

- Shin's Lab -

Python for Data Visualization

Python for Data Visualization

-Chapter.1 Matplotlib Anatomy -

1-01. Making Figures and Axes

1-02. Axes Customizing

1-03. Titles, Labels and Font Dict

1-04. Ticks and Ticklabels

1-05. Grid

1-06. Spines

1-07. Colors in Matplotlib

1-08. Matplotlib Styles and rcParams

Python for Data Visualization

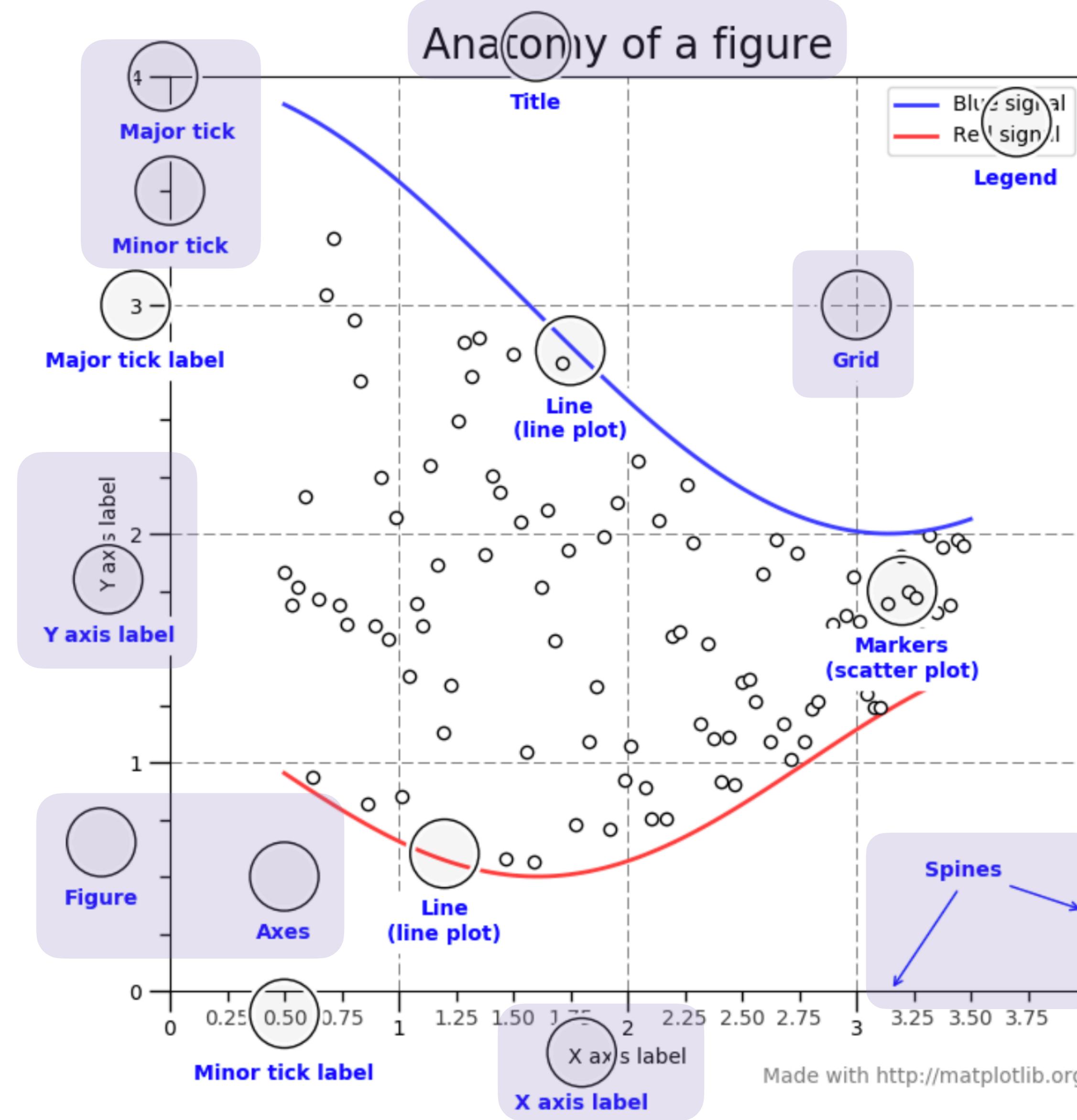
-Chapter.1 Matplotlib Anatomy -

1-08. Matplotlib Styles and rcParams

1. Styles in Matplotlib
2. rcParams in Matplotlib

Lecture_1-08 Matplotlib Styles and rcParams

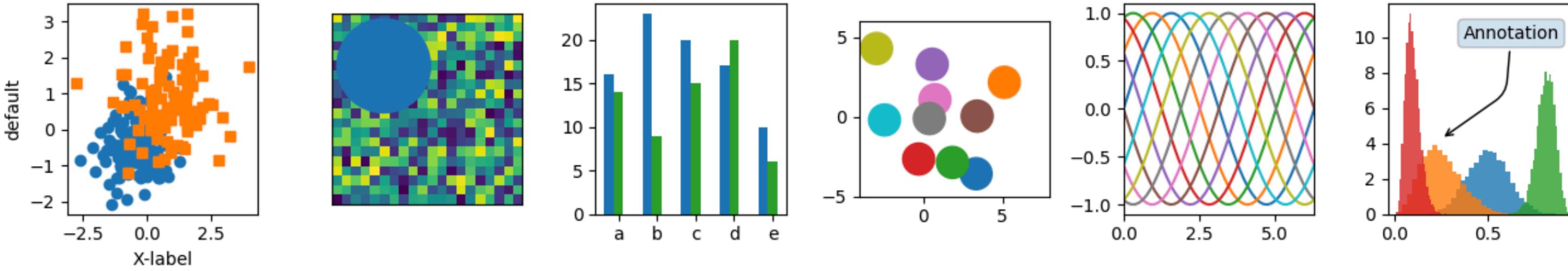
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1. Styles in Matplotlib

Style sheets reference

This script demonstrates the different available style sheets on a common set of example plots: scatter plot, image, bar graph, patches, line plot and histogram,



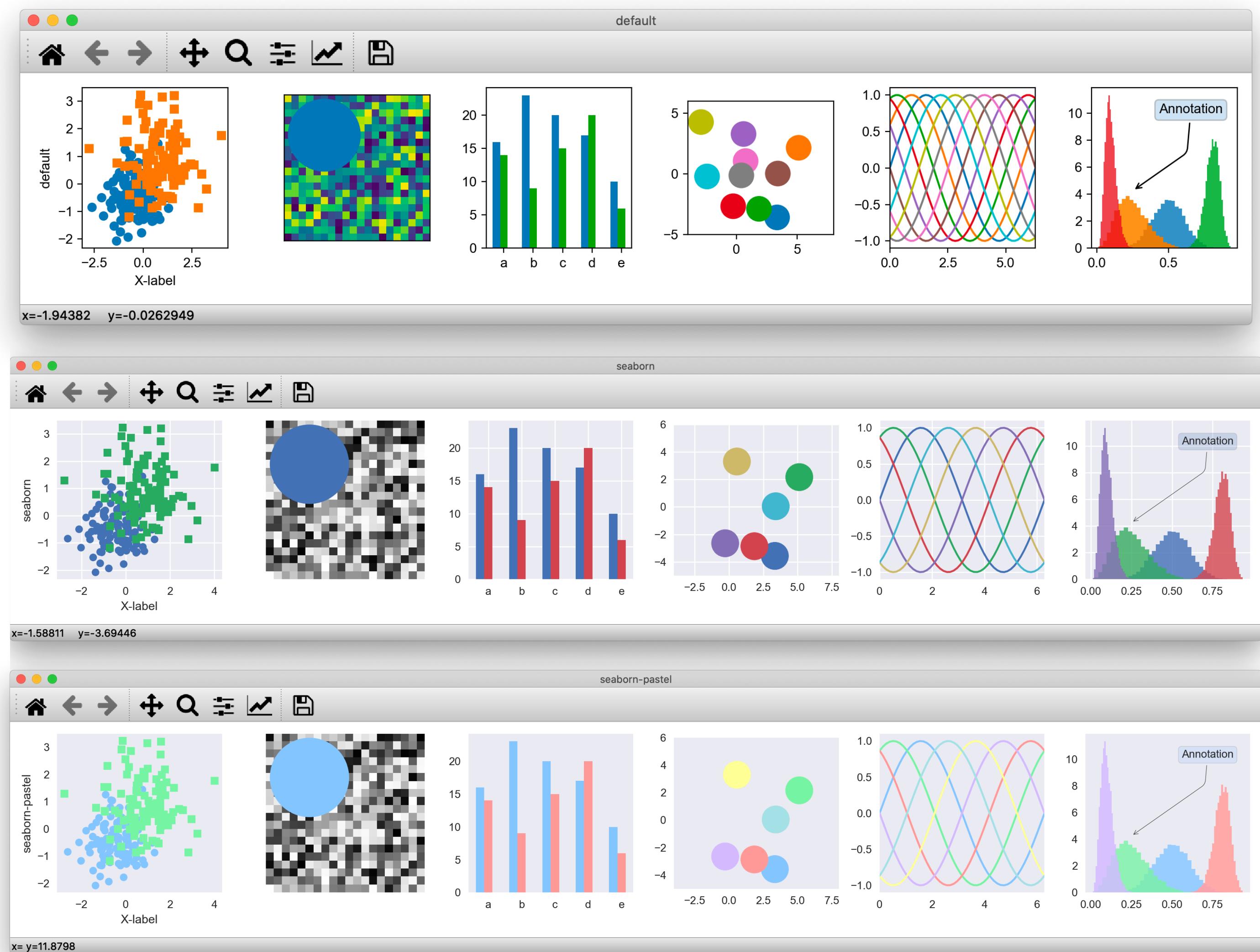
```
for style in plt.style.available:  
    print(style)
```

Solarize_Light2
_classic_test_patch
bmh
classic
dark_background
fast
fivethirtyeight
ggplot
grayscale
seaborn
seaborn-bright
seaborn-colorblind
seaborn-dark

seaborn-dark-palette
seaborn-darkgrid
seaborn-deep
seaborn-muted
seaborn-notebook
seaborn-paper
seaborn-pastel
seaborn-poster
seaborn-talk
seaborn-ticks
seaborn-white
seaborn-whitegrid
tableau-colorblind10

Lecture_1-08 Matplotlib Styles and rcParams

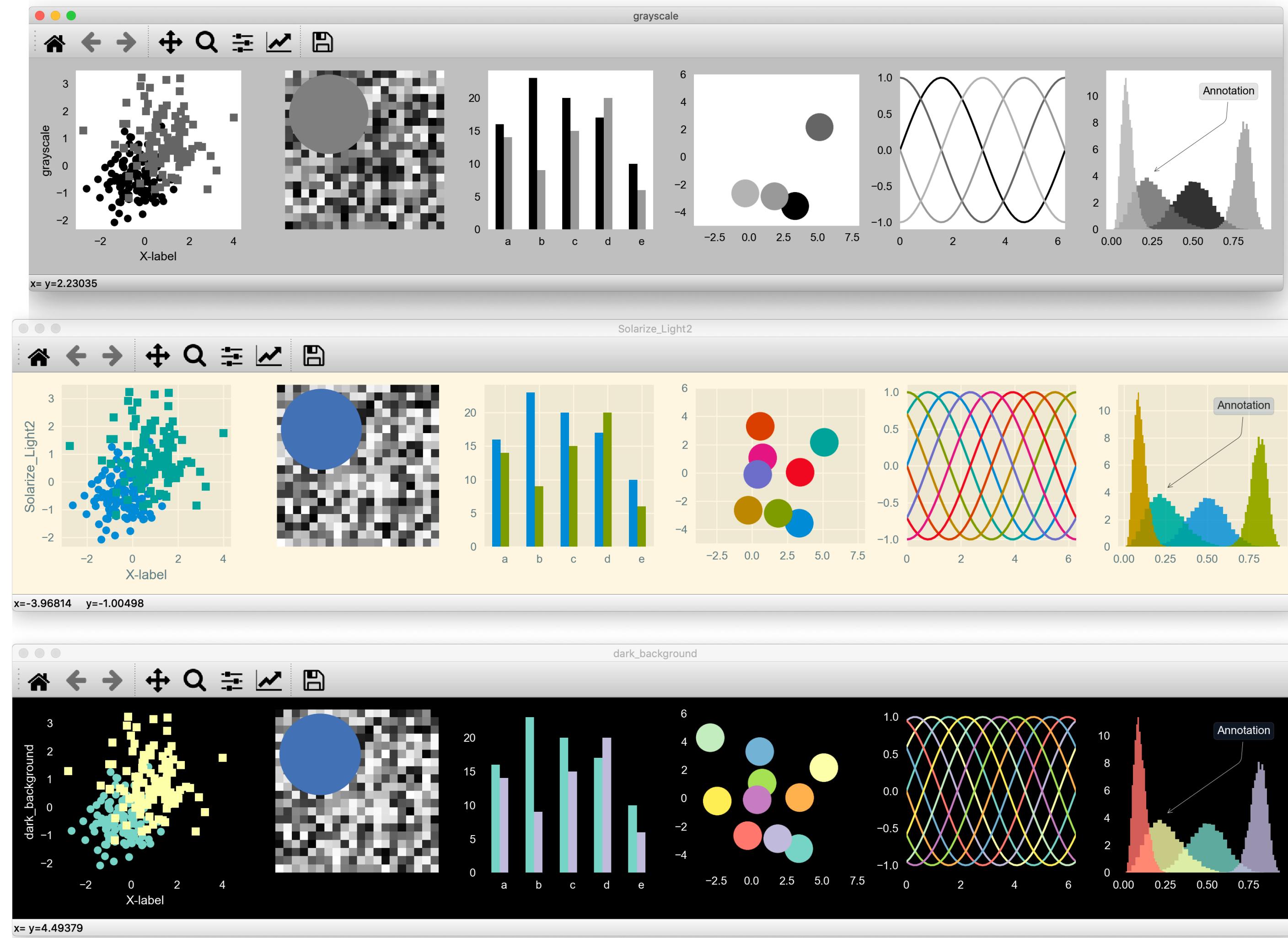
1. Styles in Matplotlib



Lecture_1-08 Matplotlib Styles and rcParams

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1. Styles in Matplotlib



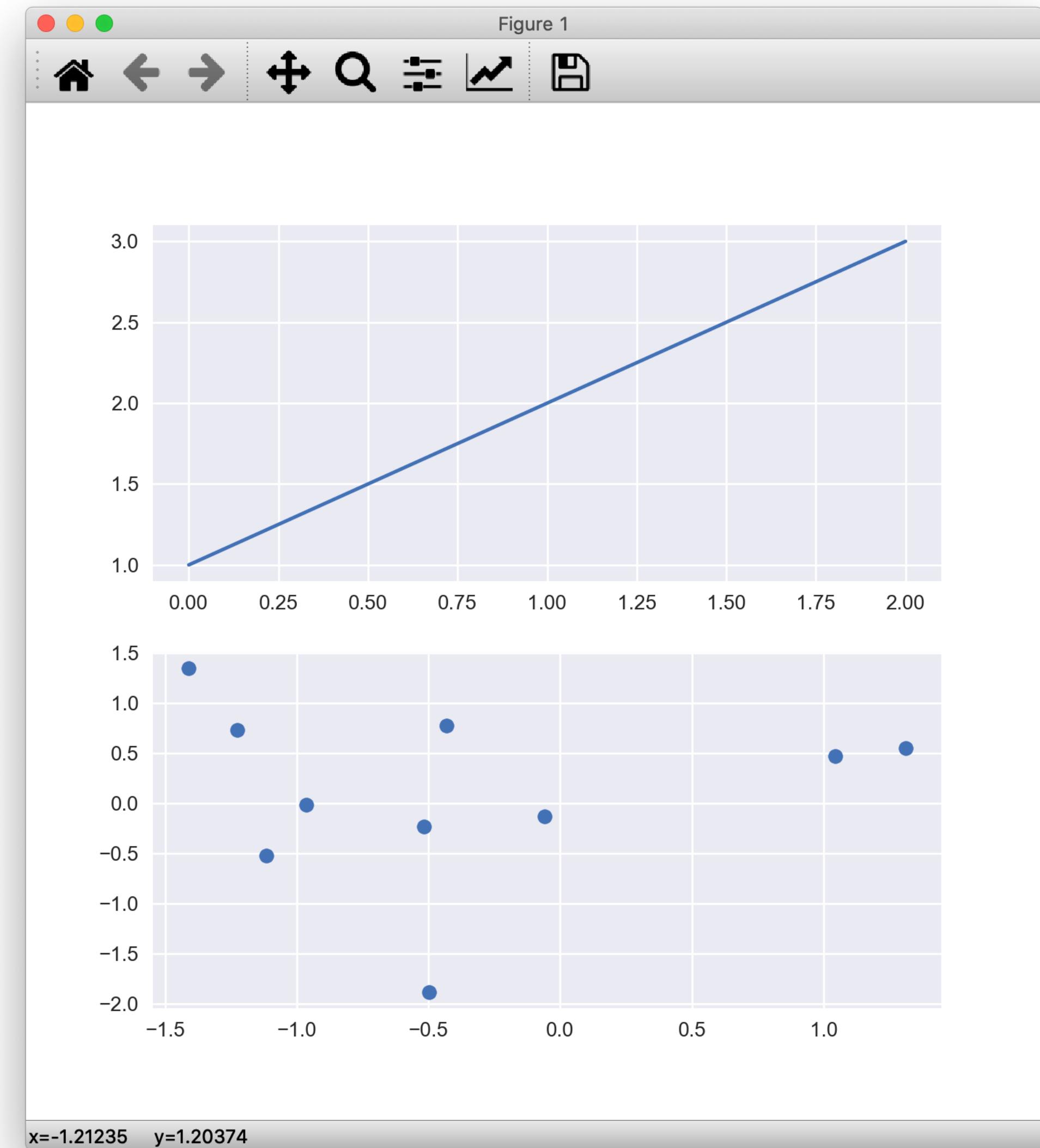
1. Styles in Matplotlib

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

plt.style.use('seaborn')

fig, axes = plt.subplots(2, 1, figsize=(7, 7))

axes[0].plot([1, 2, 3])
axes[1].scatter(np.random.normal(0, 1, 10),
               np.random.normal(0, 1, 10))
```



Lecture_1-08 Matplotlib Styles and rcParams

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2. rcParams in Matplotlib

```
import matplotlib.pyplot as plt
print(plt.rcParams)

_internal.classic_mode: False
agg.path.chunksize: 0
animation.avconv_args: []
animation.avconv_path: avconv
animation.bitrate: -1
animation.codec: h264
animation.convert_args: []
animation.convert_path: convert
animation.embed_limit: 20.0
animation.ffmpeg_args: []
animation.ffmpeg_path: ffmpeg
animation.frame_format: png
animation.html: none
animation.html_args: []
animation.writer: ffmpeg
axes.autolimit_mode: data
axes.axisbelow: True
axes.edgecolor: white
axes.facecolor: #EAEAF2
axes.formatter.limits: [-5, 6]
axes.formatter.min_exponent: 0
axes.formatter.offset_threshold: 4
axes.formatter.use_locale: False
axes.formatter.use_mathtext: False
axes.formatter.useoffset: True
axes.grid: True
axes.grid.axis: both
axes.grid.which: major
axes.labelcolor: .15
axes.labelpad: 4.0
axes.labelsize: 11.0
axes.labelweight: normal
axes.linewidth: 0.0
axes.prop_cycle: cycler('color', ['#4C72B0', '#55A868',
 '#C44E52', '#8172B2', '#CCB974', '#64B5CD'])
axes.spines.bottom: True
axes.spines.left: True
axes.spines.right: True
axes.spines.top: True
axes.titlecolor: auto
axes.titlelocation: center
axes.titlepad: 6.0
axes.titlesize: 12.0
axes.titleweight: normal
axes.unicode_minus: True
axes.xmargin: 0.05
axes.ymargin: 0.05
axes3d.grid: True
backend: Qt5Agg
backend_fallback: True
boxplot.bootstrap: None
boxplot.boxprops.color: black
boxplot.boxprops.linestyle: -
boxplot.boxprops.linewidth: 1.0
boxplot.capprops.color: black
boxplot.capprops.linestyle: -
boxplot.capprops.linewidth: 1.0
boxplot.flierprops.color: black
boxplot.flierprops.linestyle: none
boxplot.flierprops.linewidth: 1.0
boxplot.flierprops.marker: o
boxplot.flierprops.markeredgecolor: black
boxplot.flierprops.markeredgewidth: 1.0
boxplot.flierprops.markerfacecolor: none
boxplot.flierprops.markersize: 6.0
boxplot.meanline: False
boxplot.meanprops.color: C2
boxplot.meanprops.linestyle: --
boxplot.meanprops.linewidth: 1.0
boxplot.meanprops.marker: ^
boxplot.meanprops.markeredgecolor: C2
boxplot.meanprops.markerfacecolor: C2
boxplot.meanprops.markersize: 6.0
boxplot.medianprops.color: C1
boxplot.medianprops.linestyle: -
boxplot.medianprops.linewidth: 1.0
boxplot.notch: False
boxplot.patchartist: False
boxplot.showbox: True
boxplot.showcaps: True
boxplot.showfliers: True
boxplot.showmeans: False
boxplot.vertical: True
boxplot.whiskerprops.color: black
boxplot.whiskerprops.linestyle: -
boxplot.whiskerprops.linewidth: 1.0
boxplot.whiskers: 1.5
contour.corner_mask: True
contour.negative_linestyle: dashed
datapath: /Users/shinks/opt/anaconda3/envs/python3_7/
lib/python3.7/site-packages/matplotlib/mpl-data
date.autoformatter.day: %Y-%m-%d
date.autoformatter.hour: %m-%d %H
date.autoformatter.microsecond: %M:%S.%f
date.autoformatter.minute: %d %H:%M
date.autoformatter.month: %Y-%m
date.autoformatter.second: %H:%M:%S
date.autoformatter.year: %Y
docstring.hardcopy: False
errorbar.capsize: 0.0
figure.autolayout: False
figure.constrained_layout.h_pad: 0.04167
figure.constrained_layout.hspace: 0.02
```

2. rcParams in Matplotlib

```
figure.constrained_layout.use: False
figure.constrained_layout.w_pad: 0.04167
figure.constrained_layout.wspace: 0.02
figure.dpi: 100.0
figure.edgecolor: white
figure.facecolor: white
figure.figsize: [8.0, 5.5]
figure.frameon: True
figure.max_open_warning: 20
figure.subplot.bottom: 0.11
figure.subplot.hspace: 0.2
figure.subplot.left: 0.125
figure.subplot.right: 0.9
figure.subplot.top: 0.88
figure.subplot.wspace: 0.2
figure.titlesize: large
figure.titleweight: normal
font.cursive: ['Apple Chancery', 'Textile',
'Zapf Chancery', 'Sand', 'Script MT',
'Felipa', 'cursive']
font.family: ['sans-serif']
font.fantasy: ['Comic Neue', 'Comic Sans MS',
'Chicago', 'Charcoal', 'Impact', 'Western',
'Humor Sans', 'xkcd', 'fantasy']
font.monospace: ['DejaVu Sans Mono',
'Bitstream Vera Sans Mono',
'Computer Modern Typewriter', 'Andale Mono',
'Nimbus Mono L', 'Courier New', 'Courier',
'Fixed', 'Terminal', 'monospace']
font.sans-serif: ['Arial', 'Liberation Sans',
'DejaVu Sans', 'Bitstream Vera Sans', 'sans-serif']
font.serif: ['DejaVu Serif', 'Bitstream Vera Serif',
'Computer Modern Roman', 'New Century Schoolbook',
'Century Schoolbook L', 'Utopia', 'ITC Bookman',
'Bookman', 'Nimbus Roman No9 L', 'Times New Roman',
'Times', 'Palatino', 'Charter', 'serif']

font.size: 10.0
font.stretch: normal
font.style: normal
font.variant: normal
font.weight: normal
grid.alpha: 1.0
grid.color: white
grid.linestyle: -
grid.linewidth: 1.0
hatch.color: black
hatch.linewidth: 1.0
hist.bins: 10
image.aspect: equal
image.cmap: Greys
image.composite_image: True
image.interpolation: antialiased
image.lut: 256
image.origin: upper
image.resample: True
interactive: True
keymap.all_axes: ['a']
keymap.back: ['left', 'c', 'backspace',
'MouseButton.BACK']
keymap.copy: ['ctrl+c', 'cmd+c']
keymap.forward: ['right', 'v',
'MouseButton.FORWARD']
keymap.fullscreen: ['f', 'ctrl+f']
keymap.grid: ['g']
keymap.grid_minor: ['G']
keymap.help: ['f1']
keymap.home: ['h', 'r', 'home']
keymap.pan: ['p']
keymap.quit: ['ctrl+w', 'cmd+w', 'q']
keymap.quit_all: ['W', 'cmd+W', 'Q']
keymap.save: ['s', 'ctrl+s']
keymap.xscale: ['k', 'L']

xtick.color: .15
xtick.direction: out
xtick.labelbottom: True
xtick.labelsizes: 10.0
xtick.labeltop: False
xtick.major.bottom: True
xtick.major.pad: 7.0
xtick.major.size: 0.0
xtick.major.top: True
xtick.major.width: 1.0
xtick.minor.bottom: True
xtick.minor.pad: 3.4
xtick.minor.size: 0.0
xtick.minor.top: True
xtick.minor.visible: False
xtick.minor.width: 0.5
xtick.top: False
ytick.alignment: center_baseline
ytick.color: .15
ytick.direction: out
ytick.labelleft: True
ytick.labelright: False
ytick.labelsizes: 10.0
ytick.left: True
ytick.major.left: True
ytick.major.pad: 7.0
ytick.major.right: True
ytick.major.size: 0.0
ytick.major.width: 1.0
ytick.minor.left: True
ytick.minor.pad: 3.4
ytick.minor.right: True
ytick.minor.size: 0.0
ytick.minor.visible: False
ytick.minor.width: 0.5
ytick.right: False
```

2. rcParams in Matplotlib

```

keymap.yscale: ['l']
keymap.zoom: ['o']
legend.borderaxespad: 0.5
legend.borderpad: 0.4
legend.columnspacing: 2.0
legend.edgecolor: 0.8
legend.facecolor: inherit
legend.fancybox: True
legend.fontsize: 10.0
legend.framealpha: 0.8
legend.frameon: False
legend.handleheight: 0.7
legend.handlelength: 2.0
legend.handletextpad: 0.8
legend.labelspacing: 0.5
legend.loc: best
legend.markerscale: 1.0
legend.numpoints: 1
legend.scatterpoints: 1
legend.shadow: False
legend.title_fontsize: None
lines.antialiased: True
lines.color: C0
lines.dash_capstyle: butt
lines.dash_joinstyle: round
lines.dashdot_pattern: [6.4, 1.6, 1.0, 1.6]
lines.dashed_pattern: [3.7, 1.6]
lines.dotted_pattern: [1.0, 1.65]
lines.linestyle: -
lines.linewidth: 1.75
lines.marker: None
lines.markeredgecolor: auto
lines.markeredgewidth: 0.0
lines.markerfacecolor: auto
lines.markersize: 7.0
lines.scale_dashes: True

lines.solid_capstyle: round
lines.solid_joinstyle: round
markers.fillstyle: full
mathtext.bf: sans:bold
mathtext.cal: cursive
mathtext.default: it
mathtext.fallback_to_cm: True
mathtext.fontset: dejavusans
mathtext.it: sans:italic
mathtext.rm: sans
mathtext.sf: sans
mathtext.tt: monospace
mpl_toolkits.legacy_colorbar: True
patch.antialiased: True
patch.edgecolor: black
patch.facecolor: #4C72B0
patch.force_edgecolor: False
patch.linewidth: 0.3
path.effects: []
path.simplify: True
path.simplify_threshold: 0.1111111111111111
path.sketch: None
path.snap: True
pdf.compression: 6
pdf.fonttype: 3
pdf.inheritcolor: False
pdf.use14corefonts: False
pgf.preamble:
pgf.rcfonts: True
pgf.texsystem: xelatex
polaraxes.grid: True
ps.distiller.res: 6000
ps.fonttype: 3
ps.papersize: letter
ps.useafm: False
ps.usedistiller: None

savefig.bbox: None
savefig.directory: ~
savefig.dpi: figure
savefig.edgecolor: white
savefig.facecolor: white
savefig.format: png
savefig.frameon: True
savefig.jpeg_quality: 95
savefig.orientation: portrait
savefig.pad_inches: 0.1
savefig.transparent: False
scatter.edgecolors: face
scatter.marker: o
svg.fonttype: path
svg.hashsalt: None
svg.image_inline: True
text.antialiased: True
text.color: .15
text.hinting: auto
text.hinting_factor: 8
text.kerning_factor: 0
text.latex.preamble:
text.latex.preview: False
text.latex_unicode: True
text.usetex: False
timezone: UTC
tk.window_focus: False
toolbar: toolbar2
verbose.fileo: sys.stdout
verbose.level: silent
webagg.address: 127.0.0.1
webagg.open_in_browser: True
webagg.port: 8988
webagg.port_retries: 50
xtick.alignment: center
xtick.bottom: True

xtick.color: .15
xtick.direction: out
xtick.labelbottom: True
xtick.labelsizes: 10.0
xtick.labeltop: False
xtick.major.bottom: True
xtick.major.pad: 7.0
xtick.major.size: 0.0
xtick.major.top: True
xtick.major.width: 1.0
xtick.minor.bottom: True
xtick.minor.pad: 3.4
xtick.minor.size: 0.0
xtick.minor.top: True
xtick.minor.visible: False
xtick.minor.width: 0.5
xtick.top: False
ytick.alignment: center_baseline
ytick.color: .15
ytick.direction: out
ytick.labelleft: True
ytick.labelright: False
ytick.labelsizes: 10.0
ytick.left: True
ytick.major.left: True
ytick.major.pad: 7.0
ytick.major.right: True
ytick.major.size: 0.0
ytick.major.width: 1.0
ytick.minor.left: True
ytick.minor.pad: 3.4
ytick.minor.right: True
ytick.minor.size: 0.0
ytick.minor.visible: False
ytick.minor.width: 0.5
ytick.right: False

```

2. rcParams in Matplotlib

```
import matplotlib.pyplot as plt

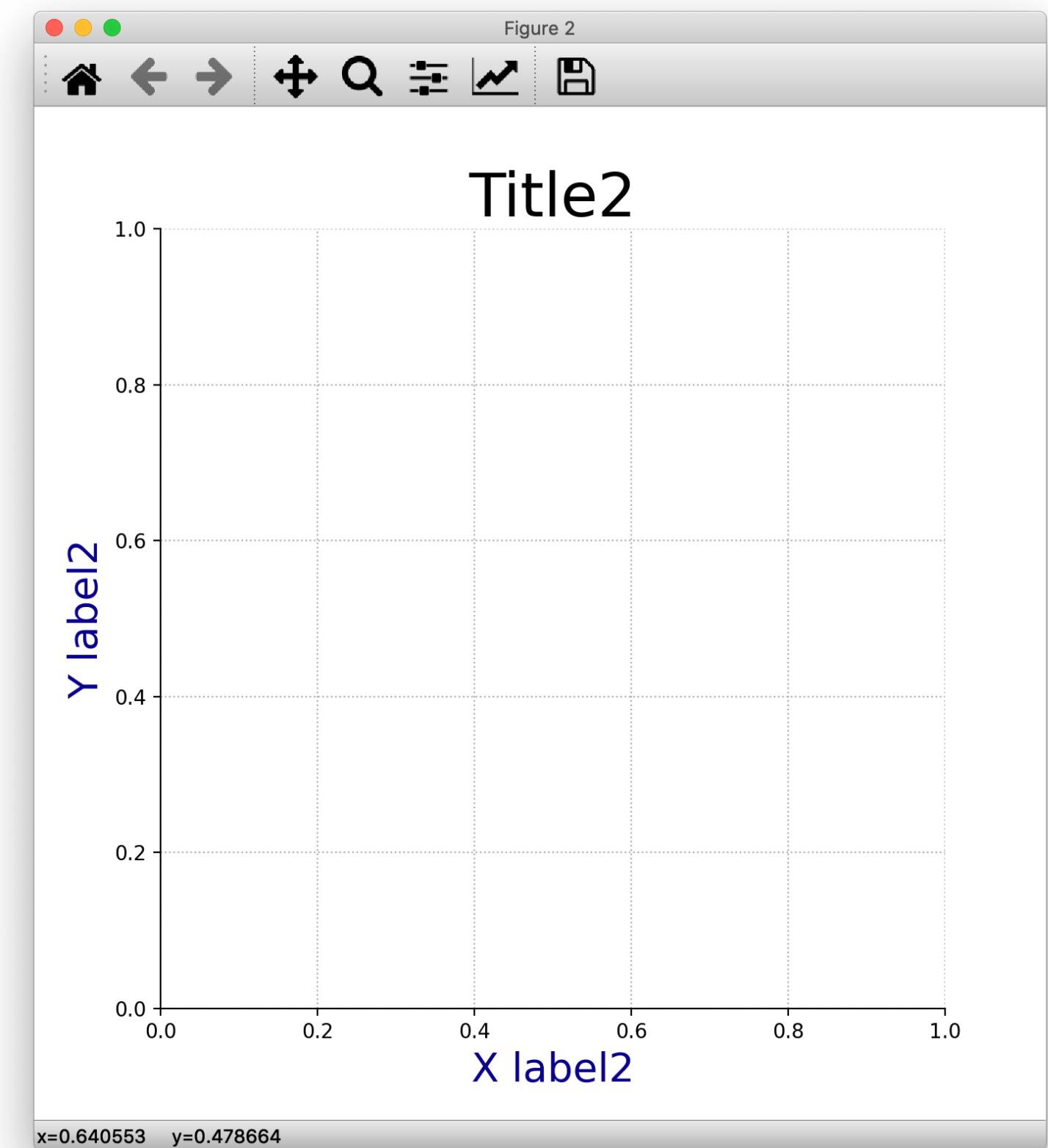
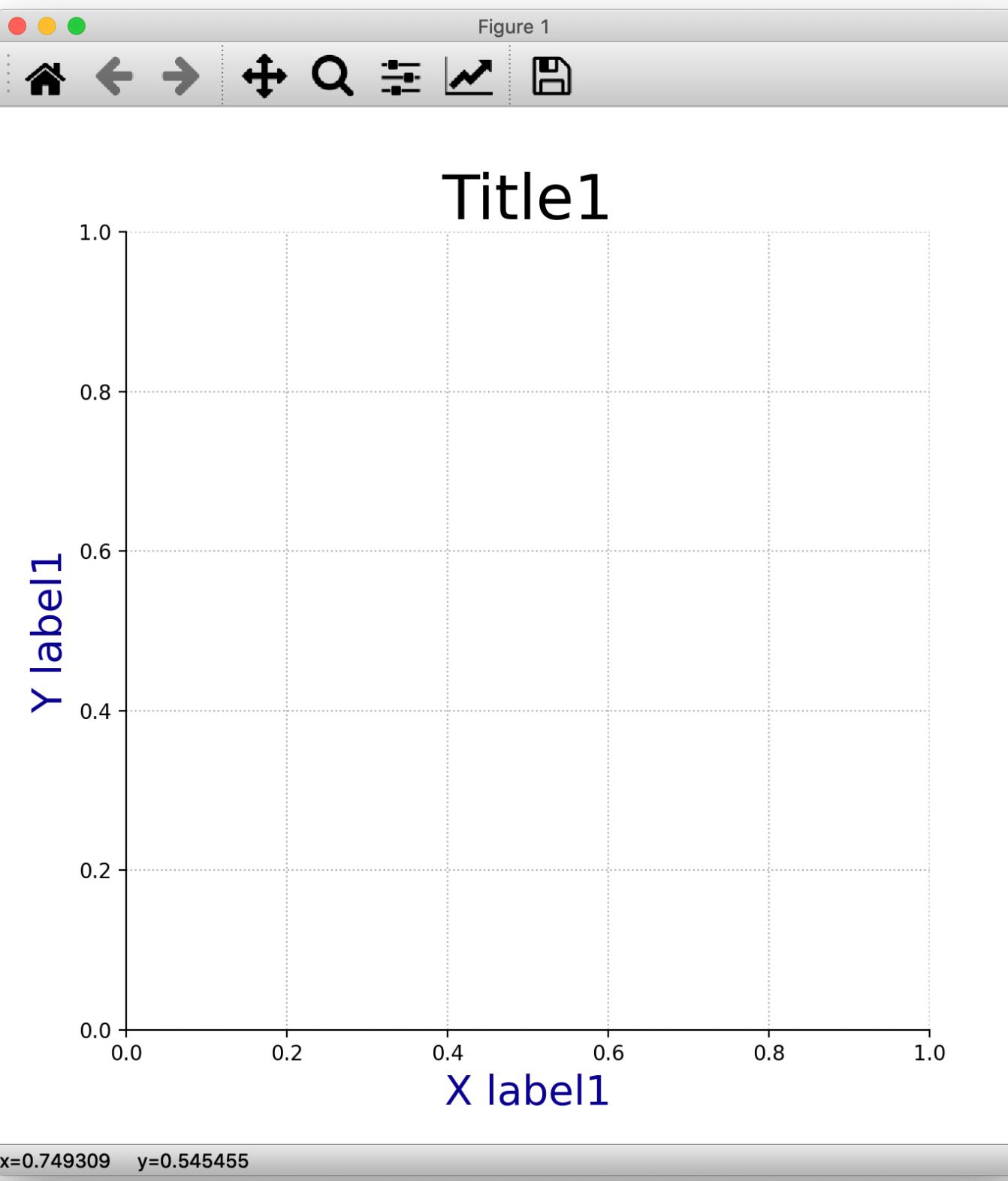
plt.rcParams['figure.figsize'] = (7, 7)
plt.rcParams['axes.titlesize'] = 30
plt.rcParams['axes.labelcolor'] = 'darkblue'
plt.rcParams['axes.labelsizes'] = 20
plt.rcParams['axes.spines.right'] = False
plt.rcParams['axes.spines.top'] = False
plt.rcParams['grid.linestyle'] = ':'

fig, ax = plt.subplots()

ax.set_title("Title1")
ax.set_xlabel("X label1")
ax.set_ylabel("Y label1")
ax.grid()

-----
fig, ax = plt.subplots()

ax.set_title("Title2")
ax.set_xlabel("X label2")
ax.set_ylabel("Y label2")
ax.grid()
```



Python for Data Visualization

-Chapter.1 Matplotlib Anatomy -

1-08. Matplotlib Styles and rcParams

- 1. Styles in Matplotlib
- 2. rcParams in Matplotlib