Notebook

January 2, 2019

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1 Get the list of conda packages installed

```
!conda list
```

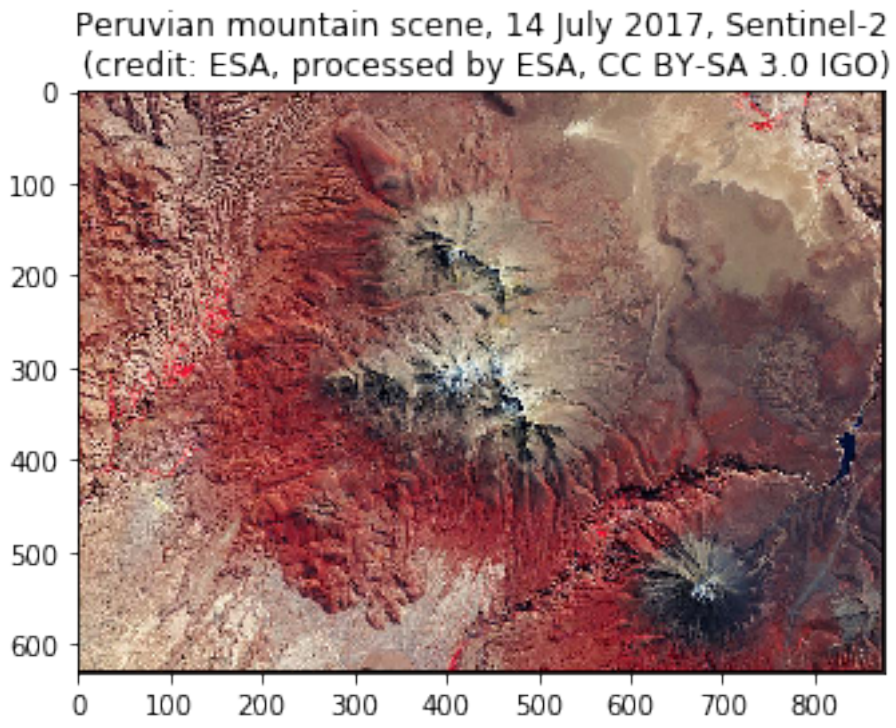
```
# packages in environment at /opt/tljh/user:
#
# Name                    Version                   Build  Channel
alembic                   1.0.5                     <pip>
asn1crypto                0.24.0                   py36_0
async-generator           1.10                      <pip>
backcall                  0.1.0                     <pip>
bleach                    3.0.2                     <pip>
ca-certificates           2018.11.29           ha4d7672_0    conda-
forge
certifi                   2018.11.29            py36_1000    conda-
forge
cffi                      1.11.5           py36h9745a5d_0
chardet                   3.0.4            py36h0f667ec_1
conda                     4.5.8                    py36_1    conda-
forge
conda-env                 2.6.0                h36134e3_1
cryptography              2.2.2            py36h14c3975_0
decorator                 4.3.0                     <pip>
defusedxml                0.5.0                     <pip>
entrypoints               0.2.3                     <pip>
idna                      2.6              py36h82fb2a8_1
ipykernel                 5.1.0                     <pip>
ipython                   7.2.0                     <pip>
ipython-genutils          0.2.0                     <pip>
ipywidgets                7.4.2                     <pip>
jedi                      0.13.2                    <pip>
Jinja2                    2.10                      <pip>
jsonschema                2.6.0                     <pip>
jupyter-client            5.2.4                     <pip>
jupyter-core              4.4.0                     <pip>
jupyterhub                0.9.4                     <pip>
jupyterlab                0.35.3                    <pip>
jupyterlab-git            0.5.0                     <pip>
jupyterlab-latex          0.4.1                     <pip>
jupyterlab-server         0.2.0                     <pip>
libedit                   3.1.20170329         h6b74fdf_2
libffi                    3.2.1                hd88cf55_4
libgcc-ng                 7.2.0                hdf63c60_3
libstdcxx-ng              7.2.0                hdf63c60_3
Mako                      1.0.7                     <pip>
MarkupSafe                1.1.0                     <pip>
mistune                   0.8.4                     <pip>
nbconvert                 5.4.0                     <pip>
nbformat                  4.4.0                     <pip>
nbgitpuller               0.6.1                     <pip>
nbresuse                  0.3.0                     <pip>
ncurses                   6.1                  hf484d3e_0
notebook                  5.7.0                     <pip>
```

```
nteract-on-jupyter          1.9.12                    <pip>
openssl                     1.0.2p                h470a237_1    conda-
forge
pamela                      0.3.0                     <pip>
pandocfilters               1.4.2                     <pip>
parso                       0.3.1                     <pip>
pexpect                     4.6.0                     <pip>
pickleshare                 0.7.5                     <pip>
pip                         10.0.1                  py36_0
prometheus-client           0.5.0                     <pip>
prompt-toolkit              2.0.7                     <pip>
psutil                      5.4.8                     <pip>
ptyprocess                  0.6.0                     <pip>
pycosat                     0.6.3             py36h0a5515d_0
pycparser                   2.18              py36hf9f622e_1
Pygments                    2.3.1                     <pip>
pyopenssl                   18.0.0                  py36_0
pysocks                     1.6.8                   py36_0
python                      3.6.5                hc3d631a_2
python-dateutil             2.7.5                     <pip>
python-editor               1.0.3                     <pip>
python-oauth2               1.1.0                     <pip>
pyzmq                       17.1.2                    <pip>
readline                    7.0                  ha6073c6_4
requests                    2.18.4            py36he2e5f8d_1
ruamel_yaml                 0.15.37           py36h14c3975_2
Send2Trash                  1.5.0                     <pip>
setuptools                  39.2.0                  py36_0
six                         1.11.0            py36h372c433_1
SQLAlchemy                  1.2.15                    <pip>
sqlite                      3.23.1               he433501_0
terminado                   0.8.1                     <pip>
testpath                    0.4.2                     <pip>
tk                          8.6.7                hc745277_3
tornado                     5.1.1                     <pip>
traitlets                   4.3.2                     <pip>
urllib3                     1.22              py36hbe7ace6_0
wcwidth                     0.1.7                     <pip>
webencodings                0.5.1                     <pip>
wheel                       0.31.1                  py36_0
widgetsnbextension          3.4.2                     <pip>
xz                          5.2.4                h14c3975_4
yaml                        0.1.7                had09818_2
zlib                        1.2.11               ha838bed_2
```

2 Read an image and plot with imshow

```
from skimage import io
import matplotlib.pyplot as plt
%matplotlib inline

# https://directory.eoportal.org/web/eoportal/satellite-missions/c-missions/copernicus-sentinel-2
url="https://directory.eoportal.org/documents/163813/4091221/Sentinel2_Auto98.jpeg"
image = io.imread(url)
plt.imshow(image)
plt.title("Peruvian mountain scene, 14 July 2017, Sentinel-2\n (credit: ESA, processed by ESA, CC BY-SA 3.0 IGO)")
plt.show()
```



3 Using equation with LaTeX notation with markdown

The well known Pythagorean theorem $x^2 + y^2 = z^2$ was proved to be invalid for other exponents. Meaning the next equation has no integer solutions:

$ x^n + y^n = z^n $

You can also use the following notation for your equations:

$$x^2 + y^2 = z^2 \tag{3.1}$$

```
import matplotlib
import matplotlib.pyplot as plt
import numpy as np

# Data for plotting
t = np.arange(0.0, 2.0, 0.01)
s = 1 + np.sin(2 * np.pi * t)

fig, ax = plt.subplots()
ax.plot(t, s)

ax.set(xlabel='time (s)', ylabel='voltage (mV)',
       title='About as simple as it gets, folks')
ax.grid()

fig.savefig("test.png")
plt.show()
```