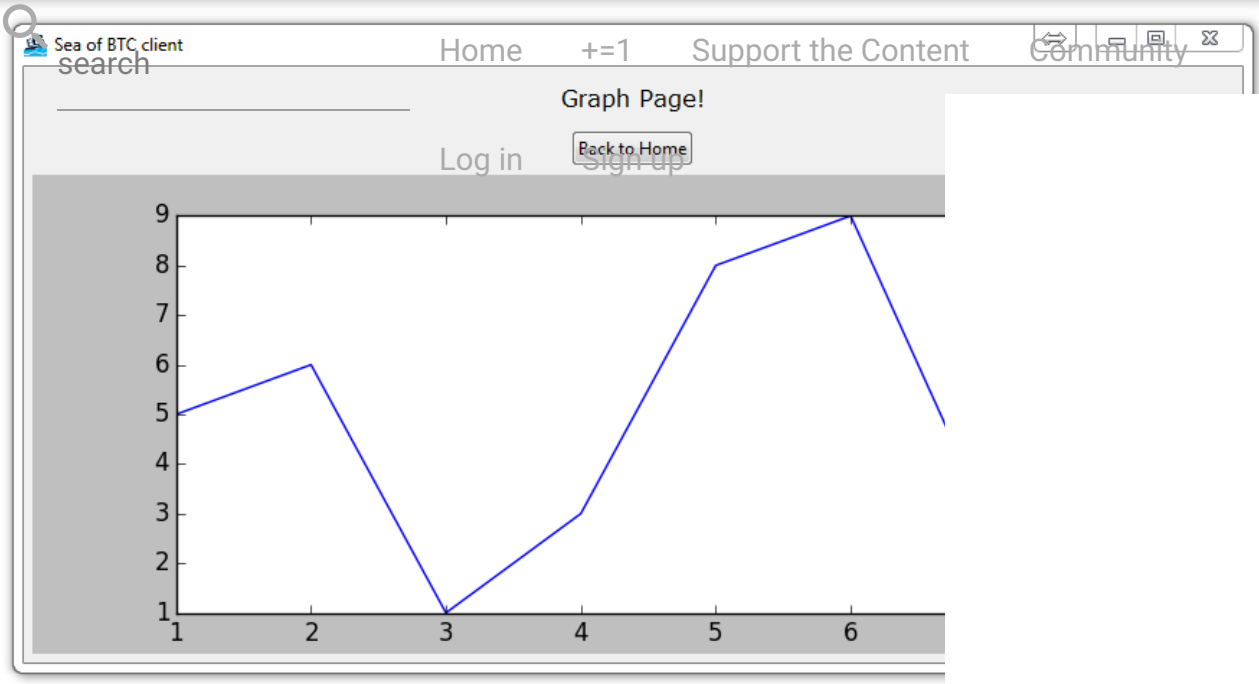
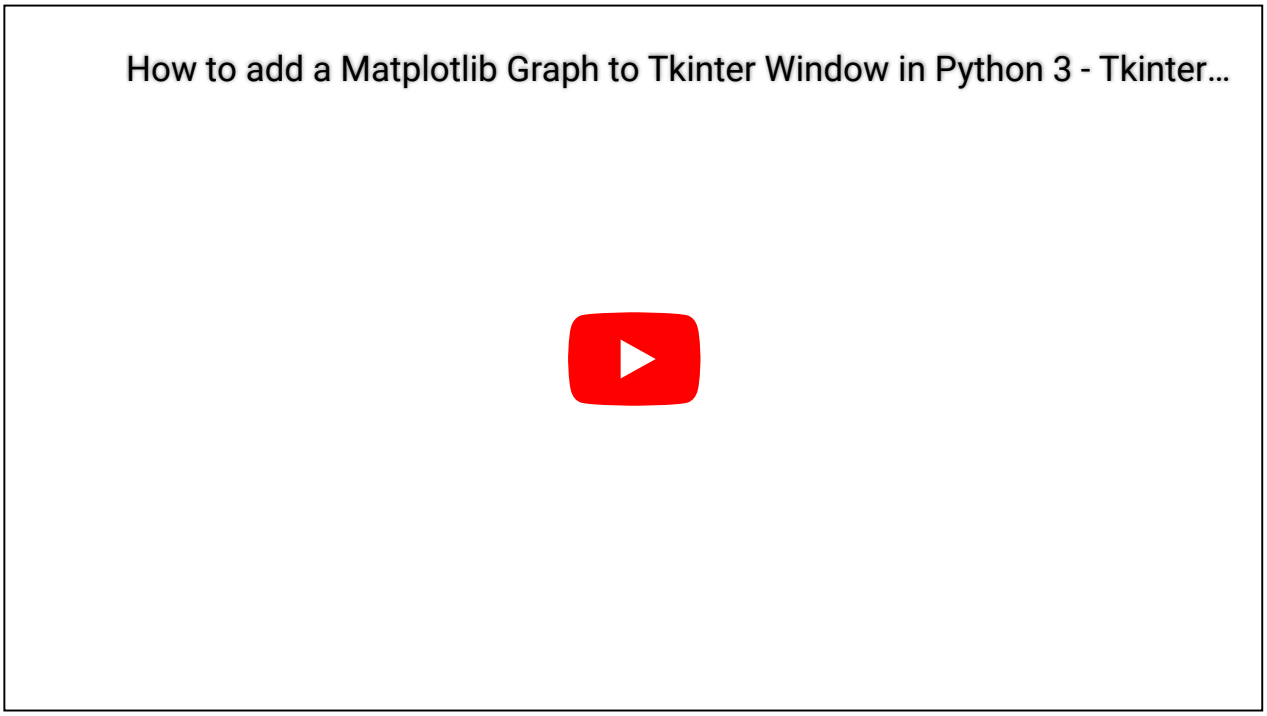


How to embed a Matplotlib graph to your Tkinter GUI



Since we are creating a bitcoin trading application, it only makes sense that we're going to have to incorporate some price data. Not only do we want to just plot the prices, but many people will want to see prices in the form of OHLC candlesticks, and then others will also want to see various indicators like EMA/SMA crossovers and things like RSI or MACD.

To do this, we first need to know how to actually embed a Matplotlib graph into a Tkinter application. Here's how!

First, we're going to be using Matplotlib, so, if you do not have it, you will need to get it. There are many ways to get Matplotlib, head over to Matplotlib.org to download.

You can also use pip to install using: `pip install matplotlib` in cmd.exe / bash.

If you need help with pip, check out the Pip Tutorial.

Now we're going to need to add the following imports to our Tkinter application:

```
import matplotlib
matplotlib.use("TkAgg")
from matplotlib.backends.backend_tkagg import FigureCanvasTkAgg, Navigation
from matplotlib.figure import Figure
```

The first just imports the Matplotlib module. Next, we specifiy the backend, "TkAgg" that we wish to use with Matplotlib. Normally, using the default is perfectly fine, but we need to change this for our uses here.

Next, we import the FigureCanvasTkAgg as well as the navigation bar that is used with Matplotlib.

Finally, we import Figure. We will just be temporarily using this Figure, but that's okay.

Now let's go ahead and add a new page. This will be our "graph" page.

```
class PageThree(tk.Frame):

    def __init__(self, parent, controller):
        tk.Frame.__init__(self, parent)
        label = tk.Label(self, text="Graph Page!", font=LARGE_FONT)
        label.pack(pady=10,padx=10)

        button1 = ttk.Button(self, text="Back to Home",
                             command=lambda: controller.show_frame(StartPage
        button1.pack()
```

```
        f = Figure(figsize=(5,5), dpi=100)
        a = f.add_subplot(111)
        a.plot([1,2,3,4,5,6,7,8],[5,6,1,3,8,9,3,5])



        canvas = FigureCanvasTkAgg(f, self)
        canvas.show()
        canvas.get_tk_widget().pack(side=tk.BOTTOM, fill=tk.BOTH, expand=Tr

        toolbar = NavigationToolbar2TkAgg(canvas, self)
        toolbar.update()
        canvas._tkcanvas.pack(side=tk.TOP, fill=tk.BOTH, expand=True)
```

Here's where our embedding code begins.

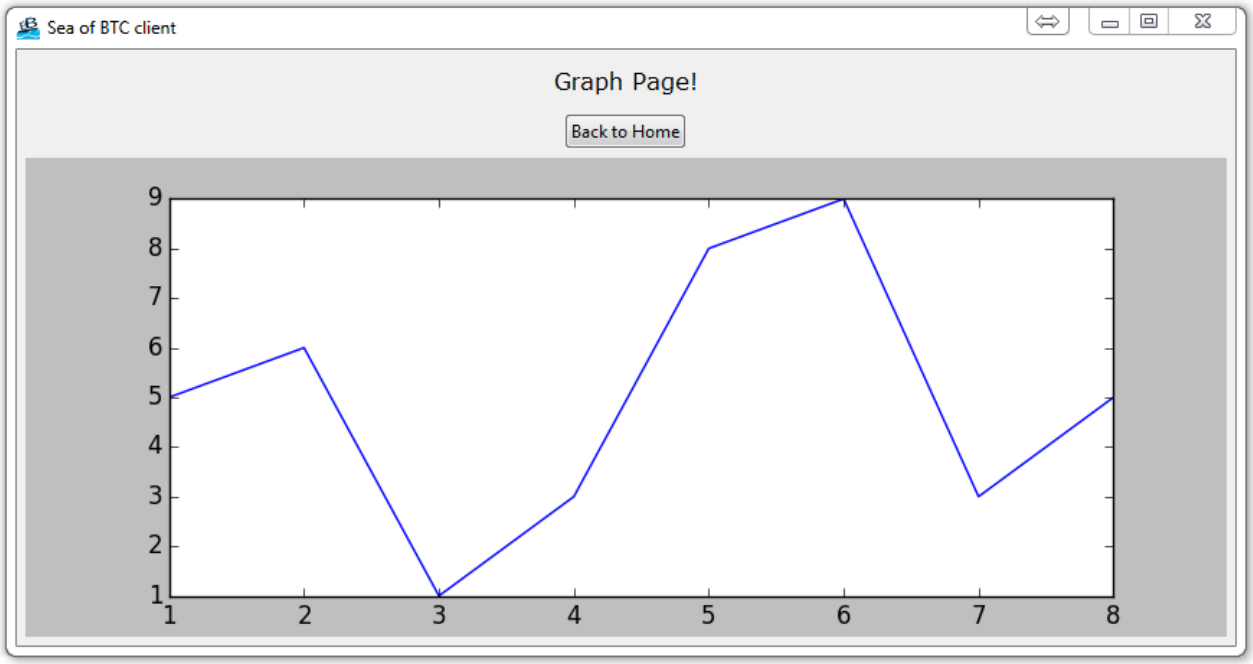
First we are defining our figure, then adding a subplot. From there, we plot as usual some x coordinates and some y.

Next, we add the canvas, which is what we intend to render the graph to.

Finally, we add the toolbar, which is the traditional matplotlib tool bar.

From there, we then pack all of this to our tkinter window.

That's all there is to it, really! Your result should be a window and if you click page 3:



```
# License: http://creativecommons.org/licenses/by-sa/3.0/

import matplotlib
matplotlib.use("TkAgg")
from matplotlib.backends.backend_tkagg import FigureCanvasTkAgg, Navigation
from matplotlib.figure import Figure

import tkinter as tk
from tkinter import ttk


LARGE_FONT= ("Verdana", 12)


class SeaofBTCapp(tk.Tk):

    def __init__(self, *args, **kwargs):

        tk.Tk.__init__(self, *args, **kwargs)

        tk.Tk.iconbitmap(self, default="clienticon.ico")
        tk.Tk.wm_title(self, "Sea of BTC client")


        container = tk.Frame(self)
        container.pack(side="top", fill="both", expand = True)
        container.grid_rowconfigure(0, weight=1)
        container.grid_columnconfigure(0, weight=1)

        self.frames = {}

        for F in (StartPage, PageOne, PageTwo, PageThree):

            frame = F(container, self)

            self.frames[F] = frame

            frame.grid(row=0, column=0, sticky="nsew")

        self.show_frame(StartPage)

    def show_frame(self, cont):
```

```
        frame.tkraise()

class StartPage(tk.Frame):

    def __init__(self, parent, controller):
        tk.Frame.__init__(self,parent)
        label = tk.Label(self, text="Start Page", font=LARGE_FONT)
        label.pack(pady=10,padx=10)

        button = ttk.Button(self, text="Visit Page 1",
                            command=lambda: controller.show_frame(PageOne))
        button.pack()

        button2 = ttk.Button(self, text="Visit Page 2",
                            command=lambda: controller.show_frame(PageTwo))
        button2.pack()

        button3 = ttk.Button(self, text="Graph Page",
                            command=lambda: controller.show_frame(PageThree
        button3.pack()


class PageOne(tk.Frame):

    def __init__(self, parent, controller):
        tk.Frame.__init__(self, parent)
        label = tk.Label(self, text="Page One!!!", font=LARGE_FONT)
        label.pack(pady=10,padx=10)

        button1 = ttk.Button(self, text="Back to Home",
                            command=lambda: controller.show_frame(StartPage
        button1.pack()

        button2 = ttk.Button(self, text="Page Two",
                            command=lambda: controller.show_frame(PageTwo))
        button2.pack()


class PageTwo(tk.Frame):

    def __init__(self, parent, controller):
```

```
        label.pack(pady=10,padx=10)

        button1 = ttk.Button(self, text="Back to Home",
                             command=lambda: controller.show_frame(StartPage
        button1.pack()

        button2 = ttk.Button(self, text="Page One",
                             command=lambda: controller.show_frame(PageOne))
        button2.pack()


class PageThree(tk.Frame):

    def __init__(self, parent, controller):
        tk.Frame.__init__(self, parent)
        label = tk.Label(self, text="Graph Page!", font=LARGE_FONT)
        label.pack(pady=10,padx=10)

        button1 = ttk.Button(self, text="Back to Home",
                             command=lambda: controller.show_frame(StartPage
        button1.pack()

        f = Figure(figsize=(5,5), dpi=100)
        a = f.add_subplot(111)
        a.plot([1,2,3,4,5,6,7,8],[5,6,1,3,8,9,3,5])



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        canvas.show()
        canvas.get_tk_widget().pack(side=tk.BOTTOM, fill=tk.BOTH, expand=Tr

        toolbar = NavigationToolbar2TkAgg(canvas, self)
        toolbar.update()
        canvas._tkcanvas.pack(side=tk.TOP, fill=tk.BOTH, expand=True)



app = SeaofBTCapp()
app.mainloop()
```
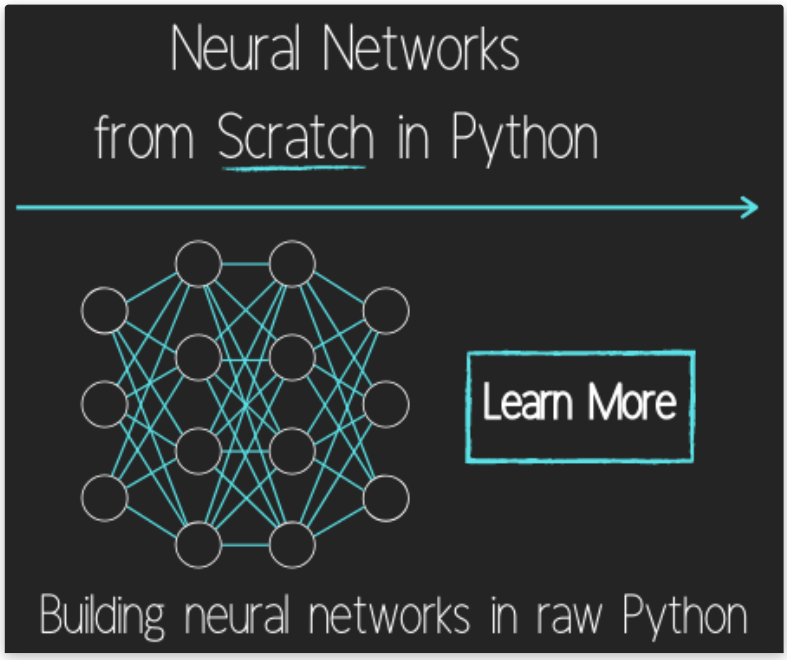

The next tutorial: How To Make The Matplotlib Graph Live In Your Application



Programming GUIs and windows with Tkinter and Python Introduction

Object Oriented Programming Crash Course with Tkinter

Passing functions with Parameters in Tkinter using Lambda

How to change and show a new window in Tkinter

Styling your GUI a bit using TTK

How to make the Matplotlib graph live in your application

Organizing our GUI

Plotting Live Updating Data in Matplotlib and our Tkinter GUI

Customizing an embedded Matplotlib Graph in Tkinter

Creating our Main Menu in Tkinter

Building a pop-up message window

Exchange Choice Option

Time-frame and sample size option

Adding indicator Menus (3 videos)

Trading option, start/stop, and help menu options

Tutorial on adding a tutorial

Allowing the exchange choice option to affect actual shown exchange

Adding exchange choice cont'd

Adding exchange choices part 3

Indicator Support

Pulling data from the Sea of BTC API

Setting up sub plots within our Tkinter GUI

Graphing an OHLC candlestick graph embedded in our Tkinter GUI

Acquiring RSI data from Sea of BTC API

Acquiring MACD data from Sea of BTC API

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