


## CREATE A CLONE PYTHON ENVIRONMENT FOR ArcGIS Pro Deep Learning Package

### Step1 Create a clone python environment

1. Go to  Start – ArcGIS – Python Command Prompt (right click) – More – Run as administrator (you may need to type in your administrator password)

You will see the Python Command Prompt window opened with the directory of the ArcGIS default Python environment `arcgispro-py3` displayed. The parenthesis enclosed is the name of the activated Python environment name, which is consisted with the default environment.

```
(arcgispro-py3) C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3>
```

2. type in command `conda env list`, then press ENTER like the following,

```
(arcgispro-py3) C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3>conda env list
```

You will see there should have two Python environments listed. And the `arcgispro-py3` was marked with a “\*”, which means again that this is the activated Python environment at this moment.

```
(arcgispro-py3) C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3>conda env list
# conda environments:
#
base                C:\Program Files\ArcGIS\Pro\bin\Python
arcgispro-py3      * C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3
```

3. Type in the following command to create a clone environment based on the ArcGIS pro default/activated Python environment. Please make sure you included `--pinned` in the end of the command.

```
conda create --clone arcgispro-py3 --name arcgispro-py3_dl --pinned
```

It may take a few minutes for the clone process to finish. The following may appear if the running is successful. Please wait till the python prompt show up again.

### Step 2 Install ArcGIS Pro Deep Learning package

3. We need to firstly activate the cloned Python environment. Please type in the following command and press ENTER.

```
proswap arcgispro-py3_dl
```

4. Now install deep-learning-essentials with the following command then hit enter, type in “y” if prompt.

```
Conda install -c esri deep-learning-essentials
```

The installation process may take a few minutes. Please be patient and do not touch the keyboard before the Python prompt (`arcgispro-py3_dl`) You probably will see the following when the installation is session.

```
(arcgispro_py3_dl) (arcgispro_py3_dl) C:\Users\DI\AppData\Local\ESRI\conda\envs\arcgispro_py3_dl>conda install -c esri deep-learning-essentials
Collecting package metadata (current_repodata.json): done
Solving environment: done

## Package Plan ##

environment location: C:\Users\DI\AppData\Local\ESRI\conda\envs\arcgispro_py3_dl
added / updated specs:
- deep-learning-essentials

The following packages will be downloaded:

package | build | size | channel
-----|-----|-----|-----
cryptography-42.0.4 | py39_0 | 4.2 MB | esri
jsons-0.9.14 | py_0 | 20 KB | esri
krb5-1.21.2 | 1 | 687 KB | esri
libpng-1.6.42 | 3 | 335 KB | esri
libprotobuf-3.21.12 | 3 | 1.8 MB | esri
libtiff-4.6.0 | 2 | 857 KB | esri
matplotlib-3.6.3 | py39_arcgispro_2 | 8 KB | esri
oauthlib-3.2.2 | py_0 | 94 KB | esri
openssl-3.0.13 | 0 | 2.5 MB | esri
orc-1.8.3 | 2 | 430 KB | esri
pip-23.3.2 | py39_0 | 2.5 MB | esri
prompt-toolkit-3.0.42 | py_0 | 263 KB | esri
prompt_toolkit-3.0.42 | 0 | 5 KB | esri
protobuf-3.21.12 | py39_1 | 216 KB | esri
pybind11-2.10.4 | 2 | 156 KB | esri
pygments-2.17.2 | py_0 | 839 KB | esri
pyopenssl-24.0.0 | py39haa95532_0 | 99 KB | esri
pytest-7.4.3 | py39_0 | 517 KB | esri
pymzq-25.0.2 | py39_2 | 390 KB | esri
setuptools-68.2.2 | py39_0 | 1.2 MB | esri
sqlite-3.45.1 | 0 | 819 KB | esri
sympy-1.12 | py39_0 | 5.3 MB | esri
win_inet_pton-1.1.0 | py39_1 | 9 KB | esri
zeromq-4.3.5 | 0 | 243 KB | esri
zlib-ng-2.1.6 | 0 | 366 KB | esri

-----
Total: 23.6 MB

The following NEW packages will be INSTALLED:

prompt-toolkit esri/noarch::prompt-toolkit-3.0.42-py_0

The following packages will be UPDATED:
```

```
cryptography 41.0.3-py39_2 --> 42.0.4-py39_0
jsons 0.9.5-py_0 --> 0.9.14-py_0
krb5 1.21.1-0 --> 1.21.2-1
libpng pkgs/main::libpng-1.6.39-h8cc25b3_0 --> esri::libpng-1.6.42-3
libprotobuf 3.21.12-0 --> 3.21.12-3
libtiff 4.5.1-0 --> 4.6.0-2
matplotlib 3.6.3-py39_arcgispro_0 --> 3.6.3-py39_arcgispro_2
oauthlib esri/win-64::oauthlib-3.2.0-py39_0 --> esri/noarch::oauthlib-3.2.2-py_0
openssl 3.0.10-0 --> 3.0.13-0
orc 1.8.3-0 --> 1.8.3-2
pip pkgs/main::pip-23.3.1-py39haa95532_0 --> esri::pip-23.3.2-py39_0
prompt_toolkit 3.0.5-py_0 --> 3.0.42-0
protobuf 3.21.12-py39_0 --> 3.21.12-py39_1
pybind11 2.10.4-1 --> 2.10.4-2
pygments 2.14.0-py_0 --> 2.17.2-py_0
pyopenssl 23.2.0-py39haa95532_0 --> 24.0.0-py39haa95532_0
pytest 7.2.0-py39_0 --> 7.4.3-py39_0
pymzq 25.0.2-py39_0 --> 25.0.2-py39_2
setuptools 67.7.2-py39_0 --> 68.2.2-py39_0
sqlite 3.41.2-0 --> 3.45.1-0
sympy 1.9-py39_1 --> 1.12-py39_0
win_inet_pton 1.1.0-py39_0 --> 1.1.0-py39_1
zeromq 4.3.4-1 --> 4.3.5-0
zlib-ng 2.0.7-0 --> 2.1.6-0
```

```
Proceed ([y]/n)? y

Downloading and Extracting Packages
pytest-7.4.3 | 517 KB | 100%
matplotlib-3.6.3 | 8 KB | 100%
prompt-toolkit-3.0.4 | 263 KB | 100%
zeromq-4.3.5 | 243 KB | 100%
win_inet_pton-1.1.0 | 9 KB | 100%
prompt_toolkit-3.0.4 | 5 KB | 100%
sympy-1.12 | 5.3 MB | 100%
protobuf-3.21.12 | 216 KB | 100%
libtiff-4.6.0 | 857 KB | 100%
pip-23.3.2 | 2.5 MB | 100%
cryptography-42.0.4 | 4.2 MB | 100%
libpng-1.6.42 | 335 KB | 100%
pybind11-2.10.4 | 156 KB | 100%
sqlite-3.45.1 | 819 KB | 100%
orc-1.8.3 | 430 KB | 100%
setuptools-68.2.2 | 1.2 MB | 100%
krb5-1.21.2 | 687 KB | 100%
pyopenssl-24.0.0 | 99 KB | 100%
openssl-3.0.13 | 2.5 MB | 100%
jsons-0.9.14 | 20 KB | 100%
zlib-ng-2.1.6 | 366 KB | 100%
pygments-2.17.2 | 839 KB | 100%
libprotobuf-3.21.12 | 1.8 MB | 100%
pymzq-25.0.2 | 390 KB | 100%
oauthlib-3.2.2 | 94 KB | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
Retrieving notices: ...working... done
```

When the Python prompt appear again the installation is finished.

### Step3 Test the deep learning package installation

5. Firstly activate the python interface. Type command python

A printout of the python version will appear. When python prompt >>> appear,

6. Type the following

```
import fastai
import torch
import arcgis
```

These are the essential packages of deep learning package. Because these are heavy packages, it may take a moment to load. If no errors come up, it means our installation is successful. You can use `quit()` to quit the python interface.

```
(arcgispro_py3_d1) C:\Users\Di\AppData\Local\ESRI\conda\envs\arcgispro_py3_d1>python
Python 3.9.18 [MSC v.1931 64 bit (AMD64)] :: Anaconda, Inc. on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import fastai
>>> import torch
>>> import arcgis
>>> quit()

(arcgispro_py3_d1) C:\Users\Di\AppData\Local\ESRI\conda\envs\arcgispro_py3_d1>
```

### reference

<https://support.esri.com/en-us/knowledge-base/how-to-clone-a-python-environment-with-the-python-comma-000020560>

<https://developers.arcgis.com/python/guide/deep-learning/>

<https://developers.arcgis.com/python/guide/test-install/>