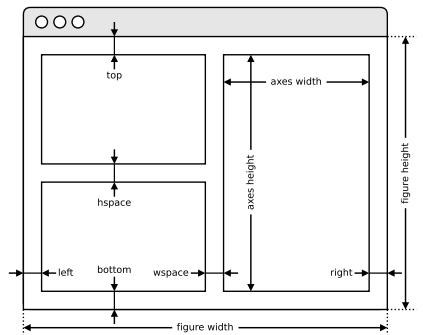


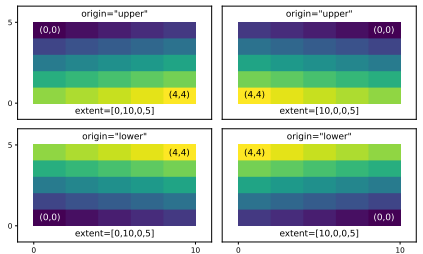
Axes adjustments API

`plt.subplots_adjust(...)`



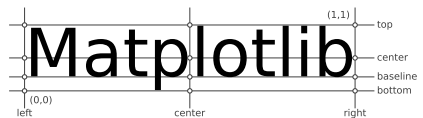
Extent & origin API

`ax.imshow(extent=..., origin=...)`



Text alignments API

`ax.text(..., ha=..., va=..., ...)`



Text parameters API

`ax.text(..., family=..., size=..., weight=...)`
`ax.text(..., fontproperties=...)`

The quick brown fox xx-large (1.73)
 The quick brown fox x-large (1.44)
 The quick brown fox large (1.20)
 The quick brown fox medium (1.00)
 The quick brown fox small (0.83)
 The quick brown fox x-small (0.69)
 The quick brown fox xx-small (0.58)

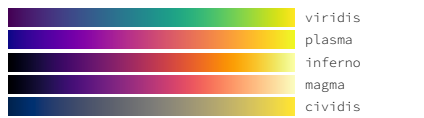
The quick brown fox jumps over the lazy dog black (900)
The quick brown fox jumps over the lazy dog bold (700)
The quick brown fox jumps over the lazy dog semibold (600)
The quick brown fox jumps over the lazy dog normal (400)
The quick brown fox jumps over the lazy dog ultralight (100)

The quick brown fox jumps over the lazy dog monospace
 The quick brown fox jumps over the lazy dog serif
 The quick brown fox jumps over the lazy dog sans
The quick brown fox jumps over the lazy dog cursive

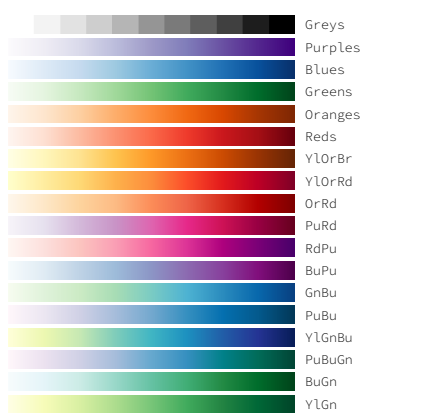
The quick brown fox jumps over the lazy dog italic
 The quick brown fox jumps over the lazy dog normal

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG small-caps
 The quick brown fox jumps over the lazy dog normal

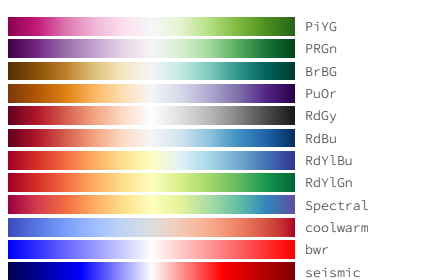
Uniform colormaps API



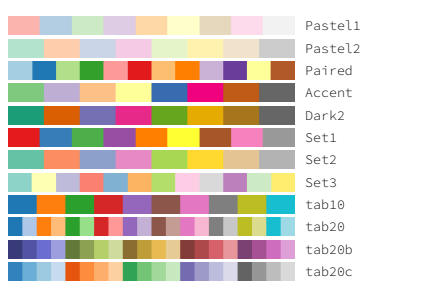
Sequential colormaps API



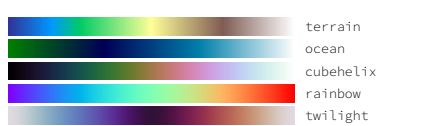
Diverging colormaps API



Qualitative colormaps API



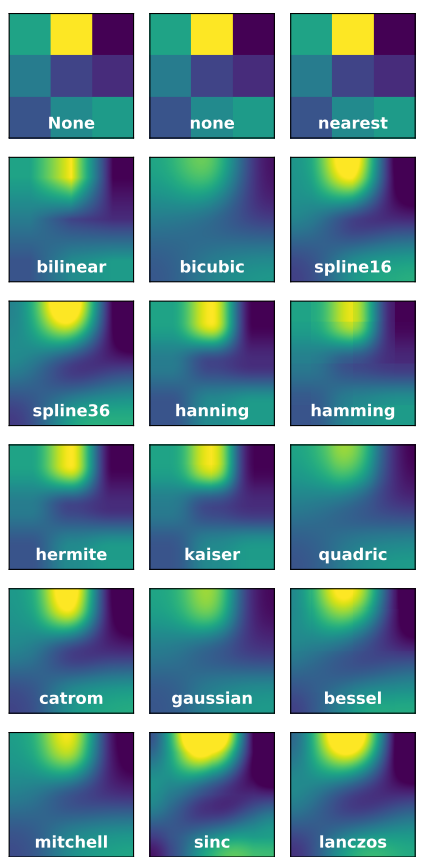
Miscellaneous colormaps API



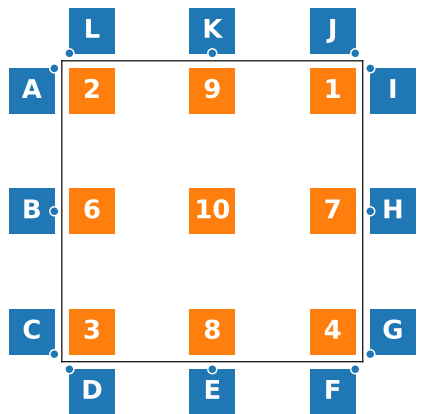
Color names API



Image interpolation API



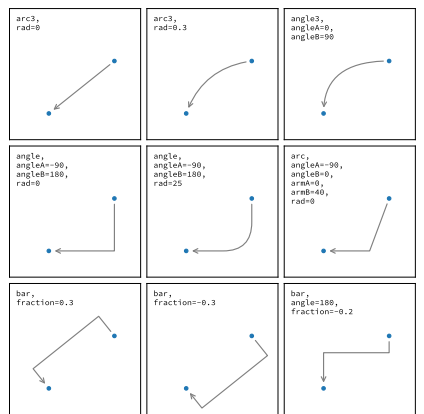
Legend placement API



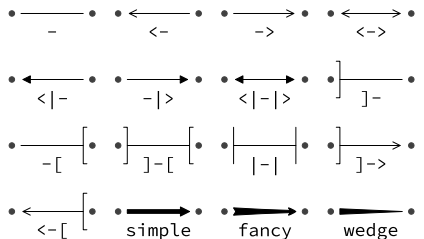
`ax.legend(loc="string", bbox_to_anchor=(x,y))`

- 2: upper left 9: upper center 1: upper right
 - 6: center left 10: center 7: center right
 - 3: lower left 8: lower center 4: lower right
- A: upper right / (-0.1, 0.9) B: center right / (-0.1, 0.5)
 C: lower right / (-0.1, 0.1) D: upper left / (0.1, -0.1)
 E: upper center / (0.5, -0.1) F: upper right / (0.9, -0.1)
 G: lower left / (1.1, 0.1) H: center left / (1.1, 0.5)
 I: upper left / (1.1, 0.9) J: lower right / (0.9, 1.1)
 K: lower center / (0.5, 1.1) L: lower left / (0.1, 1.1)

Annotation connection styles API



Annotation arrow styles API



How do I ...

- ... resize a figure? → `fig.set_size_inches(w, h)`
- ... save a figure? → `fig.savefig("figure.pdf")`
- ... save a transparent figure? → `fig.savefig("figure.pdf", transparent=True)`
- ... clear a figure/an axes? → `fig.clear()` → `ax.clear()`
- ... close all figures? → `plt.close("all")`
- ... remove ticks? → `ax.set_xyticks([])`
- ... remove tick labels? → `ax.set_xyticklabels([])`
- ... rotate tick labels? → `ax.tick_params(axis="x", rotation=90)`
- ... hide top spine? → `ax.spines['top'].set_visible(False)`
- ... hide legend border? → `ax.legend(frameon=False)`
- ... show error as shaded region? → `ax.fill_between(X, Y+error, Y-error)`
- ... draw a rectangle? → `ax.add_patch(plt.Rectangle((0, 0), 1, 1))`
- ... draw a vertical line? → `ax.axvline(x=0.5)`
- ... draw outside frame? → `ax.plot(..., clip_on=False)`
- ... use transparency? → `ax.plot(..., alpha=0.25)`
- ... convert an RGB image into a gray image? → `gray = 0.2989*R + 0.5870*G + 0.1140*B`
- ... set figure background color? → `fig.patch.set_facecolor("grey")`
- ... get a reversed colormap? → `plt.get_cmap("viridis_r")`
- ... get a discrete colormap? → `plt.get_cmap("viridis", 10)`
- ... show a figure for one second? → `fig.show(block=False), time.sleep(1)`

Performance tips

- `scatter(X, Y)` slow
- `plot(X, Y, marker="o", ls="")` fast
- `for i in range(n): plot(X[i])` slow
- `plot(sum([x+[None] for x in X], []))` fast
- `cla(), imshow(...), canvas.draw()` slow
- `im.set_data(...), canvas.draw()` fast

Beyond Matplotlib

- Seaborn: Statistical Data Visualization
- Cartopy: Geospatial Data Processing
- yt: Volumetric data Visualization
- mpld3: Bringing Matplotlib to the browser
- Datashader: Large data processing pipeline
- plotnine: A Grammar of Graphics for Python

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