Introdução a programação computacional:
MATLAB e Python

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Encontro 5

MATLAB:
Plots: criar e exportar

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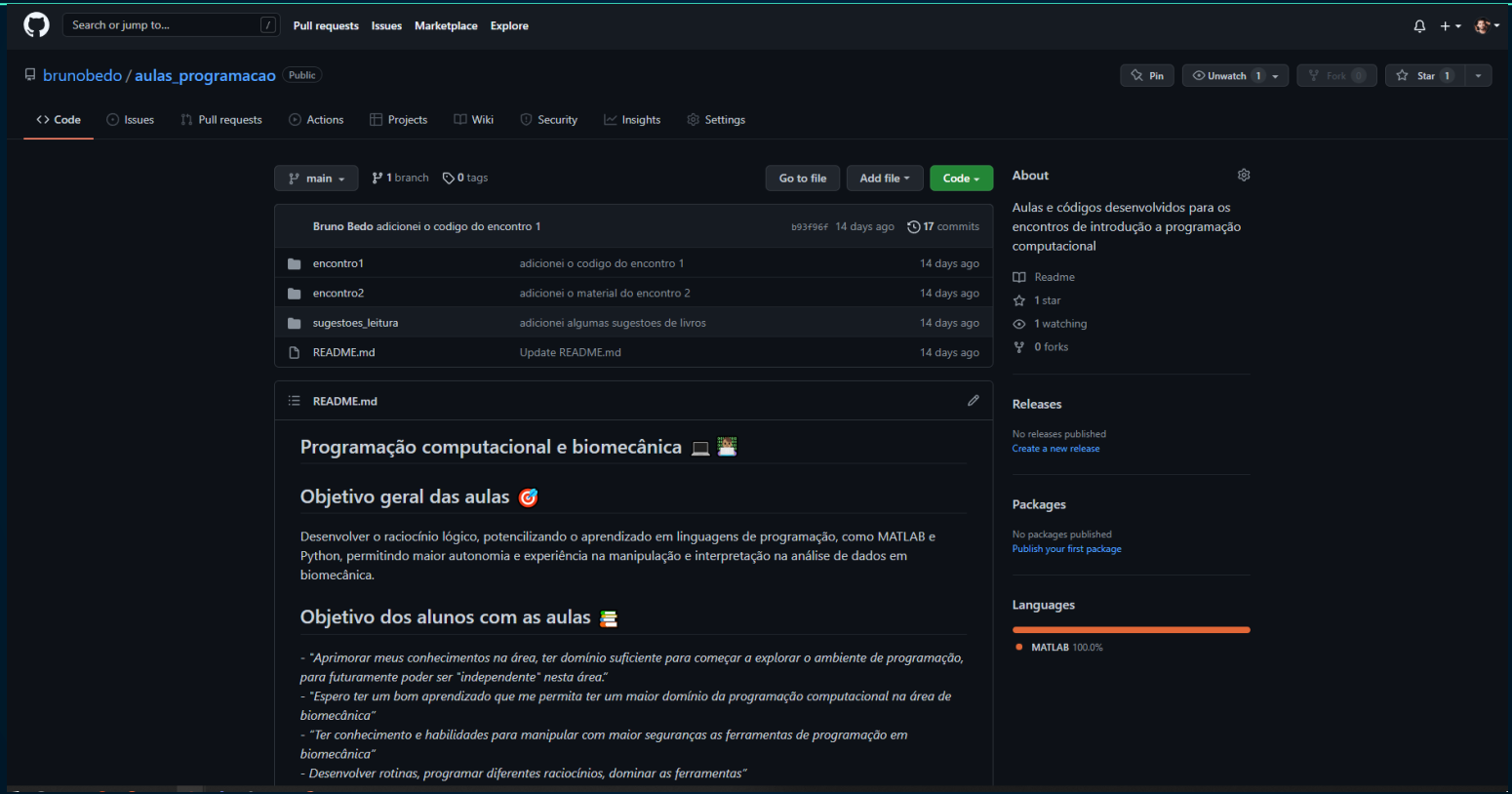
https://www.github.com/brunobedo/aulas_programacao

GITHUB

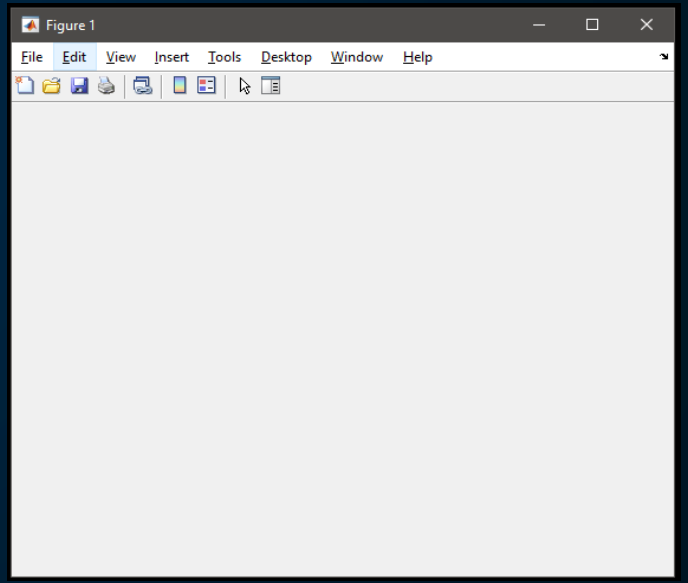


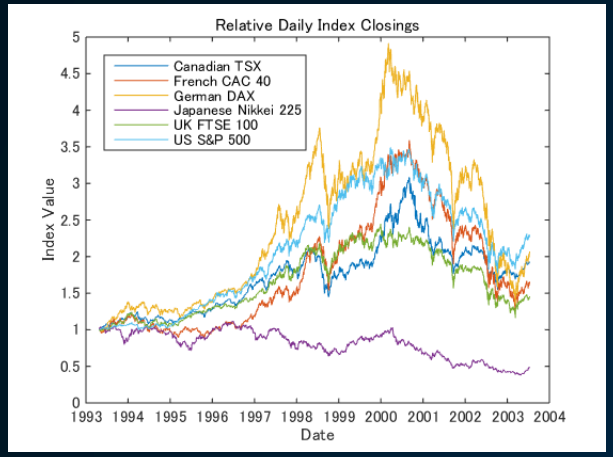
OBJETIVO DA AULA

- Diferenças entre uma figura e um plot
- Criando várias figuras e plots
- Interpretação de um plot (2D)
- Plots e subplots | Plots Dinâmicos
- Exportando gráficos

Figure

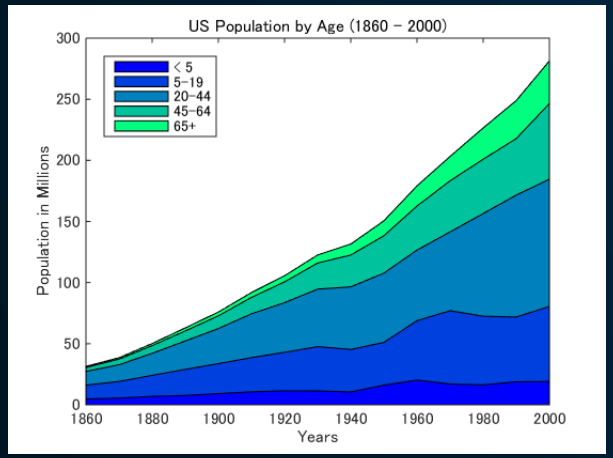
Figure objects are the individual windows on the screen in which MATLAB displays graphical output

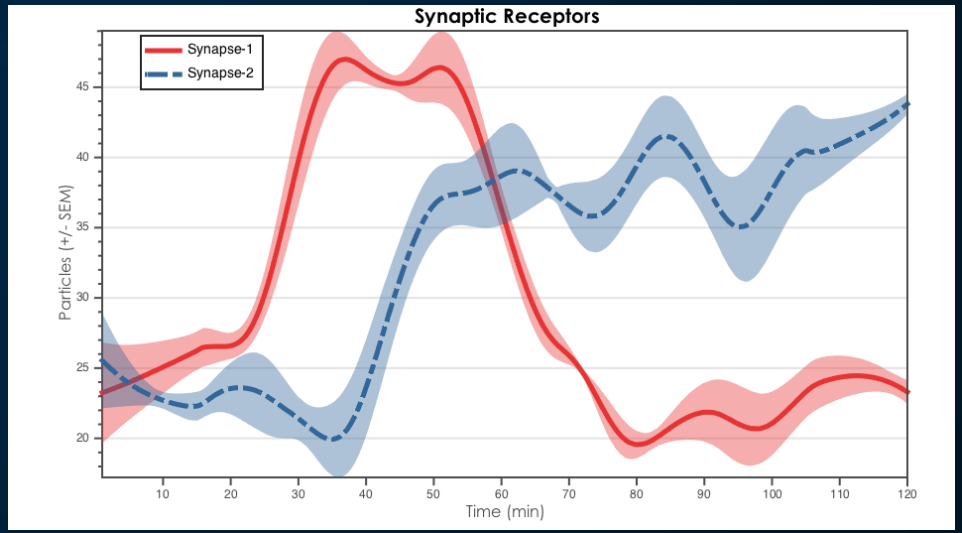




plot(X , Y) creates a 2-D line plot of the data in Y versus the corresponding values in X . To plot a set of coordinates connected by line segments, specify X and Y as vectors of the same length.

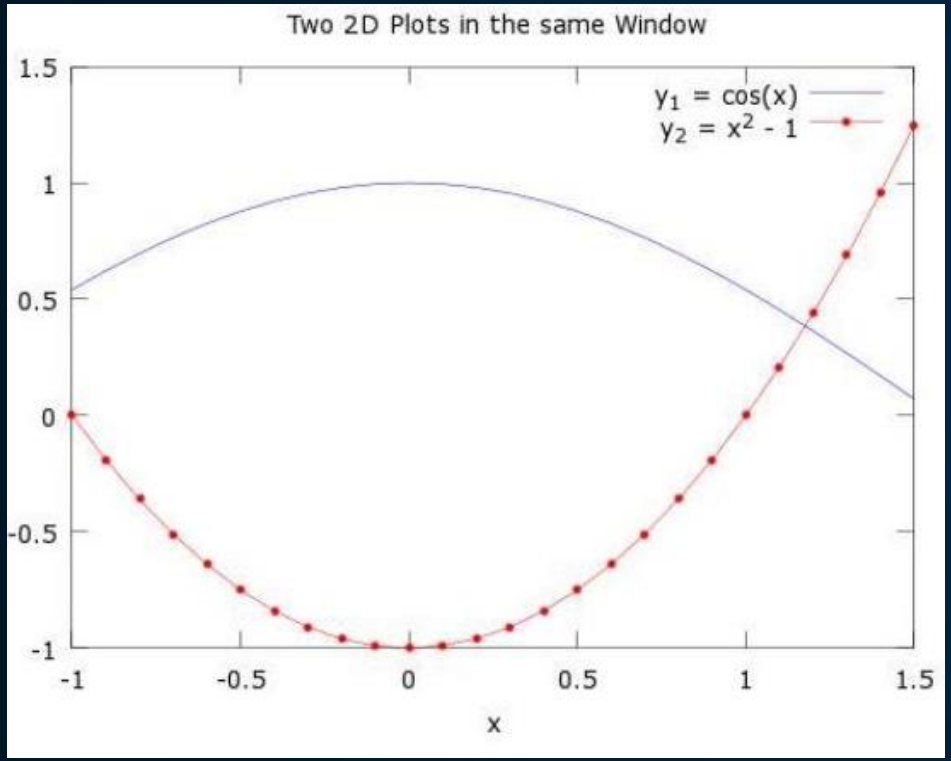
Plot



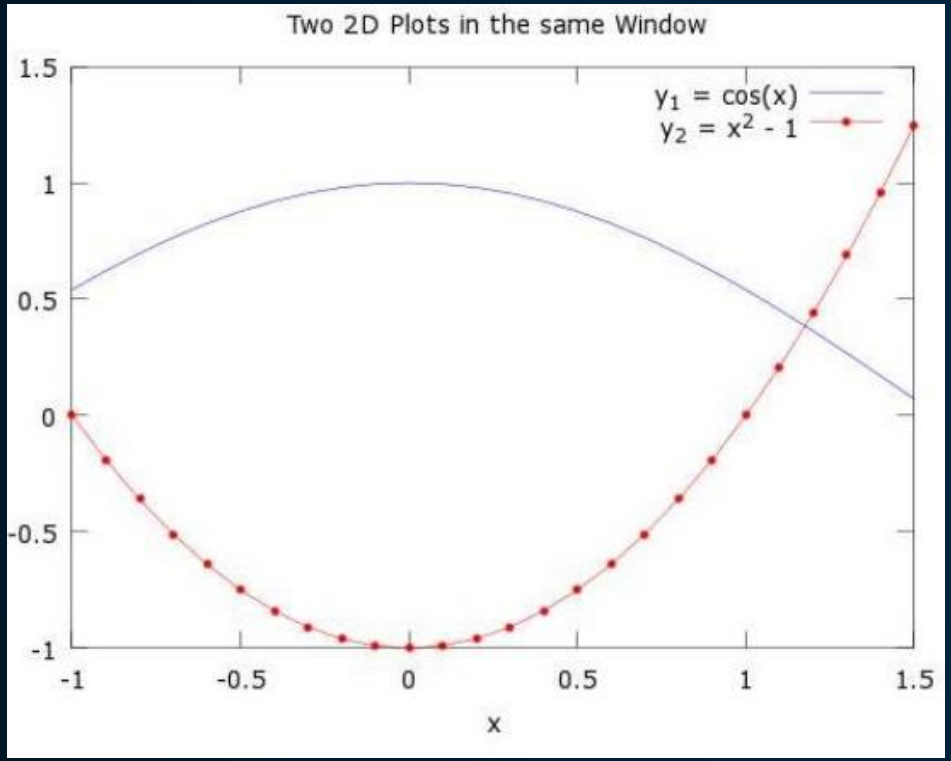


https://www.mathworks.com/help/matlab/creating_plots/types-of-matlab-plots.html

Plot elements



Plot elements




```
x = -1 : 0.1 : 1.5;
y1 = cos(x);
y2 =  x.^2 - 1;
plot(x, y1, 'b', x, y2, 'r.-')
title('Two 2D Plots in the same Window')
legend('y_1 = cos(x)', 'y_2 = x^2 - 1')
xlabel('x')
ylabel('y')
```

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Types of plots

Types of MATLAB Plots

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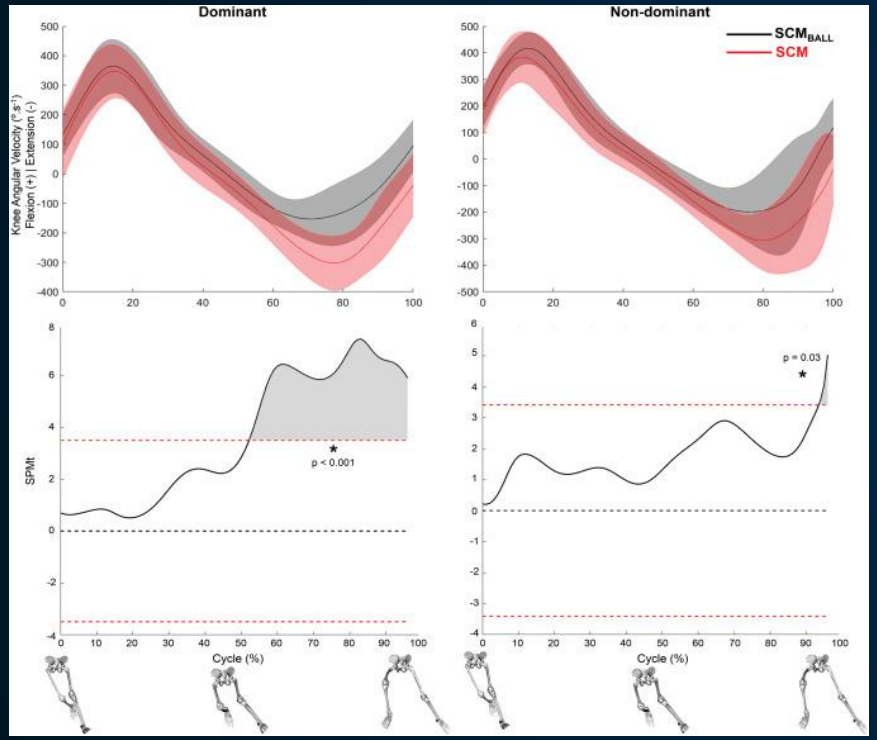
There are various functions that you can use to plot data in MATLAB®. This table classifies and illustrates the common graphics functions.

Line Plots	Scatter and Bubble Charts	Data Distribution Plots	Discrete Data Plots	Geographic Plots	Polar Plots	Contour Plots	Vector Fields	Surface and Mesh Plots	Volume Visualization	Animation	Images
plot	scatter	histogram	bar	geoplot	polarplot	contour	quiver	surf	streamline	animatedline	image
plot3	scatter3	histogram2	barh	geoscatter	polarhistogram	contourf	quiver3	surfc	streamslice	comet	imagesc
stairs	bubblechart	pie	bar3	geobubble	polarscatter	contour3	feather	surfl	streamparticles	comet3	
errorbar	bubblechart3	pie3	bar3h		polarbubblechart	contourslice		ribbon	streamribbon		
area	swarmchart	scatterhistogram	pareto		compass	fcontour		pcolor	streamtube		
stackedplot	swarmchart3	swarmchart	stem		ezpolar			fsurf	coneplot		
loglog	spy	swarmchart3	stem3					fimplicit3	slice		
semilogx		wordcloud	stairs					mesh			
semilogy		bubblecloud						meshc			
fplot		heatmap						meshz			

Subplots



subplot(m , n , p) **divides the current figure into an m -by- n grid and creates axes in the position specified by p** . MATLAB® numbers subplot positions by row. The first subplot is the first column of the first row, the second subplot is the second column of the first row, and so on.

Exporting figures

```
h=plot(x,y)
saveas(h,'FileName.jpg')
```

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```
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saveas(h,'FileName.jpg')
```
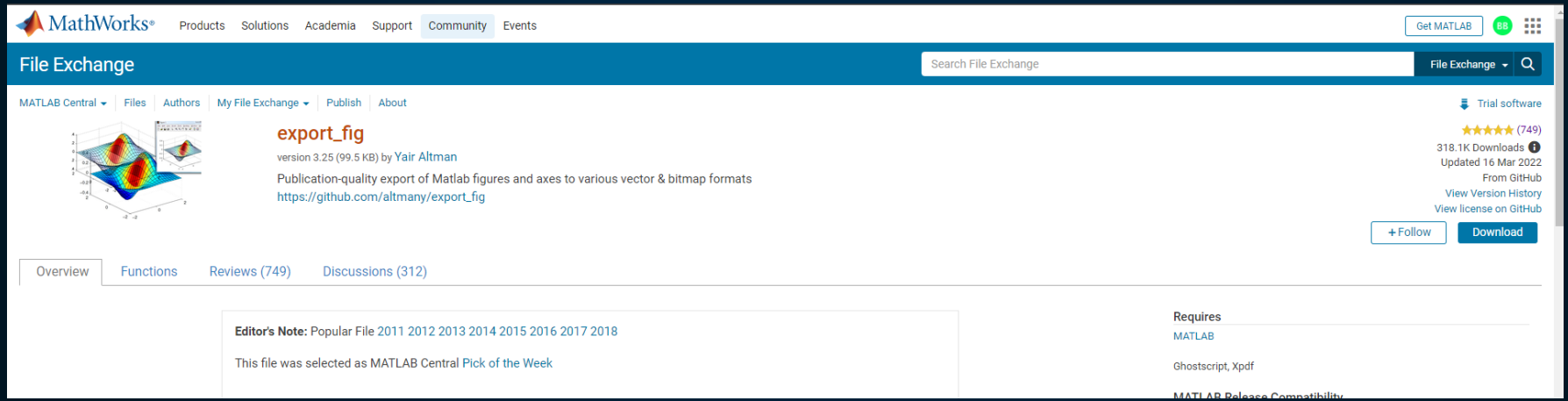
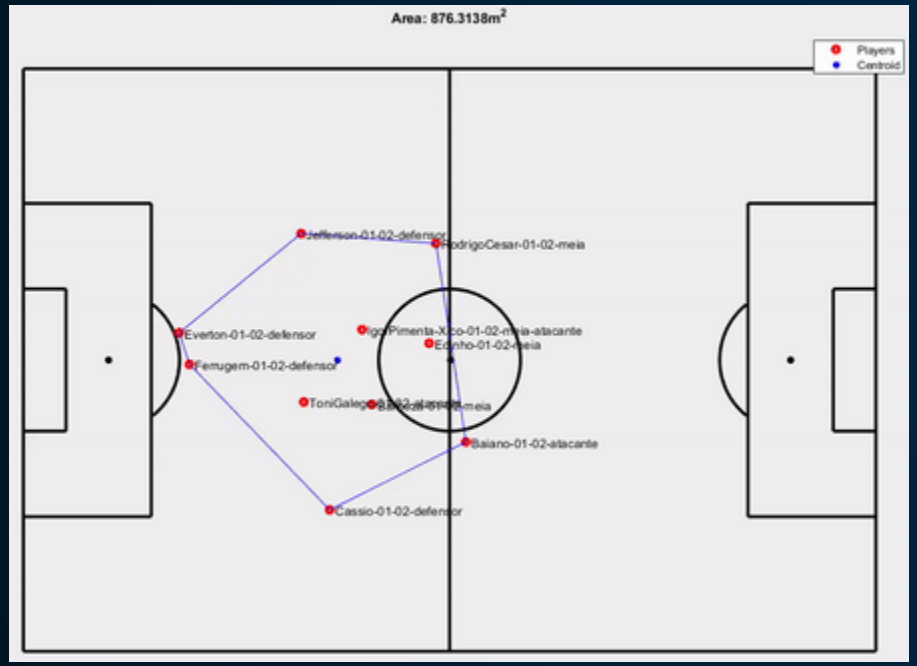
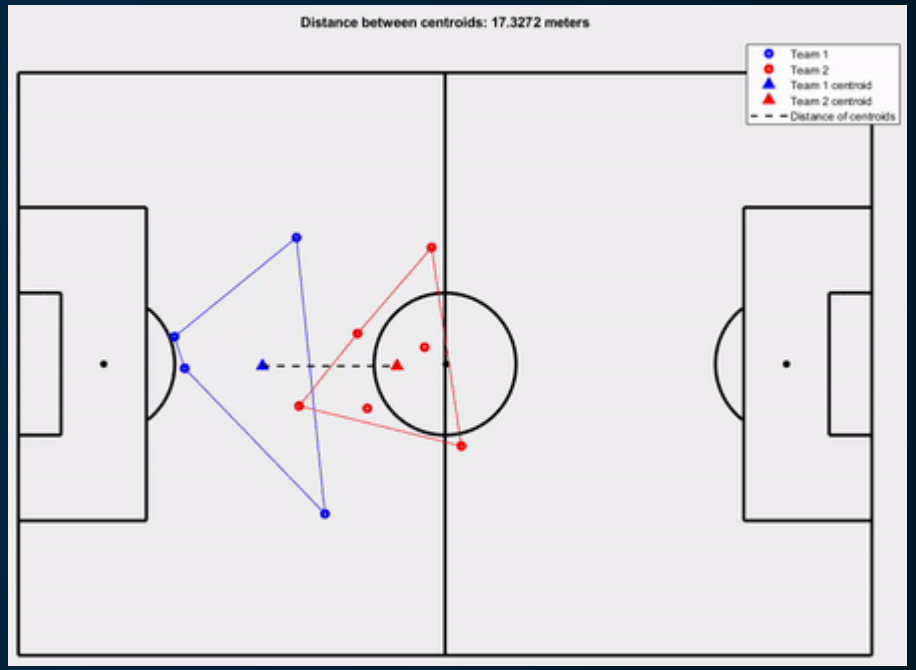
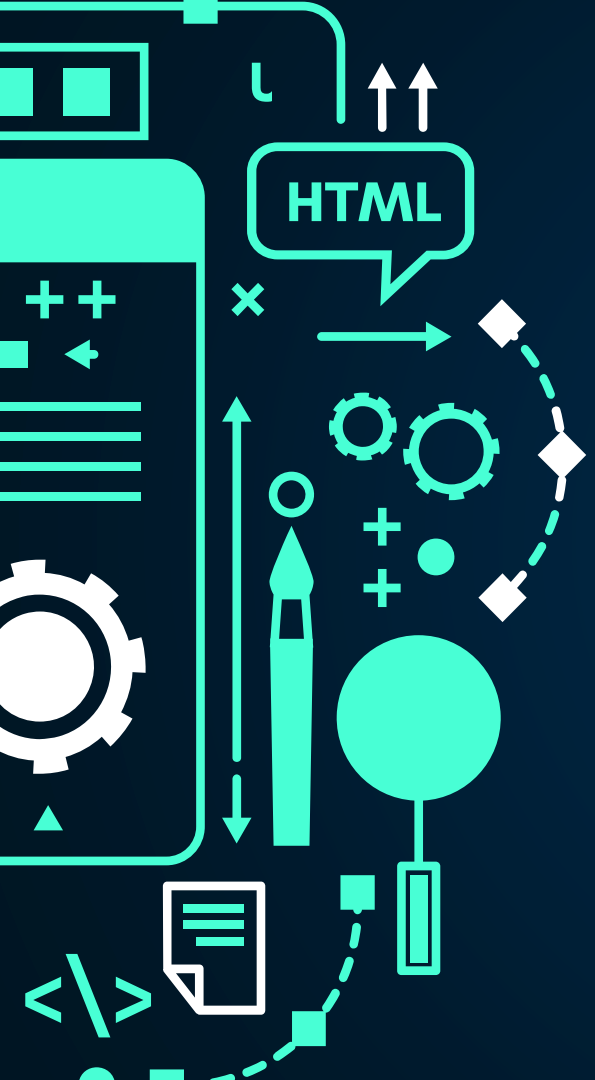



Dynamic plots (moving)







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Does anyone have any question?

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