Utilization of ggvis : : CHEAT SHEET

Basics

ggvis functions as an alternative to ggplot2, containing commands that can be utilized to form graphs from data inputs with similar syntax to ggplot2. ggvis includes several components that can be added to a graph to make the graphs interactive.

The graphs created in ggvis are web graphics. This allows ease of interactivity with the graph, but interactive graphs require a concurrent R session.

Data representation using ggvis is organized into different “layers” on a graph. Each layer on a graph refers to a data representation, and has its own layer function that can be called to implement it into a graphical system in ggvis.

There are 2 types of layer functions:

1. **Simple Layers** - layers that form different types of primitive aspects, such as lines, points, polygons, or text
2. **Compound Layers -** layers that combine simple layers with data transformation functions

Simple Layers

layer_points() - creates a scatter plot, with x as the x-axis position and y as the y-axis position for each point
Optional parameters are **shape, stroke, fill, strokeOpacity, fillOpacity,** and **opacity**

layer_paths() - creates a series of lines connecting points. Similar to layer_points() but counts the x and y values as coordinates for the endpoints of lines, connecting each point in order.
note: supplying a **fill** argument will create a polygon

layer_ribbons() - similar to layer_paths(), except that it creates a shaded area that is influenced by the line system. The arguments y and y2 will control the vertical bounds of this shaded region

layer_rects() - creates a rectangle, with its location and size being determined by the x, x2, y, and y2 variables entered into ggvis()

layer_text() - adds text labels to the system. The ggvis portion requires the **x** and **y** variables for positioning, as well as the text variable for what the labels will say. Optional parameters are **dx, dy, angle, font, fontSize, fontWeight,** and **fontStyle**

layer_bars() - adds a barchart to the system. Automatically adapts to whether or not a y variable is called, and whether the x variable contains continuous or categorical data

Compound Layers

layer_lines() - acts similar to layer_paths(), but forms the connection order in rising value of x. ie. the position with the lowest x-coordinate will form a line connecting to the position with the second lowest x-coordinate, which will connect to the third lowest x-coordinate, and so on.

layer_histogram() - forms a histogram using input data, showing its distribution

layer_smooths() - calculates and displays a prediction line from the data given. The “wiggliness” of the line can be influenced with the optional **span** parameter.

Multiple Formats

There are 3 major formats for using ggvis:

1. Subfactoring using nested parentheses

```
layer_points(ggvis(dataset, x = ~factor1,
   y = ~factor2))
```

2. Utilization of the pronounced pipe (%>%) function from magrittr

```
dataset %>% ggvis(x = ~factor1, y =
   ~factor2) %>% layer_points()
```

3. Storage and calling of the data structure

```
mydata <- ggvis(dataset, x = ~factor1, y
   = ~factor2)
layer_points(mydata)
```

Multi-layered Plots

Multiple layers can be added to the same plot to create graphs with layered information. For instance, layer_points() and layer_smooths() can both be called to simultaneously show the raw data and its trends.

Plots can also contain multiple layers of the same type. For instance, layer_ribbons() can be called to shade the area above a line red, and a second layer_ribbons() can be called to the shade the area below it blue.

Interactive Parameters

Interactive components can be added to a layer of a ggvis graph to influence it directly. For instance, **layer_points(opacity := input_slider(0, 1))** will add a slider to the graph that can be adjusted to change the opacity of the points in real time.

These interactive components are **input_slider(), input_checkbox(), input_checkboxgroup(), input_numeric(), input_radiobuttons(), input_select(),** and **input_text()**