python: how to plot one line in different colors

Asked 8 years, 5 months ago Active 7 months ago Viewed 38k times

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I have two list as below:

```
latt=
[42.0,41.978567980875397,41.96622693388357,41.963791391892457,...,41.972407378075879]
lont=
[-66.706920989908909,-66.703116557977069,-66.707351643324543,...-66.718218142021925]
```

now I want to plot this as a line, separate each 10 of those 'latt' and 'lont' records as a period and give it a unique color. what should I do?

python matplotlib Edit tags

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asked Jun 21 '13 at 17:04
wuwucat
2,165 8 22 25

Look at `scatter` matplotlib.org/api/pyplot_api.html#matplotlib.pyplot.scatter – tacaswell Jun 21 '13 at 17:08

6 Answers

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I have been searching for a short solution how to use pyplots line plot to show a time series coloured by a label feature **without using scatter** due to the amount of data points.

I came up with the following workaround:

```
plt.plot(np.where(df["label"]==1, df["myvalue"], None), color="red", label="1")
plt.plot(np.where(df["label"]==0, df["myvalue"], None), color="blue", label="0")
plt.legend()
```

The drawback is you are creating two different line plots so the connection between the different classes is not shown. For my purposes it is not a big deal. It may help someone.

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answered May 4 at 8:56
Andre S.
414 4 12

There are several different ways to do this. The "best" approach will depend mostly on how

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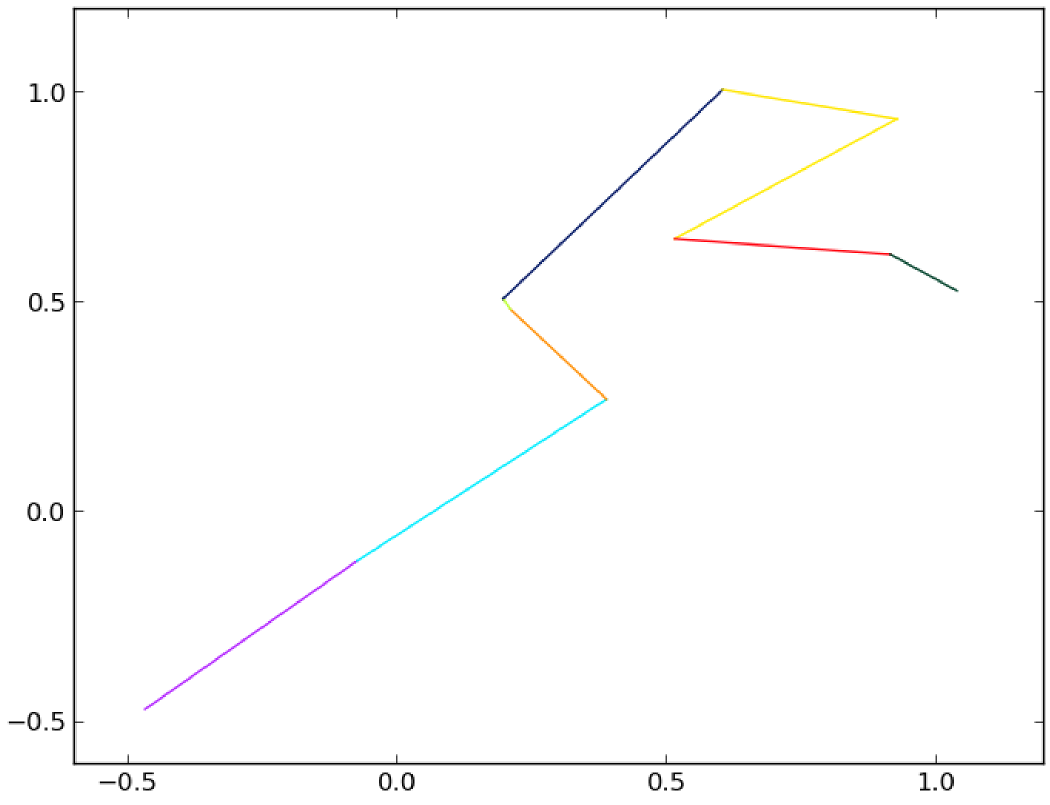
many line segments you want to plot.

If you're just going to be plotting a handful (e.g. 10) line segments, then just do something like:

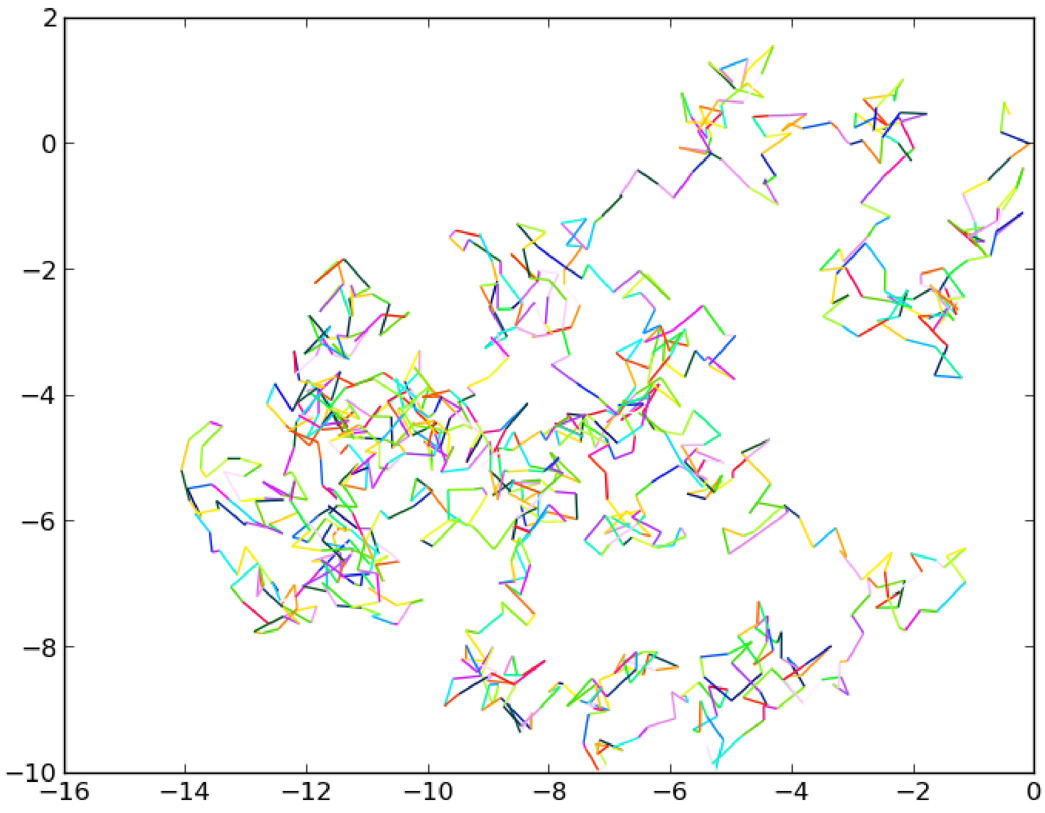
```
import numpy as np
import matplotlib.pyplot as plt

def uniqueish_color():
    """There're better ways to generate unique colors, but this isn't awful."""
    return plt.cm.gist_ncar(np.random.random())

xy = (np.random.random((10, 2)) - 0.5).cumsum(axis=0)

fig, ax = plt.subplots()
for start, stop in zip(xy[:-1], xy[1:]):
    x, y = zip(start, stop)
    ax.plot(x, y, color=uniqueish_color())
plt.show()
```



If you're plotting something with a million line segments, though, this will be terribly slow to draw. In that case, use a `LineCollection`. E.g.

```
import numpy as np
import matplotlib.pyplot as plt
from matplotlib.collections import LineCollection

xy = (np.random.random((1000, 2)) - 0.5).cumsum(axis=0)

# Reshape things so that we have a sequence of:
```

```
# [[(x0,y0),(x1,y1)],[(x0,y0),(x1,y1)],...]
xy = xy.reshape(-1, 1, 2)
segments = np.hstack([xy[:-1], xy[1:]])

fig, ax = plt.subplots()
coll = LineCollection(segments, cmap=plt.cm.gist_ncar)
coll.set_array(np.random.random(xy.shape[0]))

ax.add_collection(coll)
ax.autoscale_view()

plt.show()
```



For both of these cases, we're just drawing random colors from the "gist_ncar" coloramp. Have a look at the colormaps here (gist_ncar is about 2/3 of the way down): http://matplotlib.org/examples/color/colormaps_reference.html

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edited Jan 18 '17 at 18:43
tacaswell
77.2k 19 196 186

answered Jun 21 '13 at 17:47
Joe Kington
251k 66 566 450

Ah, I assumed he wanted lines from the "now I want to plot this as a line", but on re-reading, you're probably right. – Joe Kington Jun 21 '13 at 17:56

question. What are you specifying with: `coll.set_array(np.random.random(xy.shape[0]))` documentation is very unclear about this link – J.A.Cado Feb 8 '19 at 8:39

@JoeKington this looks awesome, I have a question, How can I make it limited to two lines, if the value is negative, shows red otherwise green – Volatil3 Oct 20 at 5:49

2

Cribbing the color choice off of @JoeKington,

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

def uniqueish_color(n):
    """There're better ways to generate unique colors, but this isn't awful."""
    return plt.cm.gist_ncar(np.random.random(n))

plt.scatter(latt, lont, c=uniqueish_color(len(latt)))
```

You can do this with `scatter`.

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answered Jun 21 '13 at 18:36
tacaswell
77.2k 19 196 186

This fails with 'Invalid RGBA argument' in Matlplotlib 3.0.0 – Nibor Mar 21 '19 at 9:46

0

This post is hidden. It was deleted 8 years ago by the post author.

You can do something like this to plot in intervals of 10:

```
import matplotlib.pyplot as plt
p = 10
for i in range(len(latt))[::p]:
     plt.scatter( latt[i:i+p], lont[i:i+p], 'o' )
```

Setting colors:

```
import numpy as np

ax = plt.gca()
color_floats = np.linspace(0,1,len(ax.lines))
ax.set_color_cycle( (plt.cm.rainbow(x) for x in color_floats) )
```

`plt.cm` is a module with many colormaps... among them the `rainbow` which goes from `0` to `1` through the colors in the rainbow (`0` closer to `red` and `1` to `violet`).

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edited Jun 21 '13 at 17:37

answered Jun 21 '13 at 17:22
Saullo G. P. Castro
51.5k 24 166 228

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Copied from this example:

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```
import numpy as np
import matplotlib.pyplot as plt
from matplotlib.collections import LineCollection
from matplotlib.colors import ListedColormap, BoundaryNorm

x = np.linspace(0, 3 * np.pi, 500)
y = np.sin(x)
z = np.cos(0.5 * (x[:-1] + x[1:]))  # first derivative

# Create a colormap for red, green and blue and a norm to color
# f' < -0.5 red, f' > 0.5 blue, and the rest green
cmap = ListedColormap(['r', 'g', 'b'])
norm = BoundaryNorm([-1, -0.5, 0.5, 1], cmap.N)

# Create a set of line segments so that we can color them individually
# This creates the points as a N x 1 x 2 array so that we can stack points
# together easily to get the segments. The segments array for line collection
# needs to be numlines x points per line x 2 (x and y)
points = np.array([x, y]).T.reshape(-1, 1, 2)
segments = np.concatenate([points[:-1], points[1:]], axis=1)

# Create the line collection object, setting the colormapping parameters.
# Have to set the actual values used for colormapping separately.
lc = LineCollection(segments, cmap=cmap, norm=norm)
lc.set_array(z)
lc.set_linewidth(3)

fig1 = plt.figure()
plt.gca().add_collection(lc)
plt.xlim(x.min(), x.max())
plt.ylim(-1.1, 1.1)

plt.show()
```

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edited Jun 21 '13 at 17:26

answered Jun 21 '13 at 17:20
ali_m
65.4k 16 209 281

2

See the answer here to generate the "periods" and then use the matplotlib scatter function as @tcaswell mentioned. Using the plot.hold function you can plot each period, colors will increment automatically.

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edited May 23 '17 at 12:10
Community Bot
1 1

answered Jun 21 '13 at 17:15
blazetopher
1,030 8 13