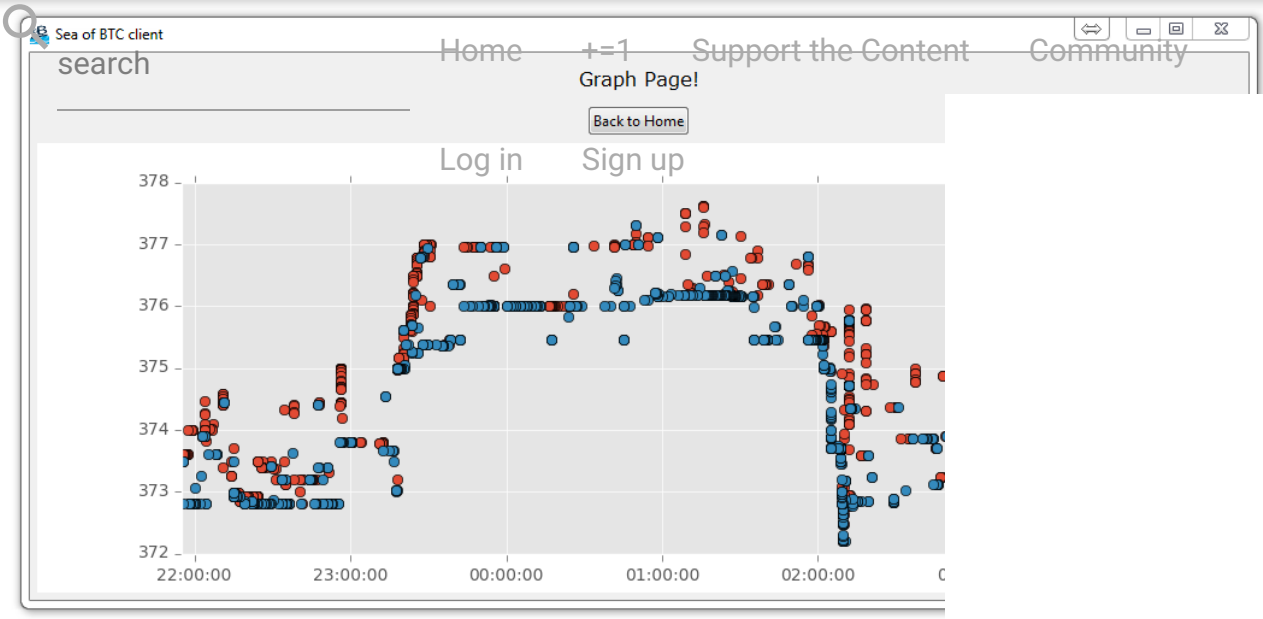
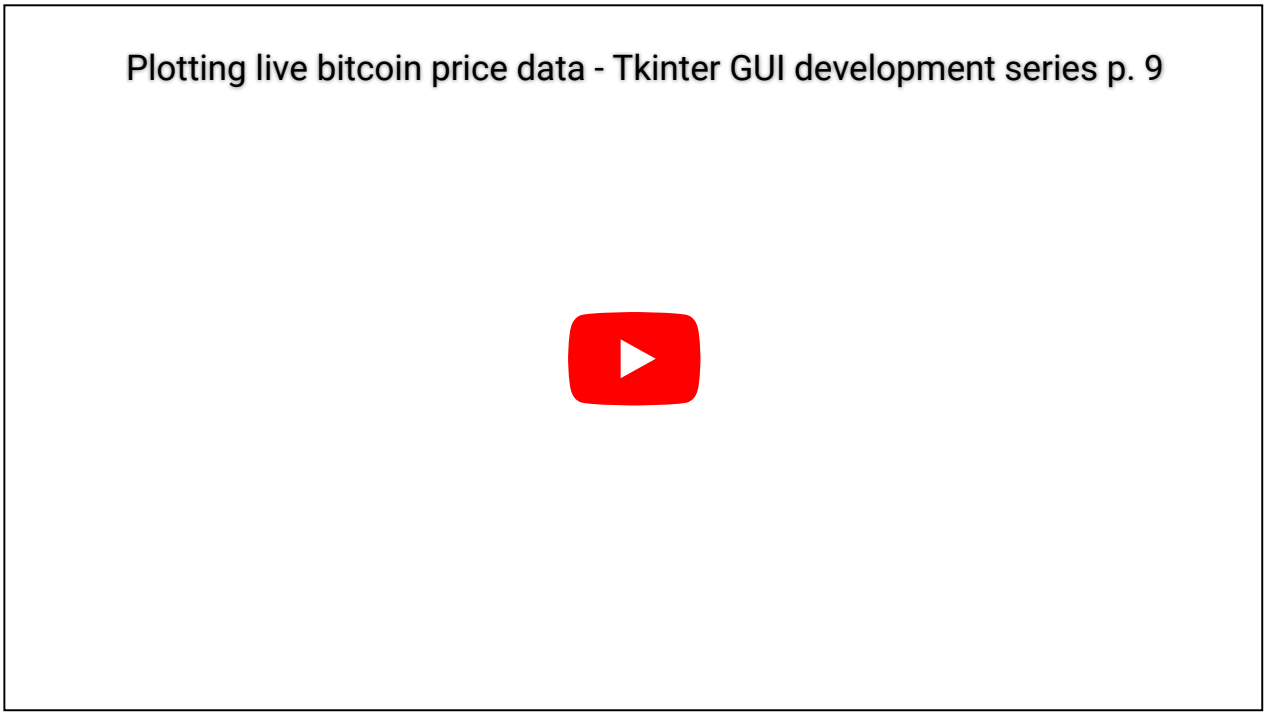


Plotting Live Updati Data in Matplotlib and our Tkinter GUI



```
def animate(i):
    dataLink = 'https://btc-e.com/api/3/trades/btc_usd?limit=2000'
    data = urllib.request.urlopen(dataLink)
    data = data.readall().decode("utf-8")
    data = json.loads(data)


    data = data["btc_usd"]
    data = pd.DataFrame(data)

    buys = data[(data['type']=="bid")]
    buys["datestamp"] = np.array(buys["timestamp"]).astype("datetime64[s]")
    buyDates = (buys["datestamp"]).tolist()


    sells = data[(data['type']=="ask")]
    sells["datestamp"] = np.array(sells["timestamp"]).astype("datetime64[s]
    sellDates = (sells["datestamp"]).tolist()

    a.clear()

    a.plot_date(buyDates, buys["price"])
    a.plot_date(sellDates, sells["price"])
```


Above, we're pulling the data from the BTC-e public API, then using the json module to actually process the data. From there, we're dividing the data into "bid" and "ask" data.

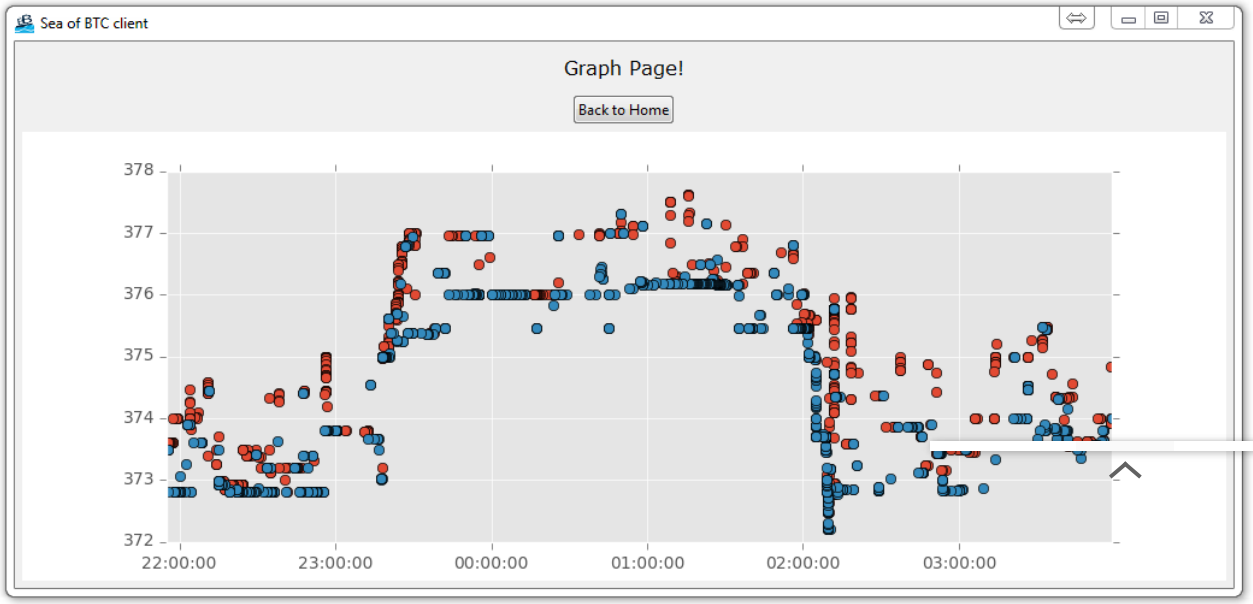
offers."

From here, we convert the date data to datetime64, and then we're ready to graph.

For more information on that, see the video.

That's it, though in the video we also chop out the starting button page, and we're now just instantly loading into the BTC-e page.

The finished product up to here when viewing the graph page should look like:



In case you're lost or confused, here's the full code:

```
# The code for changing pages was derived from: http://stackoverflow.com/qu
# 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 matplotlib.animation as animation
from matplotlib import style

import tkinter as tk
from tkinter import ttk

import urllib
import json

import pandas as pd
```

```
LARGE_FONT= ("Verdana", 12)
style.use("ggplot")

f = Figure(figsize=(10,6), dpi=100)
a = f.add_subplot(111)


def animate(i):
    dataLink = 'https://btc-e.com/api/3/trades/btc_usd?limit=2000'
    data = urllib.request.urlopen(dataLink)
    data = data.readall().decode("utf-8")
    data = json.loads(data)


    data = data["btc_usd"]
    data = pd.DataFrame(data)

    buys = data[(data['type']=="bid")]
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    sells["datestamp"] = np.array(sells["timestamp"]).astype("datetime64[s]
    sellDates = (sells["datestamp"]).tolist()

    a.clear()

    a.plot_date(buyDates, buys["price"])
    a.plot_date(sellDates, sells["price"])



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, BTCe_Page):

            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 = self.frames[cont]
        frame.tkraise()


class StartPage(tk.Frame):

    def __init__(self, parent, controller):
        tk.Frame.__init__(self,parent)
        label = tk.Label(self, text=("""ALPHA Bitcoin trading application
        use at your own risk. There is no promise
        of warranty."""), font=LARGE_FONT)
        label.pack(pady=10,padx=10)

        button1 = ttk.Button(self, text="Agree",
                             command=lambda: controller.show_frame(BTCe_Page
        button1.pack()

        button2 = ttk.Button(self, text="Disagree",
                             command=quit)
        button2.pack()
```

```
    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()




class BTCe_Page(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()


        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)


app = SeaofBTCapp()
ani = animation.FuncAnimation(f, animate, interval=1000)
app.mainloop()
```

The next tutorial: Customizing An Embedded Matplotlib Graph In Tkinter

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

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