

Help Guide

Installation:

You should have Python Dash on your computer.

In your terminal, install several dash libraries. Python 2 and 3 are supported.

```
pip install dash==0.42.0
pip install dash-daq==0.1.0
```

Click on the link below for a more detailed installation guide:

<https://dash.plot.ly/installation>

After making sure that you have Dash installed, you can download and open the project in any desired IDE (the download link is in appendix 2). We suggest PyCharm or Spyder. For more packages you need, please refer to file requirements.txt. Open the project and run the index.py file.

The app will be up and running on the following URL:

<http://127.0.0.1:8050/>

You might have to wait several seconds for the app to load. Close and open it again if it doesn't work in the first try.

Basics:

On the top left you will see the "Basics" tab. This is where you can add options to the portfolio. When you run the program, there is dropdown that you are asked to choose the ticker first. For example, TSLA , AAPL, BA, etc. Click " download data" button. If the data is successfully downloaded, for example 'TSLA', 'TSLA data downloaded' will be printed in your IDE.

Then, you should choose options from the menu with different expiration dates and strikes. We have defined our own syntax for performing filtering operations. Here are some examples for this particular dataset:

- 1) Enter eq "Call" in the "type" column
- 2) Enter > num(150) in the "strike" column
- 3) Enter < num(20) in the "bid" column

Use “Add New” or “Clear” buttons to add or delete options. When you click on “Clear”, you will still see the portfolio. You will need to add another option, and then you will see that the old option is cleared.

You will see the payoff graph, intrinsic value, and the pay off at Now in this page.

Greeks:

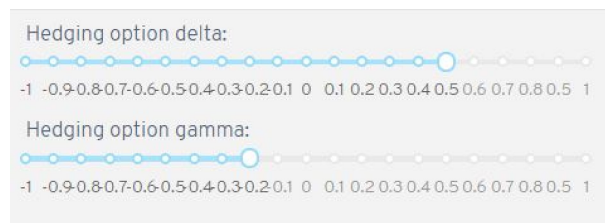
The second tab is the Greeks tab. Click on it and you will see different Greeks calculated for the portfolio. If you see a specific Greek is blank, it is because it is very close to zero.

Implied Volatility:

Implied volatility is the third tab. You need to select a ticker, input the interest rate and dividend rate, and select the features of the graph. You can find more detail about this module and what each icon does by looking at the “Plot implied vol surface vs T and vs K” part under the “Modules” in this paper.

Hedging strategy:

In this tab, you need to choose your hedging strategy first. If you chose Gamma hedging as well, then you will need to choose the properties of the used option. Move your cursor on the “Hedging option delta” and “Hedging option gamma” part to change the input.



Stress test:

In this tab, you will need to indicate whether the underlying price is going up or down, by how much, and with which method (linear, quadratic, etc.)

You also need to input the change in volatility. Decreases in the stock price increase the volatility and vice versa.

You need to choose a frequency to look at the time slices. The maximum limit of the frequency depends on how much time is left to the maturity of the option. We do not have intraday data, that is why it is impossible to have a frequency bigger than the number of days left to expiration.