

Spyder 4 ... the python IDE for science

Post 2020-05-24 by [Dan Patterson \(retired\)](#) Original Post by [Dan Patterson](#) 12-Dec-2019

Spyder

Contents

Spyder	1
Version	1
Theme choices	2
Preference options	3
Graphics options	4
File/project and script navigation	5
Help documentation and presentation	6
Editing tips	7
Finding stuff	8

Details as I go. Everything is there to assist you from initial project thought to final application.

Right now... just the pics and a few tips.

An attachment of the first image, as well, if you want to explore in more detail.

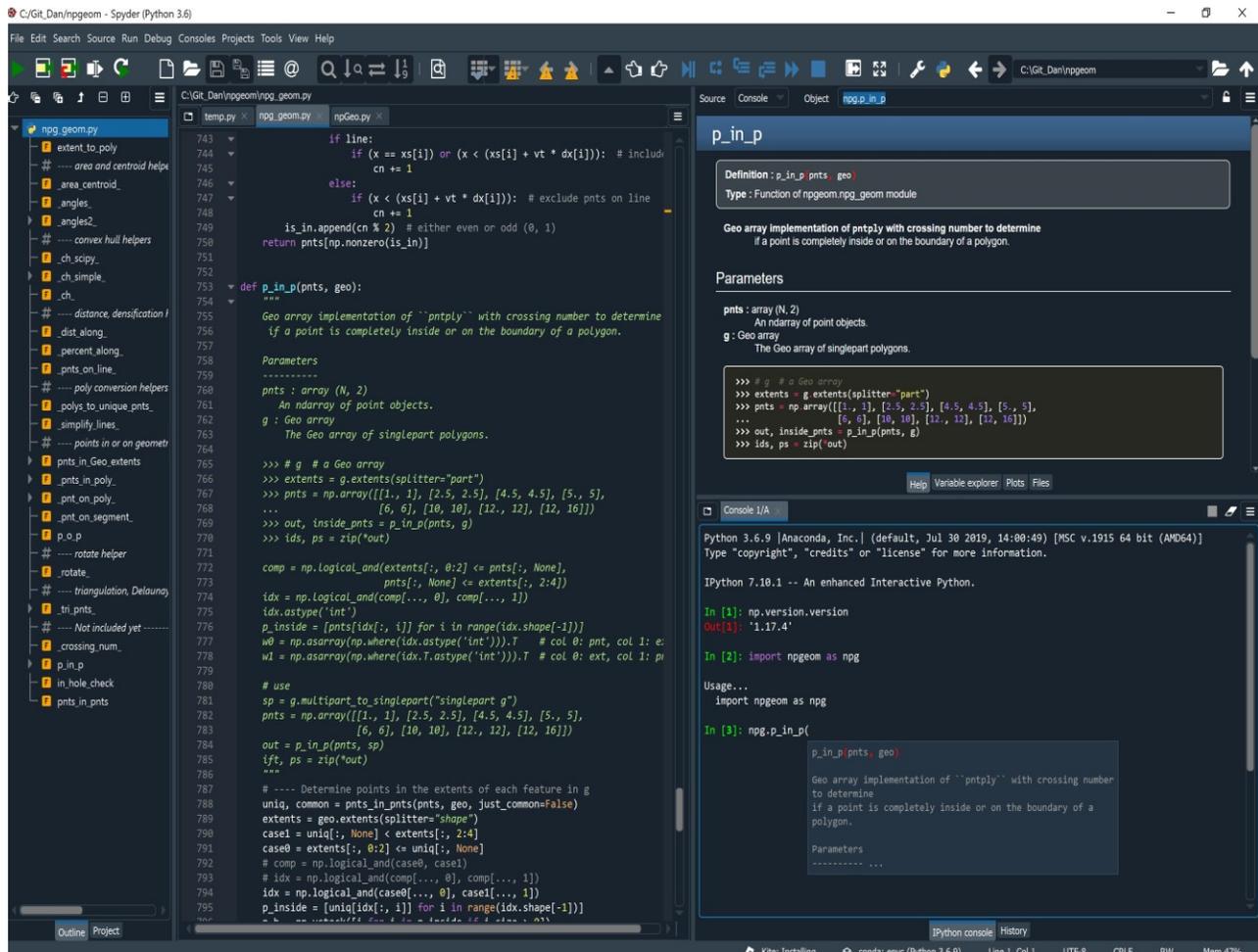
Version

Spyder 4's current version and changelog can be tracked at...

[Spyder changelog on GitHub](#)

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Theme choices



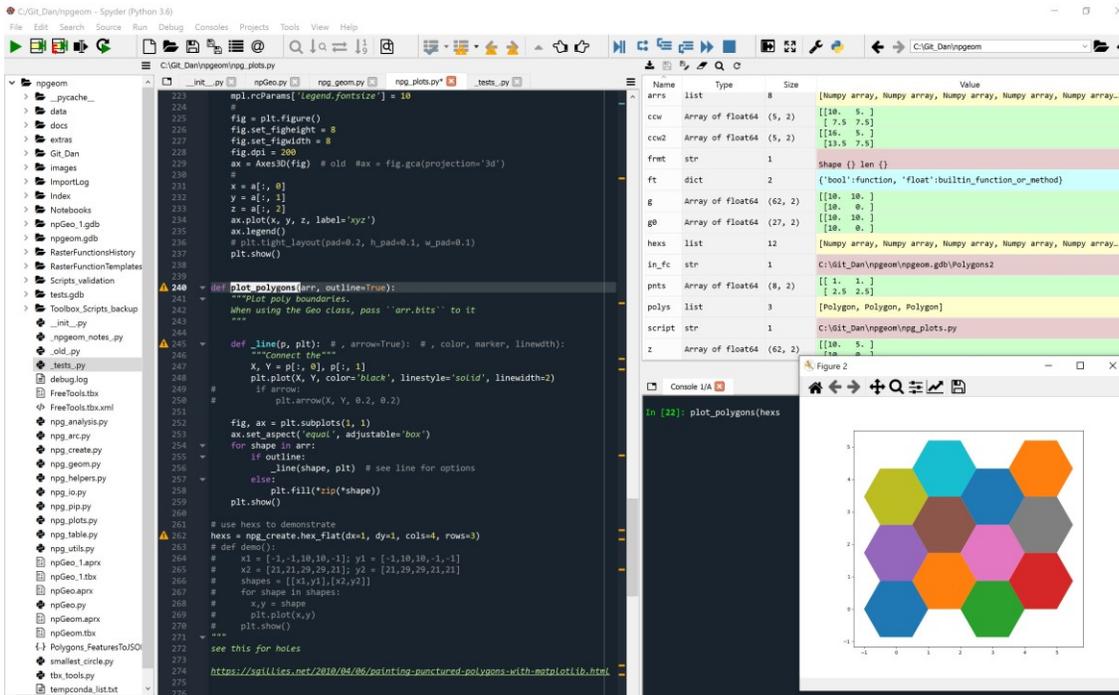
There are a variety of ways to layout and style the IDE. A full dark theme is above.

Or you can split the themes and have different ones for the editor and console.

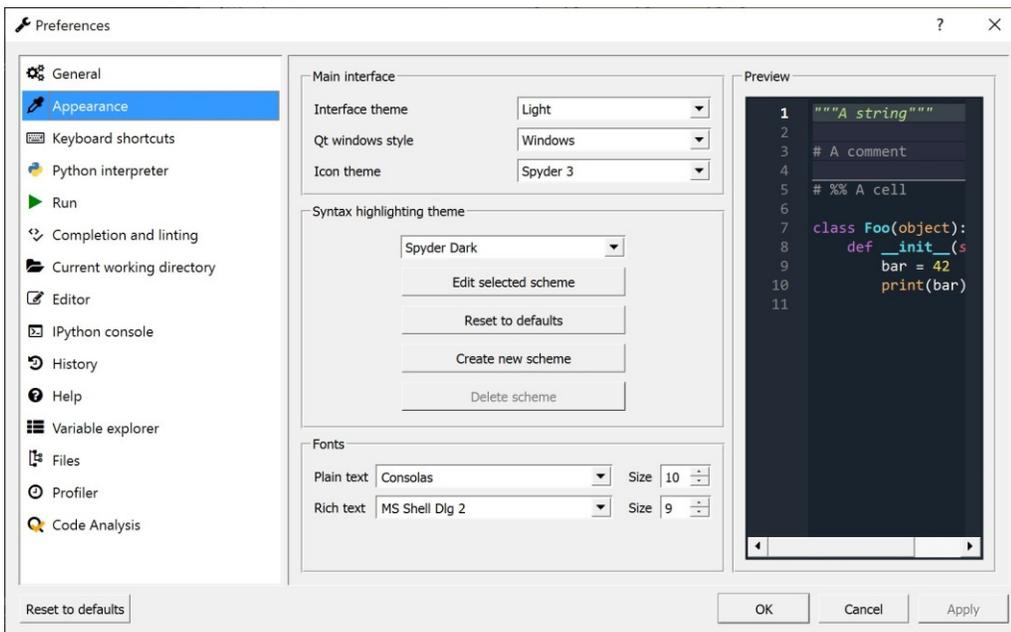
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The image below shows a lighter theme for the Variable explorer and the file explorer.

Separate (floating) or in-pane graphics available using direct access to Matplotlib.



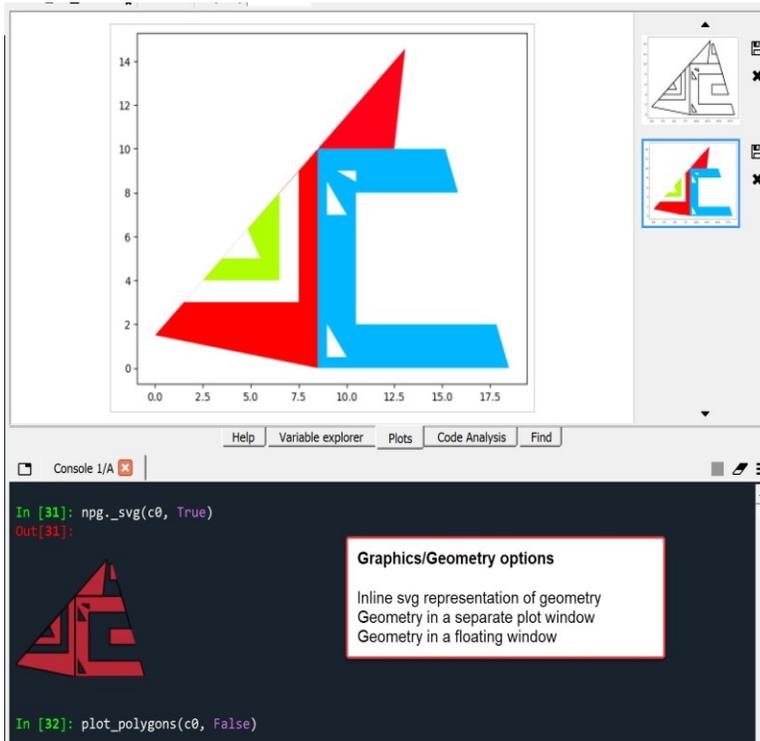
Preference options



Graphics options

There is a new Plots window, or you can set your graphics to automatic to get a separate matplotlib graph window. From there you can interactively alter the graphic to suit your needs.

You will also note, that svg inline graphics are supported. I wrote a function to display numpy arrays representing geometry objects to get a quick preview without the need to create a featureclass.



File/project and script navigation

The screenshot displays the Spyder 4 IDE interface. On the left, there are two file explorer panels. The first panel, labeled '1', shows the project's root directory 'npgeom' with its subfolders and files. The second panel, labeled '2', shows the same structure but with a different view. The third panel, labeled '3', shows the 'npGeo.py' file with a class definition for 'Geo'. The main editor window on the right shows the code for the 'Geo' class, including its constructor and various methods. The code is as follows:

```
291 class Geo(np.ndarray):
292     """
293     Geo class
294     -----
295     """
296
297     __name__ = "npGeo"
298     __module__ = "npgeom"
299     __author__ = "Dan Patterson"
300     __help__ = help
301     __doc__ += help
302
303     def __new__(cls,
304                 arr=None,
305                 IFT=None,
306                 Kind=2,
307                 Extent=None,
308                 Info="Geo array",
309                 SR=None
310                 ):
311         """See script header for construction notes."""
312         arr = np.ascontiguousarray(arr)
313         IFT = np.ascontiguousarray(IFT)
314         if (arr.ndim != 2) or (IFT.ndim != 2):
315             m = "ndim != 2 : {} or IFT.dim != 2 : {}"
316             print(dedent(m).format(arr.ndim, IFT.ndim))
317             return None
318         if (IFT.shape[-1] < 6) or (Kind not in (0, 1, 2)):
319             print(dedent(help))
320
```

Below the code editor, there are three numbered red circles with corresponding text:

- 1 File access for your project
- 2 Project outline
- 3 script details for quick navigation

Help documentation and presentation

From this 

```
def plot_polygons(arr, outline=True):  
    """Plot Geo array poly boundaries.  
  
    Parameters  
    -----  
    arr : ndarray or Geo array  
        If the arrays is a Geo array, it will convert it to `arr.bits`.  
    outline : boolean  
        True, returns the outline of the polygon. False, fills the polygon  
  
    References  
    -----  
    `random color generation in matplotlib`  
    <https://stackoverflow.com/questions/14720331/how-to-generate-random-colors-in-matplotlib>`_.  
  
    See module docs for general references.  
    """
```

Help documentation supporting a variety of types... numpydocs shown

To this... 

plot_polygons

Definition : plot_polygons(arr, outline=True)
Type : Function of __main__ module

Plot Geo array poly boundaries.

Parameters

arr : ndarray or Geo array
If the arrays is a Geo array, it will convert it to *arr.bits*.
outline : boolean
True, returns the outline of the polygon. False, fills the polygon

References

[random color generation in matplotlib.](#)
See module docs for general references.

Help is everywhere.

The example to the right shows what a function docstring looks like in the console and in the help tab.

You can choose between coding styles within the preferences.

The **numpydoc** style used by packages like *scipy*, *matplotlib*, *pandas* to name a few, is shown below for comparison.

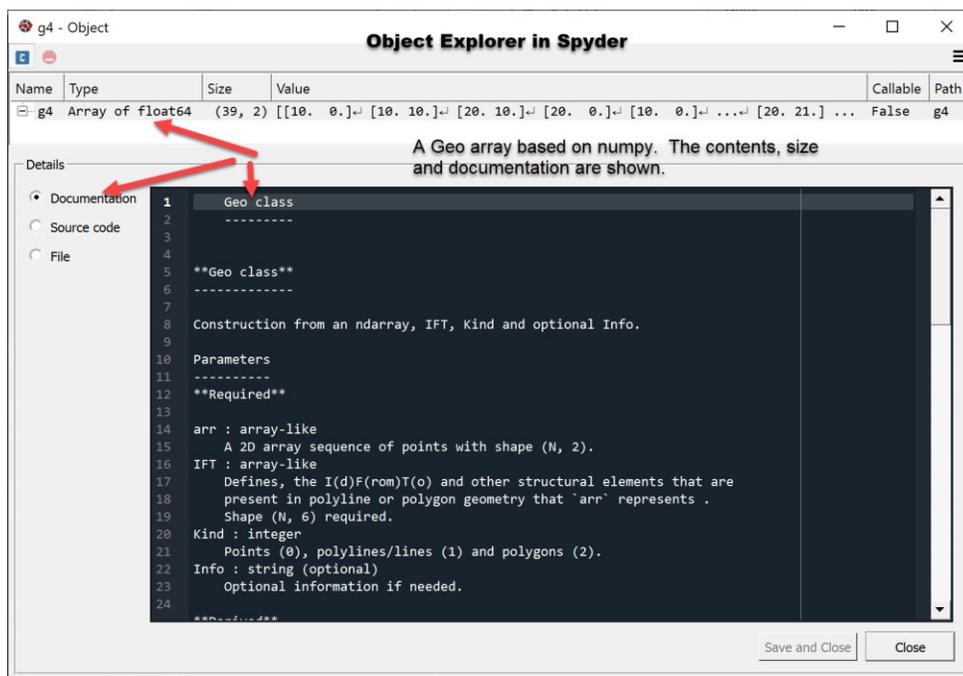
Editing tips

```
In [60]: _test_()
Traceback (most recent call last)
  File "<ipython-input-60-898d2c7556e3>", line 1, in <module>
    _test_()
  File "C:\Git_Dan\npgeom\_tests_.py", line 822, in _test_
    d = npg.fc_data(in_fc)
AttributeError: module 'npgeom' has no attribute 'fc_data'
```

Click on the line number to go to line in the code to fix the error

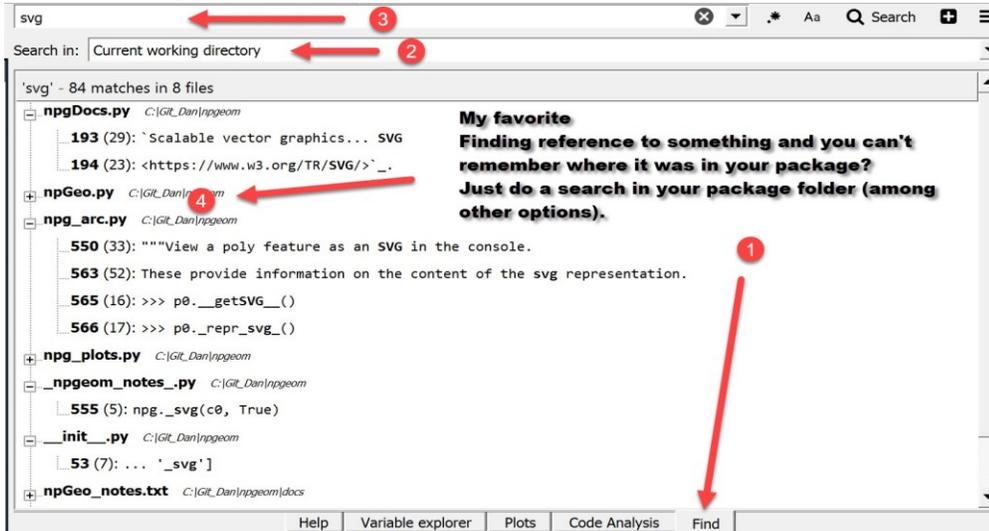
I hate scrolling, so when you get an error, click on the line number.

If it is in an imported script, you can even click on the script name to go there.



The **object explorer** can be used to retrieve information for objects. This is useful for documentation purposes.

Finding stuff



When your package gets large and you are trying to locate something... Find is your friend.

A quick click and you are there to make edits, copy or just read.

Kite can be installed as well

[Kite - AI Autocomplete and Docs for Python](#)

- [spyder_4.png](#) 561.2 KB



Dan Patterson (both 😊)