Learn to build interactive visualization with Dash
09/26/2017

Goal: Learn to build web apps that contain interactive and dynamic visualizations by using the high-level web framework Dash by Plotly.

Motivation: In the first iteration of the course, I taught Flask+Plotly toward the end of the semester. Students didn't have enough time to get used to the platform and as a result, very few of them ended up using it in their final project. This semester, I want to make sure you have time to get used to it and start using it in increasingly complex ways in your projects. Also, if you go to Hackathons, Dash can create in a few minutes a website with complex interactive visualizations. Other people in these cases use Shiny by R. Dash is a Python-based alternative to Shiny.

PART 1: Install Dash [Hopefully a few minutes]

Dash is already installed on the CS server, but it's usually easier to develop apps if the framework is installed on your own machine.

Follow the instructions to install Dash: https://plot.ly/dash/installation.

Useful notes on Dash that we discussed in class are found here.

PART 2: Work through the tutorial [3-4 hours]

Once you have installed Dash, go over the tutorials, while creating the applications and taking notes of what you're learning.

Focus only on these sections:

- Create your first app - part 1
- Create your first app - part 2
- External CSS and Javascript
- Dash Core Components
- Dash HTML Components
- URL Support

If you have advanced Python and web development skills, challenge yourself with the section of "Build your own components" and think what you can do with that material.

To submit:

- All Dash applications that you created while doing the tutorial and that you tested from your CS account. Put them in your **Week04** folder, subfolder **dash**.
- A PDF of written notes of what you learned during the tutorial. This can have code snippets, comments, pictures, whatever you need to learn Dash.

Submission: Try to complete this task during the week **09/26 to 10/03.**

PART 3: Dissect one of the Dash Gallery apps [between 6 to 10 hours]

Dash has a Gallery with 11 examples (as of 09/26/17). We want to be able to know how different things can be build in Dash. But, a single person cannot look at all examples. We'll do this collaboratively. You will work in pairs to understand in detail one example from the gallery. You'll try to dissect its content, breaking into parts and creating smaller examples, so that each example shows a particular aspect of Dash that might be useful in other applications.

When we return after the Fall break on **Friday, 10/13/17,** each group will give a short presentation of 2-3 minutes to explain something that they learned from the app they studied. In order to avoid duplications, we'll make sure that each team shows an aspect of Dash that is unique to that project (or not explained by other teams). I'll be sending emails one week in advance to ask about some possible aspects you want to present.

Notes:

- There is plenty of time until 10/13, but this task might require that you work on it in multiple settings. Dash is a new framework and you might need to ask questions to the Dash community on the Web to understand its different aspects. Give yourselves time to do a good work.
- Try to become an expert on some aspect of Dash so that you can serve as a "go-to person" on that particular aspect. Supporting peers is a desirable skill I want to foster in this class.
- If you have difficulty with some portion of your code, post on our Google Group to ask for help. It might be that some other group has understood that particular part.

Pairs and examples

1. Getting Started Example Ana + Iman

2.	Oil and Gas Explorer	Sanika + Isabel
3.	Goldman Sachs Remake	Annabel + Meha
4.	Uber Rides	Daniela + Hannah
5.	Dash Data Tables	Kalau + Sadie
6.	Simple Stock Tickers App	Ngina + Alyssa
7.	Volatility Surface Explorer	Neha + Viki + Farren
8.	Drug Discovery App	Lauren + Zoe
9.	Live Wind Streaming	Rami + Sophie
10.	Recession in 255 charts	Amber + Sabene
11.	NY Times Remake: Yield Curve	Angelina + Anah

What to submit?

In your Week06 folder you'll put all the small apps you created to dissect the app. This way, we can then get your code and create a repository of code snippets that perform a single thing. Give them meaningful names and provide documentation at the top of the file to explain the code. Then, students in the class can use these snippets to build more complex projects.

You'll create a simple Google presentation to summarize your work (what you learned, what snippets you have created). We'll have a shared Google Folder to store the presentation.

A PDF file of the log file of this activity. I want to know how long it takes to complete this task, because some examples are more complex than others. Thus, please create a log file to keep track of when you meet with your partner, or work alone, and how long you work and what part of the example you tackled. Upload the PDF of the log in your Week06 folder.