Google is All You Need

巧用开发文档、搜索引擎学习Python

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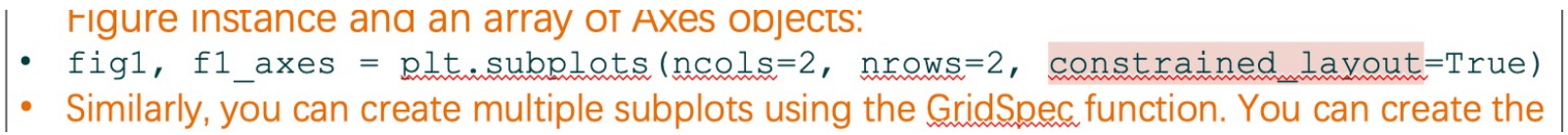
为什么要用搜索引擎

- Python课程的后期会学习很多的第三方库，比如numpy/pandas/matplotlib/scipy
- 我们不可能记住这些库里面每一个函数的每一个变量
- 面对不熟悉的函数，我们需要学会“现用现查”
- 学助有时候被问到不熟悉的函数，也是需要现场查文档看懂
- 把官网文档、搜索引擎当做字典来用

在哪里搜索需要的内容

- 使用英语搜索
- Google或Bing，千万别用百度
  - 怎么上Google可以私聊学助
- 第三方库的官方文档
  - NumPy: https://numpy.org/doc/stable/reference/index.html#reference
  - Pandas: https://pandas.pydata.org/docs/reference/index.html#api
  - matplotlib: https://matplotlib.org/stable/api/index
- 技术论坛、博客：StackOverFlow, GeekForGeeks, TowardsDataScience等（不建议CSDN）
- GitHub

Case Study: constrained_layout



- 在Session12的ppt里面，plt.subplots有一个参数叫constrained_layout，但我们并没有学过这个参数
- 这时候我们应该考虑的查找顺序：
  - 先找官方文档
  - 再找个人博客
  - 如果问题很具体，就需要到技术论坛里找

方法一：查官方文档

0. 确定要查询的函数是 matplotlib.pyplot.subplot

matplotlib Plot types Examples Tutorials Reference User guide Develop Release notes stable

Section Navigation

- matplotlib
- matplotlib.afm
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- matplotlib.colors
- matplotlib.container

API Reference

When using the library you will typically create Figure and Axes objects and call their methods to add content and modify the appearance.

- matplotlib.figure: axes creation, figure-level content
- matplotlib.axes: most plotting methods, Axes labels, access to axis styling, etc.

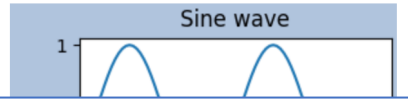
Example: We create a Figure fig and Axes ax. Then we call methods on them to plot data, add axis labels and a figure title.

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

x = np.arange(0, 4, 0.05)
y = np.sin(x*np.pi)

fig, ax = plt.subplots(figsize=(3,2), constrained_layout=True)
ax.plot(x, y)
ax.set_xlabel('t [s]')
ax.set_ylabel('S [V]')
ax.set_title('Sine wave')
fig.set_facecolor('lightsteelblue')
```

(Source code, png)



On this page
Usage patterns
Modules

1.在左栏找到matplotlib.pyplot

matplotlib.pyplot

matplotlib.pyplot.acorr

matplotlib.pyplot.angle_spectrum

matplotlib.pyplot.annotate

2. 在pyplot里面找到subplot函数

matplotlib.pyplot.subplot

matplotlib.pyplot.subplot(*args, **kwargs) [source]

Add an Axes to the current figure or retrieve an existing Axes.

This is a wrapper of Figure.add_subplot which provides additional behavior when working with the implicit API (see the notes section).

Call signatures:

```
subplot(nrows, ncols, index, **kwargs)
subplot(pos, **kwargs)
subplot(**kwargs)
subplot(ax)
```

Parameters: ***args** : *int, (int, int, index), or SubplotSpec, default: (1, 1, 1)*

3. 进入subplot的页面，寻找参数constrained_layout

方法一：查官方文档

4a. 如果能找到constrained_layout这个参数，就可以直接读参数的说明

Property	Description
adjustable	{'box', 'datalim'}
agg_filter	a filter function, which takes a (m, n, 3) float array and a dpi value, and returns a (m, n, 3) array and two offsets from the bottom left corner of the image
alpha	scalar or None
anchor	(float, float) or {'C', 'SW', 'S', 'SE', 'E', 'NE', ...}
animated	bool
aspect	{'auto', 'equal'} or float
autoscale_on	bool

(像是这些)

4b. 如果没找到(比如constrained_layout就没被找到)，那么就需要用搜索引擎查找答案

方法二：搜索引擎

1. 在搜索框里怎么搜

我们要搜索的是 `matplotlib.pyplot.subplot` 中的 `constrained_layout` 参数

方法二：搜索引擎

2. 搜索结果

matplotlib plt constraint layout

All Images Videos Books News More Tools

About 10.600.000 results (0,45 seconds)

https://matplotlib.org › stable › tutorials › intermediate

Constrained Layout Guide — Matplotlib 3.6.2 documentation 官方文档的说明

constrained_layout automatically adjusts subplots and decorations like legends and colorbars so that they fit in the figure window while still preserving, as ...

https://matplotlib.org › subplots_axes_and_figures › de...

Resizing axes with constrained layout - Matplotlib

8 Apr 2020 — **Constrained layout** attempts to resize subplots in a figure so that there are no overlaps between axes objects and labels on the axes. See ...

https://matplotlib.org › subplots_axes_and_figures › de...

Resizing axes with constrained layout - Matplotlib

Constrained layout attempts to resize subplots in a figure so that there are no overlaps between axes objects and labels on the axes. See **Constrained Layout** ...

https://matplotlib.org › stable › tutorials › intermediate

Tight Layout guide — Matplotlib 3.6.2 documentation

Tight **Layout** guide#. How to use tight-**layout** to fit plots within your figure cleanly. tight_layout automatically adjusts subplot params so that the ...

https://www.scivision.dev › matplotlib-constrained-layo...

Matplotlib constrained_layout vs. tight_layout 技术博客

12 Jul 2020 — **Matplotlib** constrained_layout is more advanced than tight_layout, works better.

People also ask

- What is constrained layout in Matplotlib?
- What is Constrained_layout?
- What is fig Tight_layout?
- How do I stop Matplotlib overlapping?

Feedback

https://www.matplotlib.org.cn › tutorials › intermediate

Constrained Layout Guide - Matplotlib 中文 中文官方文档

27 Apr 2020 — constrained_layout automatically adjusts subplots and decorations like legends and colorbars so that they fit in the figure window while still ...

https://stackoverflow.com › questions › python-matplot... 技术论坛

How to disable Constrained Layout but keep the axes position?

1 Jun 2020 — What am I missing? enter image description here import **matplotlib.pyplot** as plt fig, ax = plt.

1 answer · Top answer: Is it wrong to adjust the vertical and horizontal in the subplot? fig, ax = …

How to use **matplotlib** tight **layout** with Figure? - Stack Overflow 7 Mar 2012
Add external margins with **constrained layout**? - Stack Overflow 20 Aug 2020
Text moves axes upon panning with **constrained layout** 5 Apr 2022
overlapping **constrained** 3d subplots - **matplotlib** 11 May 2022
More results from stackoverflow.com

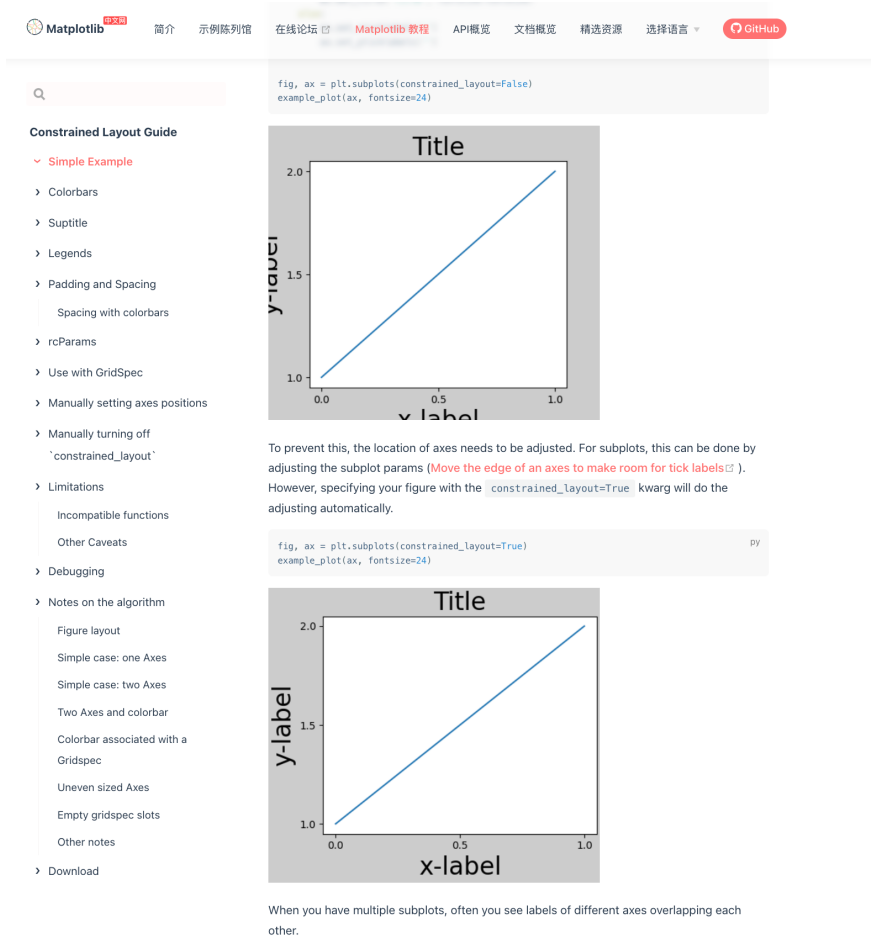
https://github.com › matplotlib › tutorials › intermediate GitHub

matplotlib/constrainedlayout_guide.py at main - GitHub

using the respective argument to :func:`~.**pyplot**.subplots` or. :func:`~.**pyplot**.figure`, e.g.:: plt.subplots(**layout="constrained"**).

方法二：搜索引擎

3. 看搜索结果，比如点开中文官网文档



沃趣，这篇文章没被翻译成中文
不过可以看下示意图

能看出来，这个参数主要是用来：

- 对齐绘图的内容（比如图中的x-label、y-label等字样）不会被画出画布之外
- 去掉画布中的空白（比如右上角）

差不多看懂了

一点碎碎念

- 用英语搜索、阅读大量英语内容的能力需要慢慢锻炼
- 开始用英语进行搜索的时候确实很难
- 但这是南科大学生的必修课之一
- 一定要好好学英语！！

- 大家对这个教程有什么问题，随时欢迎在课程群里提问，或者私聊我（qq:360189767）
- 各位加油，期末顺利！