

Institute for Geographic Information Science San Francisco State University

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# Using Spyder with ArcGIS Pro 2.5.2: Home Use (Your Own Computer)

Spyder is the "Scientific Python Development Environment." It is an integrated development environment (IDE) for programming written in Python, for Python, and designed by and for scientists, engineers, and data analysts: <u>https://www.spyder-ide.org/</u>

If you're reading this guide from SF State's Institute for Geographic Information Science, you're likely using Spyder with ArcGIS Pro. If that's the case, keep in mind that In the ArcGIS world, because we're in this transition phase between ArcMap, which uses Python 2.7, and ArcGIS Pro, Python 3.x, ESRI's solution was to use virtual environments in order to not break most of our C:\python27 installs. There is an open source package management system that helps manage virtual environments called "conda". Conda is <u>automatically installed</u> when you install ArcGIS Pro. Not to be confused with "Anaconda", which is a standalone scientific package management system based on conda. So in short, we recommend that you first download/install ArcGIS Pro, which will come with the "conda" package from which you can install Spyder.

### Download and Install ArcGIS Pro

- 1. For instructions how to download and install ArcGIS Pro, visit: <u>http://gis.sfsu.edu/arcgis-pro</u>
  - a. Note that if you have a previous version of ArcGIS Pro already installed on your computer, you may need to follow ESRI guides that will help you clear out ArcGIS Pro from a system that cannot fully uninstall the software: https://esribelux.com/helpdeskitem/clean-uninstall-of-arcgis-pro/
  - b. If you have trouble with installation of ArcGIS Pro after working through the instructions provided online, you may call ESRI technical support for help as a part of our site license agreement (note that ESRI <u>only</u> offers students help with installation—if you have other questions, you'll need to consult one of the university's ESRI Approved callers)



#### Clone the default environment in ArcGIS Pro

On a good day, this should take around 30 minutes to do right

- 2. Once you have ArcGIS Pro installed, open ArcGIS Pro and choose Python→Manage Environments→Clone Default (this may take several minutes)
- 3. Check the new cloned environment bubble and choose **OK**

¢			ArcGIS Pro - MyProject1 - Map			?	- 0	×
New	Python	Package	Manager					
Save	Project Environmen	t						
Save As	arcgispro-py3 [C:\Prog	ram Files\ArcGIS\Pro\bin\Pytl	hon\envs\arcgispro-py3]			1		
Portals	Manage Environments	Manage Environm	ents e Default		х			
Licensing		Active	Environments	Clone	Remove			
Options	Update Pack	age arcgispro-py	3	m				
Python	Add Package	C:\Program Fil	les\ArcGIS\Pro\bin\Python\envs\arcgispro-py3		~			1
Add-In Manager		arcgispro-py	3-clone		×			
Help						Uninstall		ľ
About						nx theme		
Exit								
						d configurable		
				ОК	Close	sy to install/use as ter is selected as		
		cftime	1.0.0b1					Ŧ

- 4. Restart ArcGIS Pro so the changes to your environment are saved (confirm that arcgispropy3-clone is set in the ArcGISPro Project Environment when you reopen Pro)
- 5. Type **Python Command Prompt** into your Start Menu (you don't want Python Command <u>Line</u>, which will likely be the first option that pops up as you start typing into the Start Menu)
  - a. \*Note that on a home computer you may need to right-click on Python Command Prompt and Run as Administrator\*

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						🚰 Pyth	on Command Prompt	1/10/2019 1:43 PM	
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#### Install Spyder in the cloned ArcGIS Pro Environment

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6. The Python Command Prompt window will open and should show the cloned environment (arcgispro-py3-clone) at the beginning:

🔤 Python Command Prompt	—		$\times$
(arcgispro-py3-clone) C:\Users\ <b>angle and a</b> \AppData\Local\ESRI\conda\envs\arcgispro-py3-clone>			<b>^</b>
7. Type conda install spyder			
Python Command Prompt - conda install spyder	-		×
(arcgispro-py3-clone) C:\Users\\AppData\Local\ESRI\conda\envs\arcgispro-py3-clone>conda install	spyder	1	^

- 8. Type **y**
- 9. You'll see a series of packages being installed (this may take a few minutes)
- 10. There are several ways to launch the Spyder IDE, the two most obvious ones are:
  - a. In Python Command Prompt, type **spyder** (pictured below)
  - b. OR search for the spyder application in the Start Menu

Ges Administrator: Python Command Prompt	-	×
(arcgispro_nv3) () Program Files/ArcGTS/Pro/bin/Puthon/envs/arcgispro_nv3/snuder		^

11. You probably will see a message about a newer version of Spyder that's available, click OK:



12. If you see this message, it means you should update Spyder 3 to Spyder 4 using conda again by going back to the Python Command Prompt. Start by doing a dry run so you don't mess anything up. Type:

conda update spyder --no-pin --dry-run



🏧 Python Command Prompt - conda update spyder --no-pin --dry-run

13. You'll see something like the following that will show you which packages will be installed fresh, which packages will be updated (and what version they'll be updated to), and which packages will be downgraded—If you are a Python guru and know that you don't want some of these things to change, then don't make this update and do some research on your own to identify which packages you do want to update. The main thing we care about is updating Spyder 3 to Spyder 4.

C:4.	Python Command Prompt							
(ar Fet Sol	cgispro-py3-clone) C:\Us ching package metadata . ving package specificati	ers\ <b>unio</b> \AppData\  ons: .	Local	l\ESRI\conda\envs\	arcgispro-py	y3-clone≻conda up	odate spyder	no-pindry-run
Pac	kage plan for installati	on in environment C:\U	sers	\913692057\AppData	\Local\ESRI	\conda\envs\arcg	ispro-py3-clone	2:
The	following NEW packages	will be INSTALLED:						
	<pre>argh: autopep8: bcrypt: diff-match-patch: flake8: intervaltree: libspatialindex: paramiko: pathtools: pexpect: pydocstyle: python-jsonrpc-server: python-language-server: python-language-server: python-language-server: sortedcontainers: ujson: watchdog: yaml:</pre>	0.26.2-py36_0 1.5.3-py_0 3.1.7-py36he774522_1 20200713-py_0 3.8.3-py_0 3.0.2-py_1 1.9.3-h33f27b4_0 2.7.1-py_0 0.1.2-py_1 4.8.0-py36_0 5.0.2-py_0 1.4.0-py36h62dcd97_0 0.3.4-py_1 0.34.1-py36_0 3.12-py36h11928f_1 2.8.1-py_0 0.9.4-py36h21ff451_1 2.2.2-py_0 1.35-py36h21ff451_1 2.2.2-py_0 1.35-py36h21ff451_0 0.16.3-py36_0 0.16vc14_0	esri	[vc14]				
The	yapf: following nackages will	0.30.0-py_0						
me	jedi: jupyter_client: spyder: spyder-kernels:	0.16.0-py36_0 5.3.1-py36_0 3.3.6-py36_0 0.5.2-py36_0	esri esri	> 0.17.1-py36_0 > 6.1.2-py36_0 > 4.1.4-py36_0 > 1.9.2-py36_0	esri			

14. Remove just the --dry-run and go ahead with the update when you're ready—make sure you keep the --no-pin because this will allow you to update even though the current download of Pro doesn't

(arcgispro-py3-clone) C:\Users\\_\_\_\_\_\AppData\Local\ESRI\conda\envs\arcgispro-py3-clone>conda update spyder --no-pin

15. When prompted to Proceed, type y



SOTV	/ing package specification	ons:				
Pack	age plan for installation	on in environment C:\U	Jsers	\\A	ppData	\Local\ESRI\conda\envs\arcgispro-py3-clone:
The	following NEW packages v	will be INSTALLED:				
	argh:	0.26.2-py36_0				
	autopep8:	1.4.4-py_0				
	bcrypt:	3.1.7-py36he774522_0				
	diff-match-patch:	20181111-py_0				
	flake8:	3.8.2-py_0				
	intervaltree:	3.0.2-py_0				
	libspatialindex:	1.9.3-h33f27b4_0				
	paramiko:	2.7.1-py_0				
	pathtools:	0.1.2-py_1				
	pexpect:	4.8.0-py36_0				
	pydocstyle:	4.0.1-py_0				
	pynacl:	1.3.0-py36h62dcd97_0				
	python-jsonrpc-server:	0.3.4-py_0				
	python-language-server:	0.31.9-py36_0				
	pyyaml:	3.12-py36h1d1928f_1				
	qdarkstyle:	2.8.1-py_0				
	rtree:	0.9.4-py36h21ff451_1				
	sortedcontainers:	2.1.0-py36_0				
	ujson:	1.35-py36hfa6e2cd_0				
	watchdog:	0.10.2-py36_0				
	yaml:	0.1.6-vc14_0	esri	[vc14]		
	yapf:	0.28.0-py_0				
The	following packages will	be UPDATED:				
	jupyter_client:	5.3.1-py36_0	esri	> 6.1.2-p	y36_0	esri
	spyder:	3.3.6-py36_0		> 4.1.3-p	y36_0	
	spyder-kernels:	0.5.2-py36_0		> 1.9.1-p	y36_0	
The	following packages will	be DOWNGRADED:				
	jedi:	0.16.0-py36_0	esri	> 0.15.2-	ру36_0	
	parso:	0.7.0-py_0		> 0.5.2-p	y_0	
Proc	ceed ([y]/n)? y					

16. Launch the Spyder IDE





17. In the console of the Spyder IDE, type import arcpy after In [1] to verify that Spyder is working in your cloned environment. You should see In [2] appear.



- 18. Close and reopen ArcGIS Pro
- 19. Go to Settings→Python→Installed Packages should show that you have Spyder 4.1.4 installed now (and Spyder kernels 1.9.2)

#### Set Spyder as the default script editor in ArcGIS Pro

- 20. Once you have installed Spyder in the cloned ArcGIS Pro environment, you'll want to make Spyder the default script editor in Pro. Open Pro and go to the Project tab→Options→Geoprocessing
- 21. Enter the path to the **spyder.exe application** (if you don't remember where it was installed, check where the clone was installed in ArcGIS Pro→Settings→Manage Environments→



22. What you enter for your script editor should look something like the following screenshot except you won't have the 9-digit ID part for a home computer



Project	
Current Settings	Set options for running geoprocessing tools and scripts
Units	Allow geoprocessing tools to overwrite existing datasets
Tasks	Remove layers that reference data overwritten by geoprocessing tools
pplication	Add output datasets to an open map
General	Analyze script and model tools for ArcGIS Pro compatibility (1)
Map and Scene	Script Editor
Navigation	C:\Users\912345678\AppData\Local\ESRI\conda\envs\arcgispro-py3-clone\Scripts\spyder.exe
Selection	
Editing	Logging
Geoprocessing	Write geoprocessing operations to XML log file
Share and Download	✓ Write geoprocessing operations to dataset metadata
Raster and Imagery	ModelBuilder Options
Display	Do not show warning when overwriting model from previous version
ayout	
Color Management	R-ArcGIS Support
CAD	Detected R home directories
Metadata	[R-4.0.2] C:\Program Files\R\R-4.0.2
ndexing	⚠ Please install the ArcGIS R integration package 🖳 💌
Location Referencing	commerce about geoprocessing options

- 23. Choose **OK** and Restart ArcGIS Pro
- 24. Open a Script tool to verify that this launches Spyder so you know you're all good to go!



## More Spyder resources

Pristine arcgispro-py3 https://community.esri.com/docs/DOC-12021-python-at-arcgispro-22

Python Package Manager and Working with Python environments <a href="https://pro.arcgis.com/en/pro-app/arcpy/get-started/what-is-conda.htm">https://pro.arcgis.com/en/pro-app/arcpy/get-started/what-is-conda.htm</a>

More about virtual environments: <u>https://realpython.com/python-virtual-environments-a-primer/</u>

Updating Spyder for ArcGIS Pro 2.5.2: more about –no-pin d—dry-run https://community.esri.com/blogs/dan\_patterson/2020/02/09/clone-arcgis-pro-25

Pinning Conda http://damianavila.github.io/blog/posts/how-to-pin-conda.html