



# Introdução a programação computacional: MATLAB e Python





Bruno L S Bedo






Encontro 5

MATLAB:  
Plots: criar e exportar






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

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encontro1	adicionou o código do encontro 1	14 days ago
encontro2	adicionou o material do encontro 2	14 days ago
sugestoes_leitura	adicionou algumas sugestoes de livros	14 days ago
README.md	Update README.md	14 days ago

 **README.md** 

## Programação computacional e biomecânica

### Objetivo geral das aulas


Desenvolver o raciocínio lógico, potencializando o aprendizado em linguagens de programação, como MATLAB e Python, permitindo maior autonomia e experiência na manipulação e interpretação na análise de dados em biomecânica.


### Objetivo dos alunos com as aulas


- "Aprimorar meus conhecimentos na área, ter domínio suficiente para começar a explorar o ambiente de programação, para futuramente poder ser "independente" nesta área."
- "Espero ter um bom aprendizado que me permita ter um maior domínio da programação computacional na área de biomecânica"
- "Ter conhecimento e habilidades para manipular com maior segurança as ferramentas de programação em biomecânica"
- Desenvolver rotinas, programar diferentes raciocínios, dominar as ferramentas"


## About

Aulas e códigos desenvolvidos para os encontros de introdução a programação computacional

 Readme

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## Releases

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## Languages

MATLAB 100.0%

# 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



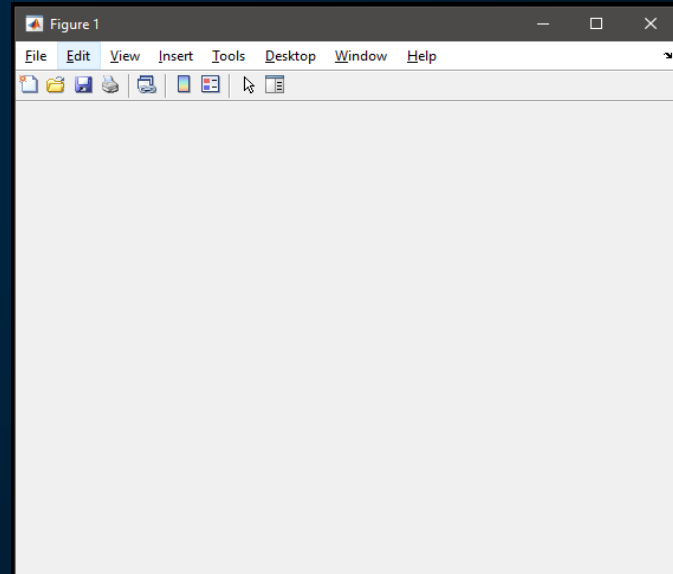
Exportando gráficos

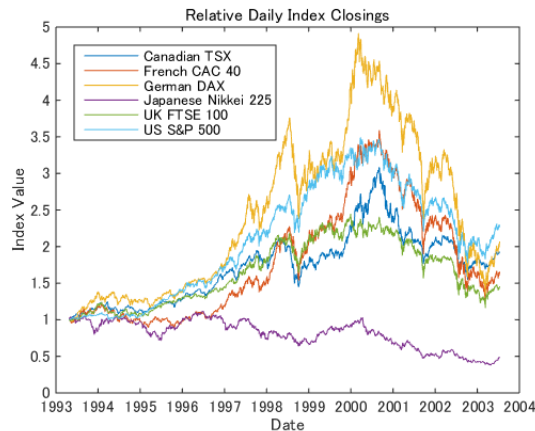




Figure objects are the individual windows on the screen in which MATLAB displays graphical output

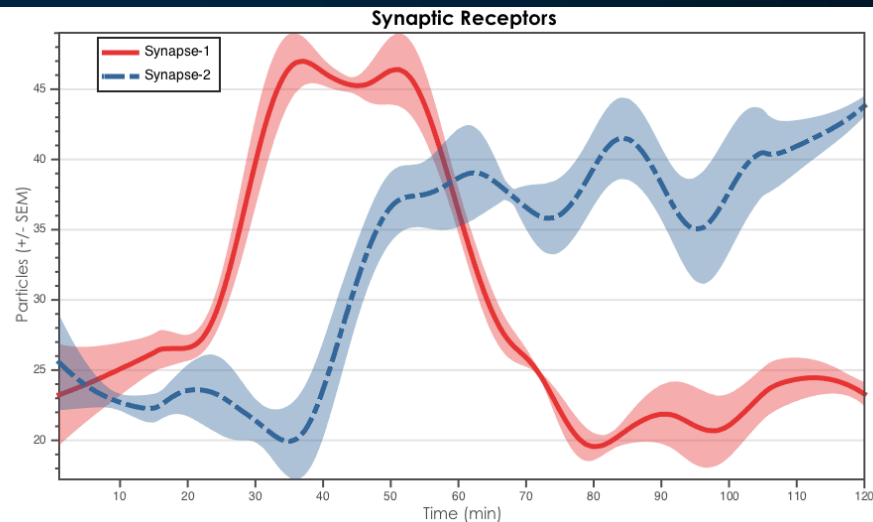
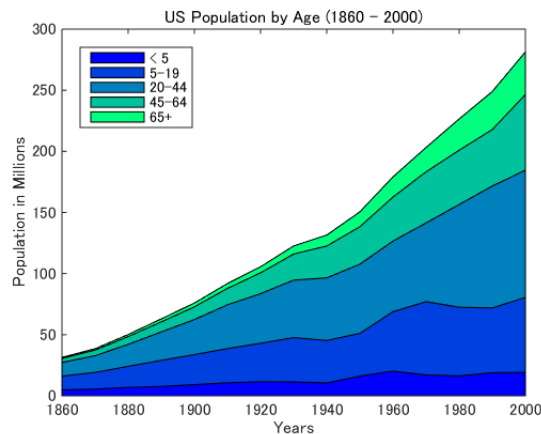
# Figure



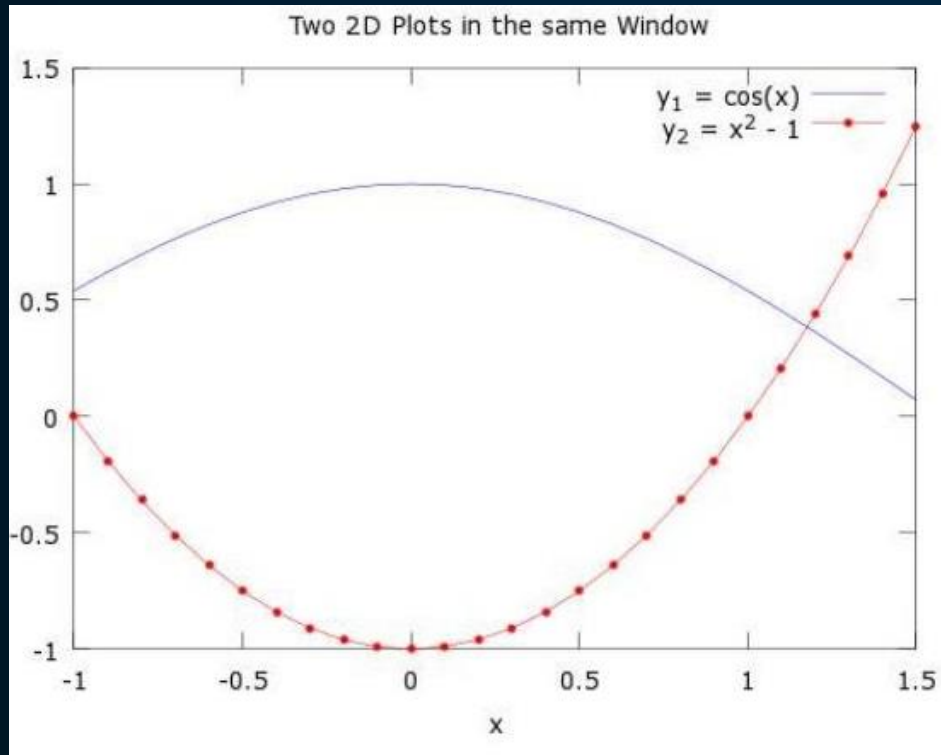


plot( X , Y ) creates a 2-D line plot of the data in Y versus the corresponding values in X . To plot a set of coordinates connected by line segments, specify X and Y as vectors of the same length.

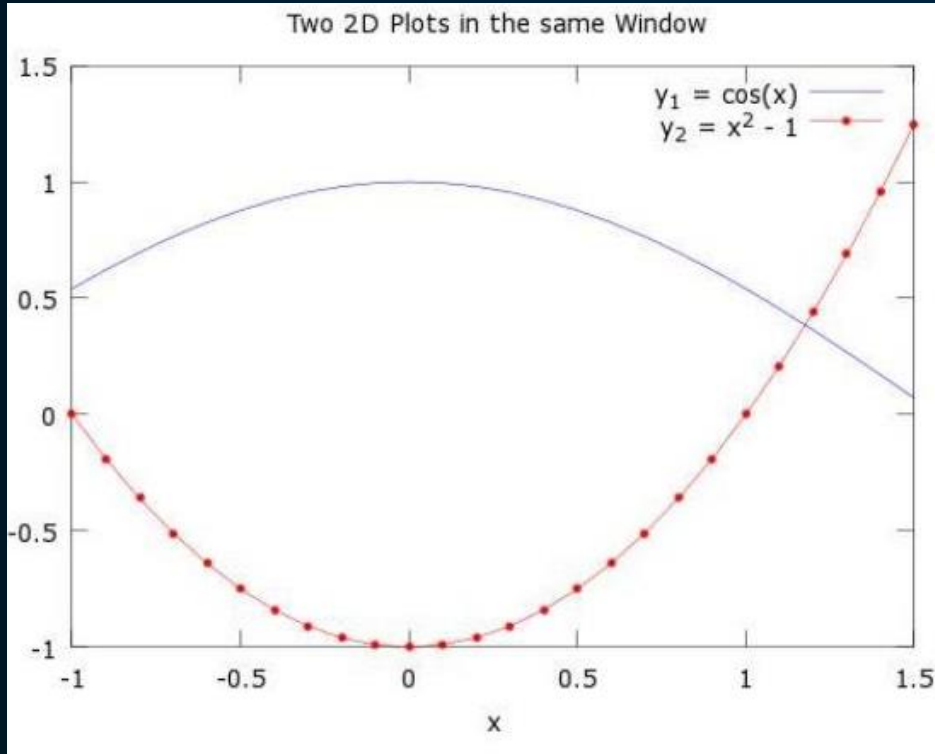
# Plot



# 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')
```

# Types of plots

## Types of MATLAB Plots

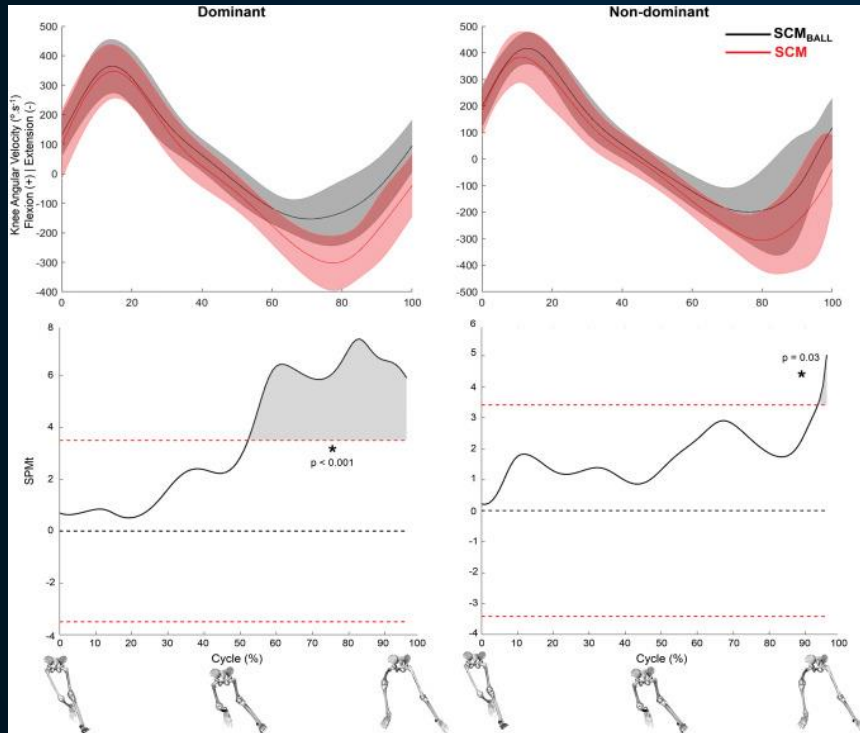
R2022a

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
<code>plot</code> 	<code>scatter</code> 	<code>histogram</code> 	<code>bar</code> 	<code>geoplot</code> 	<code>polarplot</code> 	<code>contour</code> 	<code>quiver</code> 	<code>surf</code> 	<code>streamline</code> 	<code>animatedline</code> 	<code>image</code> 
<code>plot3</code> 	<code>scatter3</code> 	<code>histogram2</code> 	<code>barh</code> 	<code>geoscatter</code> 	<code>polarhistogram</code> 	<code>contourf</code> 	<code>quiver3</code> 	<code>surfc</code> 	<code>streamslice</code> 	<code>comet</code> 	<code>imagesc</code> 
<code>stairs</code> 	<code>bubblechart</code> 	<code>pie</code> 	<code>bar3</code> 	<code>geobubble</code> 	<code>polarscatter</code> 	<code>contour3</code> 	<code>feather</code> 	<code>surf1</code> 	<code>streamparticles</code> 	<code>comet3</code> 	
<code>errorbar</code> 	<code>bubblechart3</code> 	<code>pie3</code> 	<code>bar3h</code> 		<code>polarbubblechart</code> 	<code>contourslice</code> 		<code>ribbon</code> 	<code>streamribbon</code> 		
<code>area</code> 	<code>swarmchart</code> 	<code>scatterhistogram</code> 	<code>pareto</code> 		<code>compass</code> 	<code>fcontour</code> 		<code>pcolor</code> 	<code>streamtube</code> 		
<code>stackedplot</code> 	<code>swarmchart3</code> 	<code>swarmchart</code> 	<code>stem</code> 		<code>ezpolar</code> 			<code>fsurf</code> 	<code>coneplot</code> 		
<code>loglog</code> 	<code>spy</code> 	<code>swarmchart3</code> 	<code>stem3</code> 					<code>fimplicit3</code> 	<code>slice</code> 		
<code>semilogx</code> 		<code>wordcloud</code> 	<code>stairs</code> 					<code>mesh</code> 			
<code>semilogy</code> 		<code>bubblecloud</code> 						<code>meshc</code> 			
<code>fplot</code> 		<code>heatmap</code> 						<code>meshz</code> 			



# 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')
```

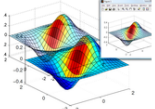
# Exporting figures

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

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### export\_fig

version 3.25 (99.5 KB) by [Yair Altman](#)

Publication-quality export of Matlab figures and axes to various vector & bitmap formats  
[https://github.com/altmany/export\\_fig](https://github.com/altmany/export_fig)

Overview

Functions

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**Requires**


MATLAB

Ghostscript, Xpdf

MATLAB Release Compatibility

 Trial software

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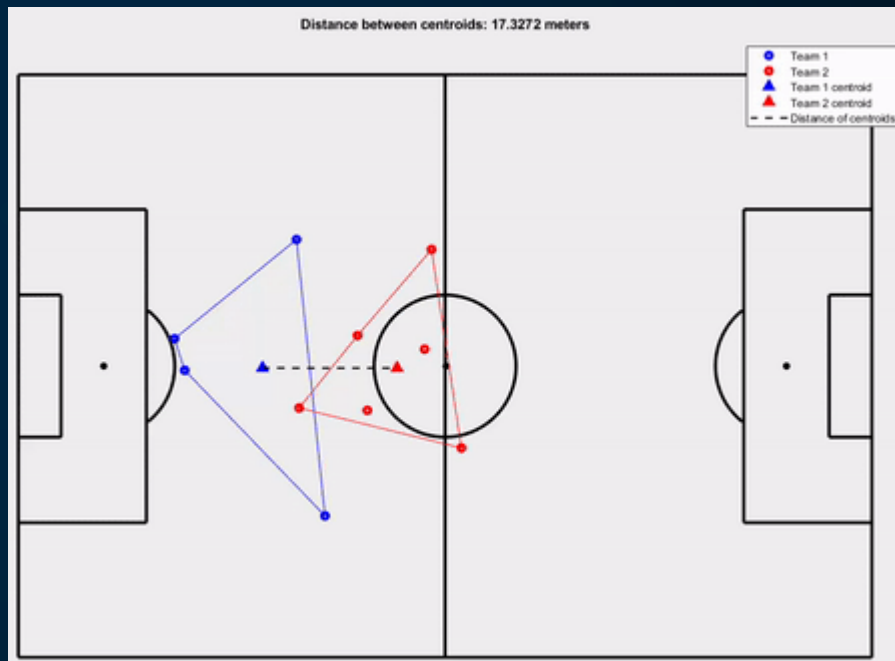
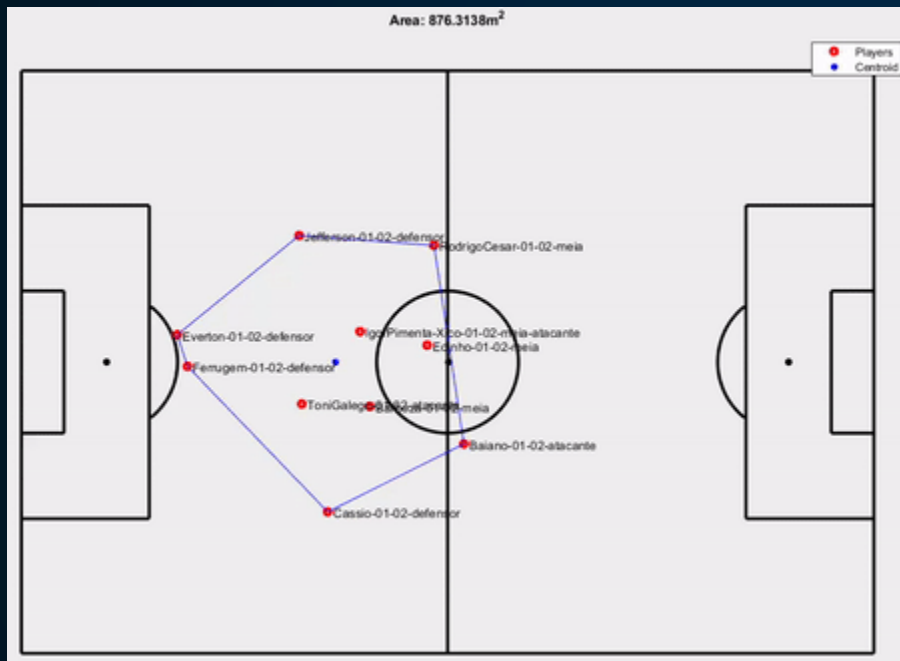
From GitHub

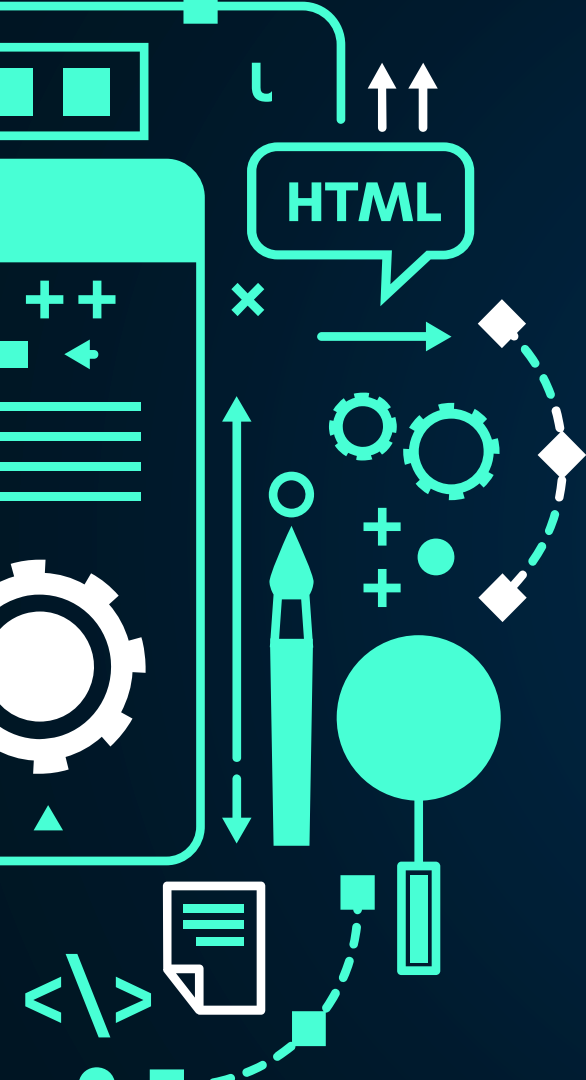
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# Dynamic plots (moving)





# OBRIGADO

Does anyone have any question?

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