INFO201 Problem Set: interactive web app

February 26, 2023

Instructions

In this problem set you are asked to do create a shiny app–a similar app as what you are going to make for your final project. You should a) make the github repo; b) create the app; and c) publish the app on `shinyapps.io`.

In this task, you can use any dataset of your choice (feel free to use what you plan to use for the final project). If you do not have good ideas, you can use UAH lower troposphere data (*UAH-lower-troposphere-long.csv.bz2* on canvas), see `https://bitbucket.org/otoomet/data/src/master/nature/` for the variable definitions.

You may use both single- or multiple file setup.

1 Your tasks

Your task is to build your own shiny application. The application should provide the user with the ability to interactively explore the dataset you chose. What the application looks like is up to you, but see the sample app `https://otoomet.shinyapps.io/uah-lower-troposphere/`.

The visualization can be made with base R graphics, ggplot2, plotly, leaflet for maps or something else. While we don't expect you to create anything ground-breaking, we do expect you to create a clear visualization with proper labels and titles. And of course, the graphic needs to react to changing values in the widgets.

Requirements:

1. You have at least three sets of pages (e.g. using `tabsetPanel`). One page (the opening page) displays the general information about the dataset, another page displays a plot, and the third page displays a table.

2. The plot and table page use either the sidebar layout, or another more complex layout (e.g. columns) that allows you to put the widgets and the rendered output next to each other.

   Just putting everything underneath each other is not OK.

3. The tab and plot page have a side panel in which you've created at least two widgets that change the visual output in your application, such as type of the plot, or data displayed on the `x` or `y` axis of a scatterplot.

   Note: I mean a *side panel* but it does not have to be `sidebarLayout`.

4. The main panel of these pages displays data (as a plot or a table).

5. When you start the app, it should show explanatory text about your dataset and the app on the main panel. It may be very brief. No separate sidebars and no interactivity is needed here.

6. The explanatory text uses at least two html text formatting markers, such as `strong()`, `em()` or similar (raw html is OK too).

   See https://faculty.washington.edu/otoomet/info201-book/shiny.html#shiny-ui-text.

7. For both plot and table, there is at least one widget that allows the user to modify the values on screen. This may include filtering or some sort of computations. Just changing color is not enough.

8. The plot also includes a widget that allows one to change the visuals only, leaving data untouched.

   See https://faculty.washington.edu/otoomet/info201-book/shiny.html#shiny-server-reactive

9. The plot is appropriately labeled. This can be achieved either through `ggplot()` (or `plot()` if you wish) or through the layout elements.

10. Both plot and table page must also include some textual output that reacts to a widget, such as the number of non-missing observations, or the overall average value. For instance "Selected subset contains 1234 observations" is such a sentence, given 1234 is derived from the actual (subset of) data.

11. You must push your application up to the shinyapps.io server (or another server if you like), making it publicly available.

12. The uploaded should *work* on shinyapps, not crash!

    Note: this means you need to upload data, and ensure you use correct relative path!

13. Your github repo should include a readme file that contains a brief "user documentation" of your project: a brief description of the data, and explanation what are the widgets and panels doing. This file should contain a link to your project on the https://www.shinyapps.io server.

14. As submission, submit the link to your github repo to canvas.

We hope that when you finish this project, you will good to go and start your final shiny applications!

2 Grading

In total **100 points**

- (10pt) The app contains three different tabs or similar layout elements.
- (15pt) the opening page
  - (5pt) Includes appropriate explanatory text
  - (5pt) Contains figures, calculated from data

  - (5pt) Contains HTML text formatting

- (35pt) plot panel
  - (6pt) Contains sidebar and the main panel
  - (7pt) Sidebar contains a widget that modifies values
  - (8pt) Sidebar contains a widget the modifies visuals only
  - (7pt) Plot is appropriately labeled
  - (7pt) Plot includes a text summary that is computed of data (and changes reacts to the widget)
- (20pt) table panel
  - (6pt) Contains sidebar and the main panel
  - (7pt) Sidebar contains a widget that changes data
  - (7pt) Table includes a text summary that is computed of data (and changes reacts to the widget)
- (20pt) Publishing
  - Link available, app works as intended on `shinyapps.io`.

Finally tell us how many hours did you spend on this PS.