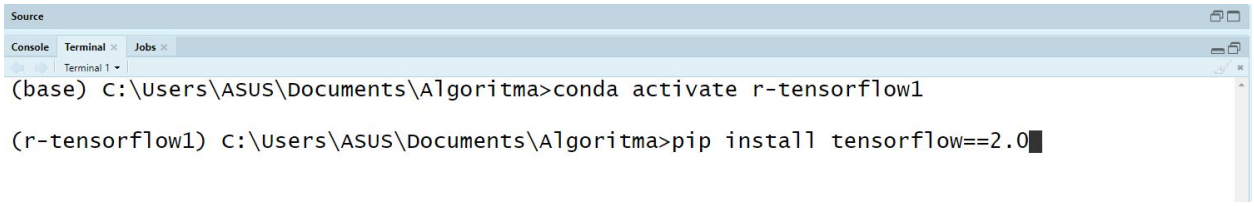


Figure 7 : Installing Tensorflow library version 2.0

8. Restart your R

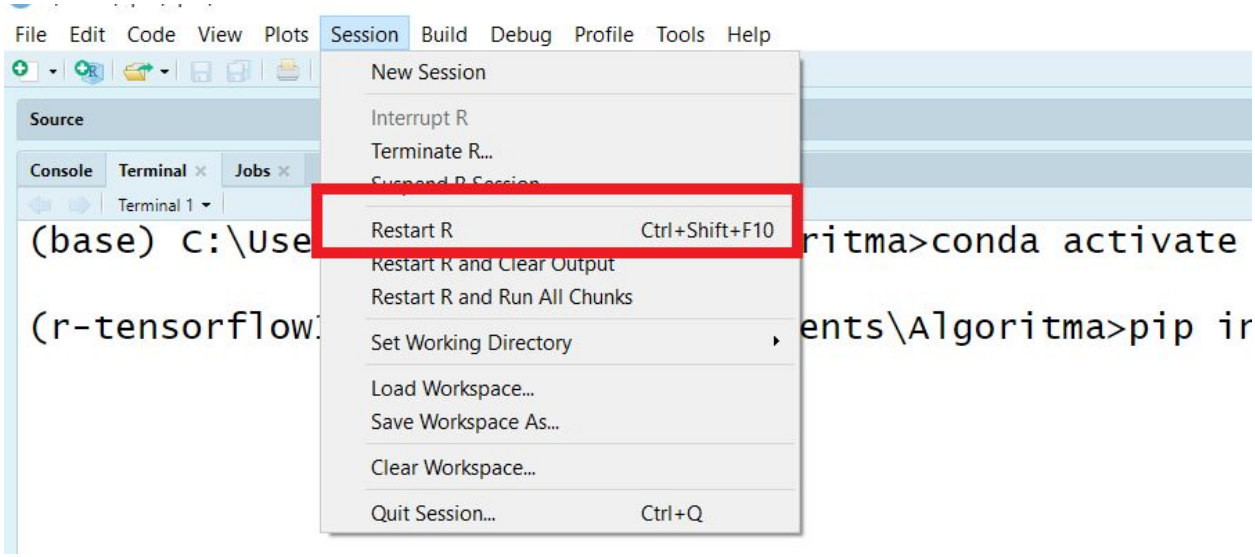


Figure 8 : Restarting your R

Verify `keras` Installation:

1. In your console type `library(keras)`
2. To check if keras is ready, load keras library in R then try:

   `model <- keras_model_sequential()`

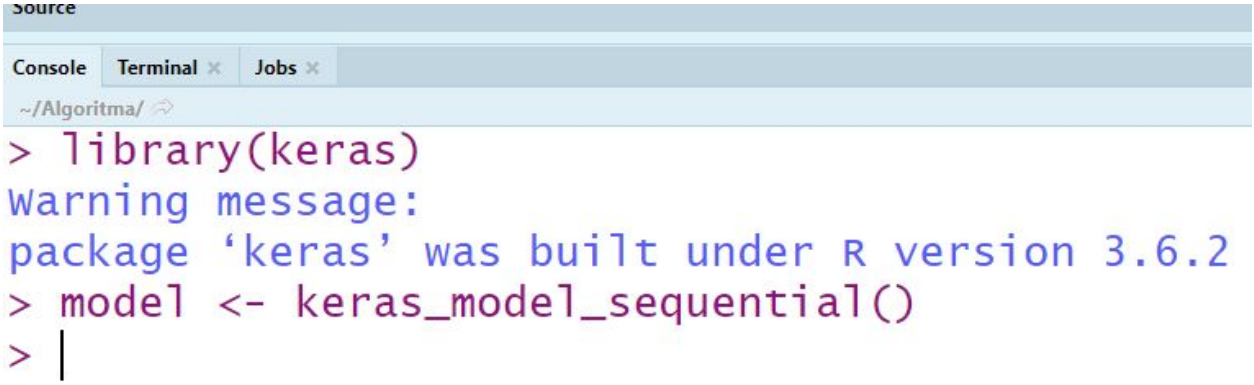


Figure 9 : Verifying your `keras` installation

3. If there is no error, then it is ready to use

Note: Usually, the installation process ends here. But some users might find problems when they run keras_model_sequential( ). It's because R use python version 3.8 as default python to run reticulate (package to use python and its environment in R). If you have problem as the picture below, please continue this additional step.

```
> library(keras)
Warning message:
package 'keras' was built under R version 4.0.2
> model <- keras_model_sequential()
Error: Installation of TensorFlow not found.

Python environments searched for 'tensorflow' package:
 C:\Users\A S U S\anaconda3\envs\r-tensorflow\python.exe
 C:\Users\A S U S\anaconda3\python.exe

You can install TensorFlow using the install_tensorflow() function.
> reticulate::use_python('C:/Users/A S U S/anaconda3/envs/r-tensorflow/python.e
xe', required = TRUE)
ERROR: The requested version of Python ('C:/Users/A S U S/anaconda3/envs/r-tens
orflow/python.exe') cannot be used, as another version of Python ('C:/Users/A
S U S/anaconda3/python.exe') has already been initialized. Please restart the R
 session if you need to attach reticulate to a different version of Python.
Error in reticulate::use_python("C:/Users/A S U S/anaconda3/envs/r-tensorflow/p
ython.exe",  :
  failed to initialize requested version of Python
>
```

4. Make sure the tensorflow 2.0 is successfully installed in r-tensorflow environment by using this step
    a. Open command prompt (windows) or terminal (Mac Os)
    b. Run “conda activate r-tensorflow” then “conda list”
    c. The terminal will print default python packages that are installed in the environment. If you found tensorflow version 2.0, then its successfully installed and you can continue to the next step

Windows:

5. Close the command prompt and re-open then run “conda env list”
6. Copy the directory of r-tensorflow like the picture below

```
Select C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.10586]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\LENOVO>conda env list
# conda environments:
#
                         C:\Users\LENOVO\AppData\Local\Orange
                         C:\Users\LENOVO\AppData\Local\R-MINI~1
                         C:\Users\LENOVO\AppData\Local\R-MINI~1\envs\r-reticulate
base                  *  C:\Users\LENOVO\anaconda3
r-tensorflow             C:\Users\LENOVO\anaconda3\envs\r-tensorflow


C:\Users\LENOVO>
```

7. Open R studio then run this code sequentially. You can run in the console or create new chunk
   reticulate::use_python(“directory r-tensorflow2”,required=TRUE) *note: change \ to/*

library(keras)
Model <- keras_model_sequential

Example:

8. If there's no error when running keras_model_sequential(), then you good to go

MacOs

1. After you make sure the tensorflow 2.0 is installed in r-tensorflow environment, run this following code sequentially. You can run in the console or create new chunk

   library(tensorflow)
   use_condaenv("r-tensorflow2")
   library(keras)
   Model <- keras_model_sequental()

2. If there's no error when running keras_model_sequential(), then you are good to go