MATLAB Visualization Reference

MathWorks
https://www.mathworks.com

Plot Basic

Display plot

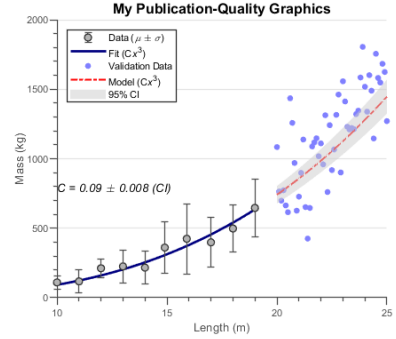
```
>>> figure;
>>> plot(x,y)
```

Types of Plots

plot stairs loglog semilogx semilogy
bar barh pie stackedplot area
scatter bubblechart swarmchart histogram pareto
polarplot polar histogram stem bin scatter scatter histogram
errorbar plotmatrix wordcloud bubblecloud parallel plot

Types of Vector Plots

quiver feather streams lice compass streamline
stream particles coneplot streamtube stream ribbon



Customizing Plots

Get figure window object or current axes objects

```
>>> fig = gcf
>>> ax = gca
```

Get graphics object (an example)

```
>>> h = plot(x,y)
```

Examples of axes object properties

xlabel ylabel title grid legend

Set font properties

```
>>> fontname(gcf,'Helvetica')
>>> fontsize(gcf,18)
```

Set the color, line width, and marker of the plot

```
>>> h.Color = [0 0 0.5]
>>> h.LineWidth = 1
>>> h.Marker = 'o'
```

LineStyle

Marker

Color

Set axes limits

```
>>> xlim([0 10]) % set x-axis limits
>>> axis([0 10 0 100]) % set both x,y axes
```

Set axes ticks

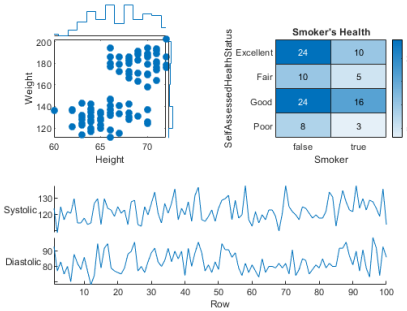
```
>>> xticks(0:1:10) % set ticks 0 to 10 by 1
```

Set the aspect ratio of the axes

```
>>> daspect([1 2 1]) % x:y:z in 1:2:1 ratio
```

Add annotation

```
>>> annotation('textarrow',x,y,'String',text)
```



Display Image/2D Data

Display image

```
>>> figure;
>>> image(A)
```

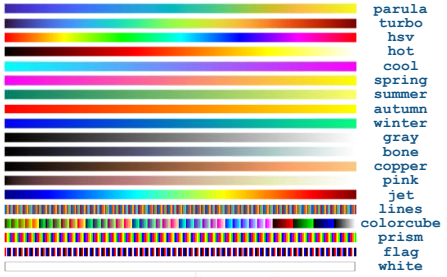
Types of Images

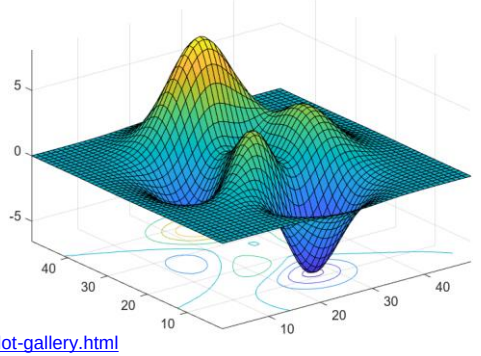
pcolor / image contour contourf heatmap
mesh meshc surf surfc ribbon
contourslice contour3 geoplot geoscatter geobubble

Colormaps

Set colormap

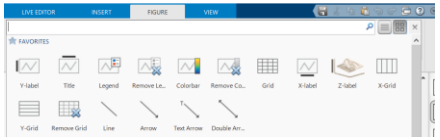
```
>>> colormap(colormapName)
```





GUI Operations

Operation via Live Editor Toolstrip



Operation via Property Inspector

Combining Plots

Overlay plots

```
>>> plot(x1,y1)
>>> hold on
>>> plot(x2,y2)
```

Overlay charts

```
>>> plot(x1,y1)
>>> ax2 = axis(0.7,0.7,0.2,0.2)
>>> plot(x2,y2,'Parent',ax2)
```

Tiled layout of charts (even)

```
>>> tiledlayout('flow')
>>> nexttile; plot(x1,y1)
>>> nexttile; plot(x2,y2)
```

Tiled layout of charts (varied)

```
>>> tiledlayout('flow')
>>> nexttile; plot(x1,y1)
>>> nexttile([2,1]); plot(x2,y2)
>>> nexttile; plot(x3,y3)
```

Chart with two y-axes

```
>>> plot(x,y1)
>>> yyaxis right
>>> plot(x,y2)
```

Types of 3D Plots

plot3 histogram2 pie3 bar3 bar3h
bubblechart3 stem3 scatter3 slice isosurface

MATLAB Plot Gallery: https://www.mathworks.com/products/matlab/plot-gallery.html