

# Don't reinvent the wheel: making use of shiny extension packages



Münster R User Group

# Hi!

I'm Suthira Owlarn :)

- Biologist/postdoc at the Max Planck Institute
- R newbie (~1.5 years)
- Shiny enthusiast!

 [@s\\_owla](https://twitter.com/s_owla)

 [sowla](https://github.com/sowla)



[2019-MS-RUG-shiny-extensions](https://github.com/2019-MS-RUG-shiny-extensions)





**USING  
THE RIGHT TOOLS  
SAVES  
A LOT OF PAIN**

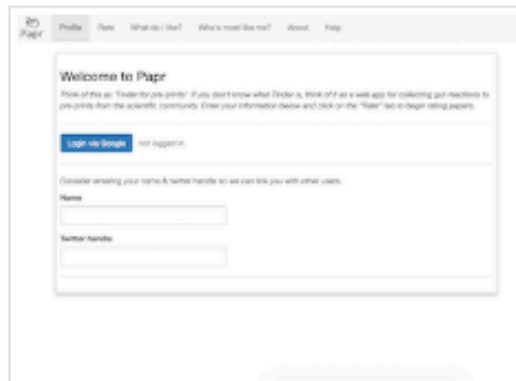
# Shiny

## Shiny User Showcase

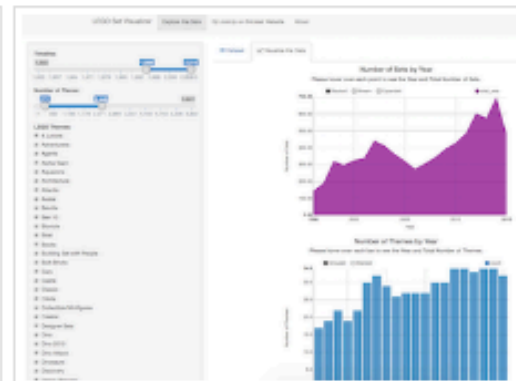
The [Shiny User Showcase](#) contains an inspiring set of sophisticated apps developed and contributed by Shiny users.



Genome browser



Papr



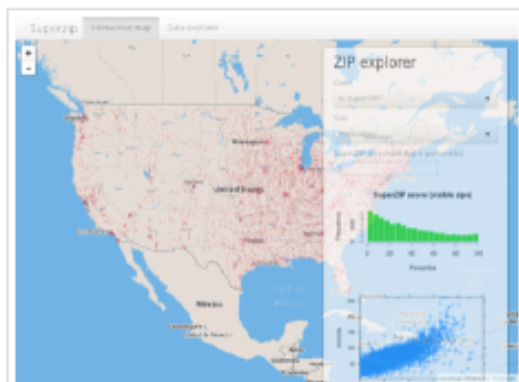
Lego Set Database Explorer



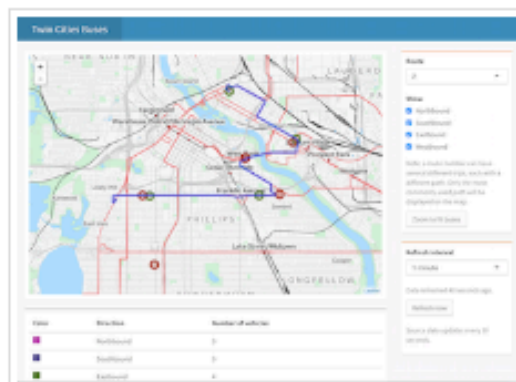
See more

## Interactive visualizations

Shiny is designed for fully interactive visualization, using JavaScript libraries like [d3](#), [Leaflet](#), and [Google Charts](#).



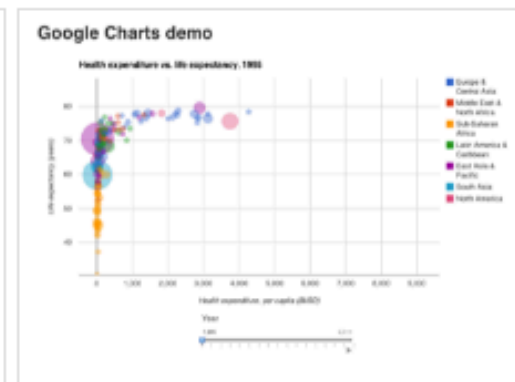
SuperZip example



Bus dashboard

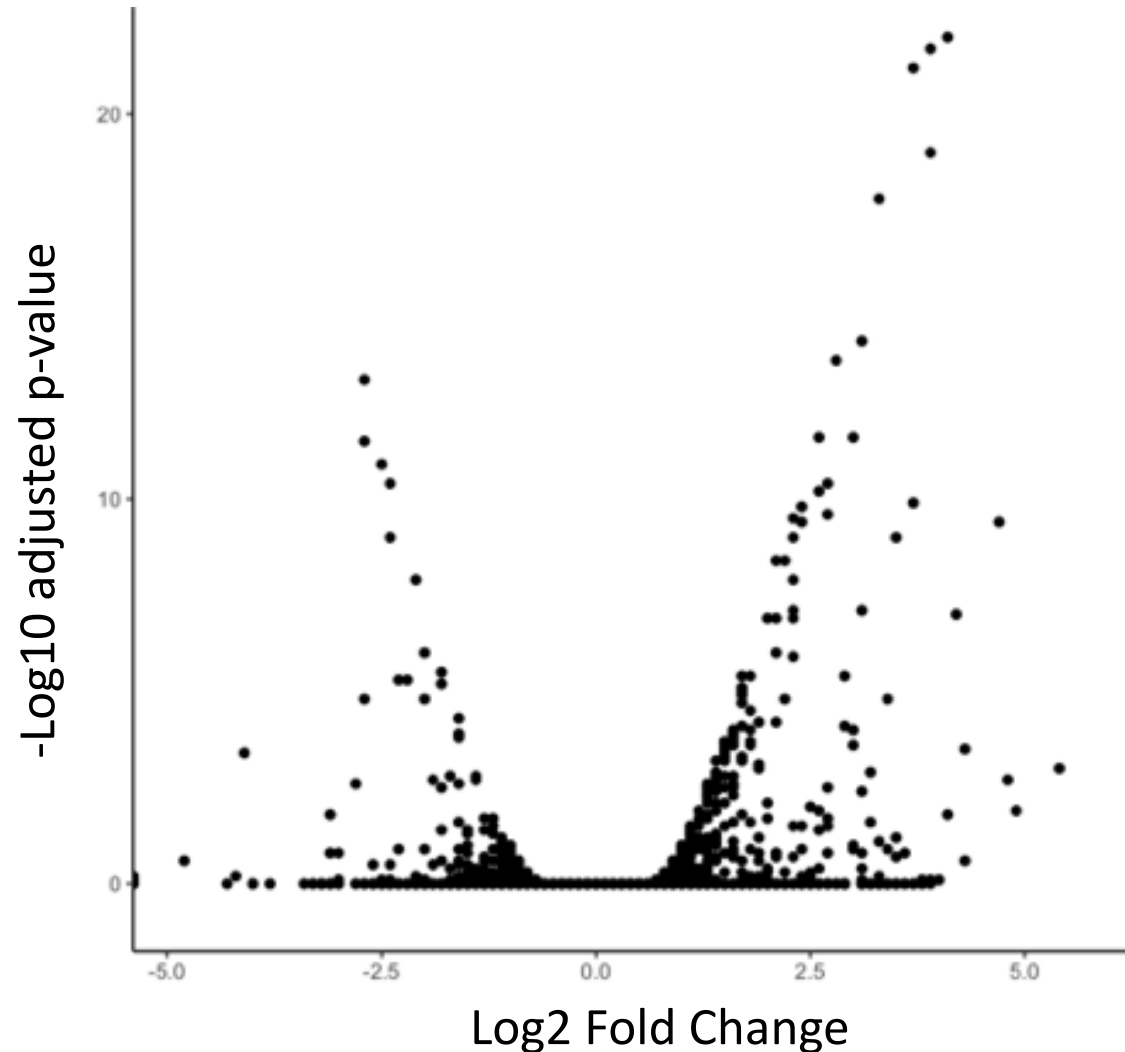


Movie explorer



Google Charts

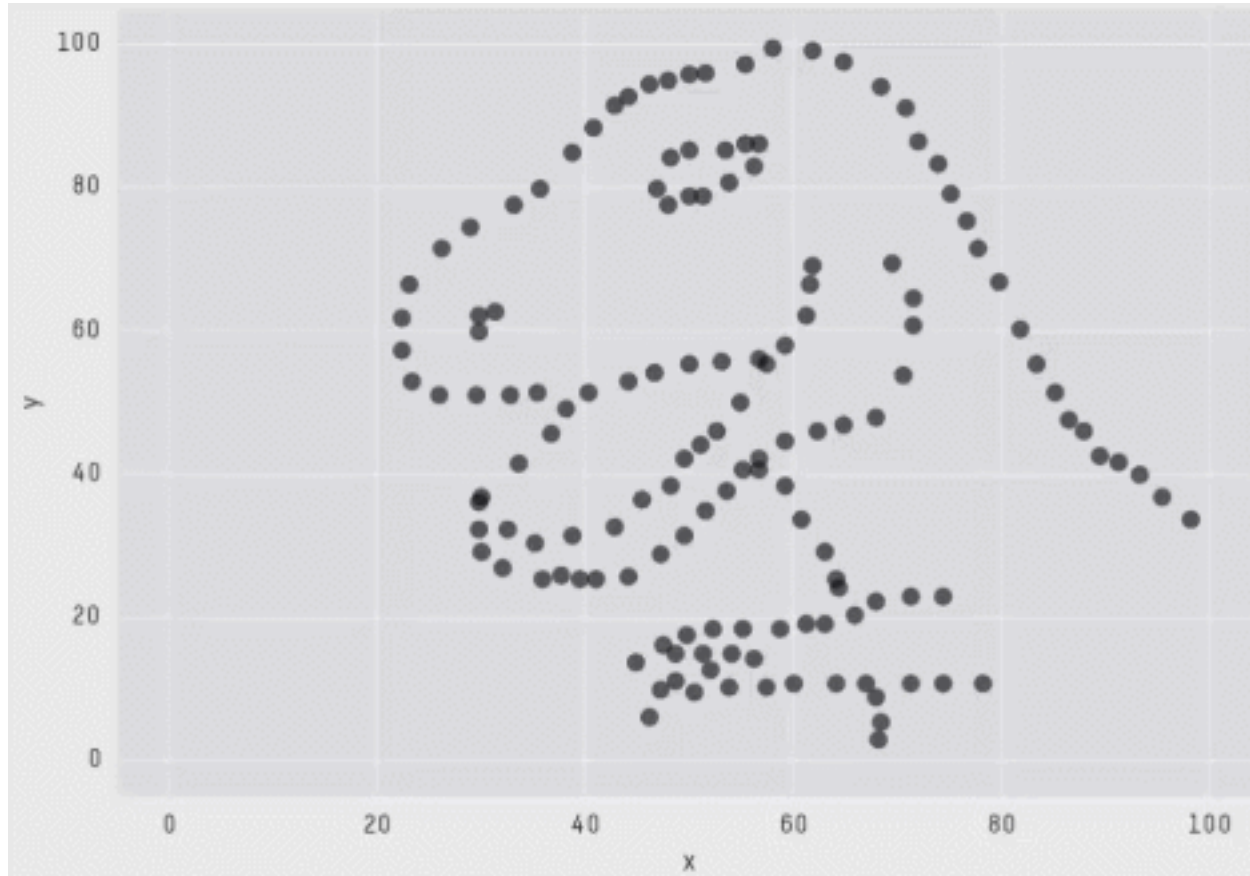
# Why did I start using shiny?



	A	B	C	D
1	Id	baseMean	log2Foldchange	padj
2	dd_Smed_v6_102_0_1	796.510123	-1.227211103	0.01294388
3	dd_Smed_v6_10302_0_1	369.428622	0.987704116	6.72E-08
4	dd_Smed_v6_1033_0_1	1855.65034	0.989061916	0.00671085
5	dd_Smed_v6_1054_0_1	5001.65104	-0.828711614	0.0009754
6	dd_Smed_v6_10849_0_1	202.860402	-0.500429771	0.04398802
7	dd_Smed_v6_1114_0_1	3545.29634	0.653791911	0.01336137
8	dd_Smed_v6_11501_0_1	63.8936551	-1.289230411	1.04E-06
9	dd_Smed_v6_1224_0_1	941.936102	0.622942178	0.01667194
10	dd_Smed_v6_12355_0_1	277.217068	-1.022192875	0.0162604
11	dd_Smed_v6_13291_0_1	56.5819099	-0.978517859	0.00789344
12	dd_Smed_v6_1350_0_1	117.100205	-1.160414409	0.01550004
13	dd_Smed_v6_14068_0_1	82.338354	-1.097416225	0.01971501
14	dd_Smed_v6_1509_0_1	1042.41145	-0.553030165	0.00980481
15	dd_Smed_v6_1519_0_1	955.358024	0.753083458	0.02762951
16	dd_Smed_v6_1531_0_1	652.722592	-1.148139028	1.39E-07
17	dd_Smed_v6_158_0_1	377.730819	-3.076838854	4.73E-20
18	dd_Smed_v6_1580_0_1	2953.09382	1.802740685	1.87E-13
19	dd_Smed_v6_1581_0_1	1773.91345	-0.524144223	0.00198497
20	dd_Smed_v6_1596_0_1	505.382348	-0.602958258	0.00268586
21	dd_Smed_v6_1753_0_1	66.3417388	1.73775701	0.0042826
22	dd_Smed_v6_1772_0_1	3602.39903	0.638196287	0.01017817
23	dd_Smed_v6_1774_0_1	366.528291	1.348691806	0.00078916
24	dd_Smed_v6_1778_0_1	551.331537	0.400441333	0.0071733



# Why did I start using shiny?



```
X Mean: 54.2659224  
Y Mean: 47.8313999  
X SD   : 16.7649829  
Y SD   : 26.9342120  
Corr.  : -0.0642526
```

# Demo



"OH, NO -- THAT'S JUST THE  
PROTOTYPE."



# Let's chat! :)

- Do you actually need shiny?
- Straight out of the shiny box
- Judging a book by its cover
- More ways to add to add to the UI/UX
- Tools to help your shiny workflow

# Do you actually need shiny?

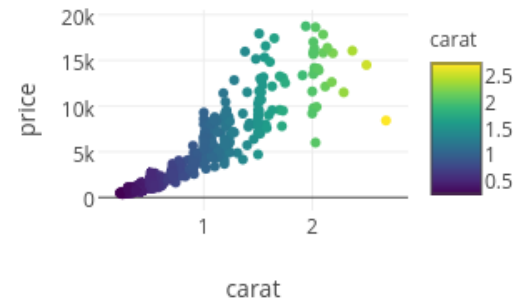
- Crosstalk

- HTML report demoed
- Linked data sets
- Filter/selection
- Some interactivity without needing shiny

- Some compatible widgets ->

- Make your own using [htmlwidgets](#) or [reactR](#)

plotly



## leaflet



## summarywidget

You have selected 4 cars with an average mpg of 24.0 . The 2 cars with automatic transmission have an average mpg of 22.1 .



## DT

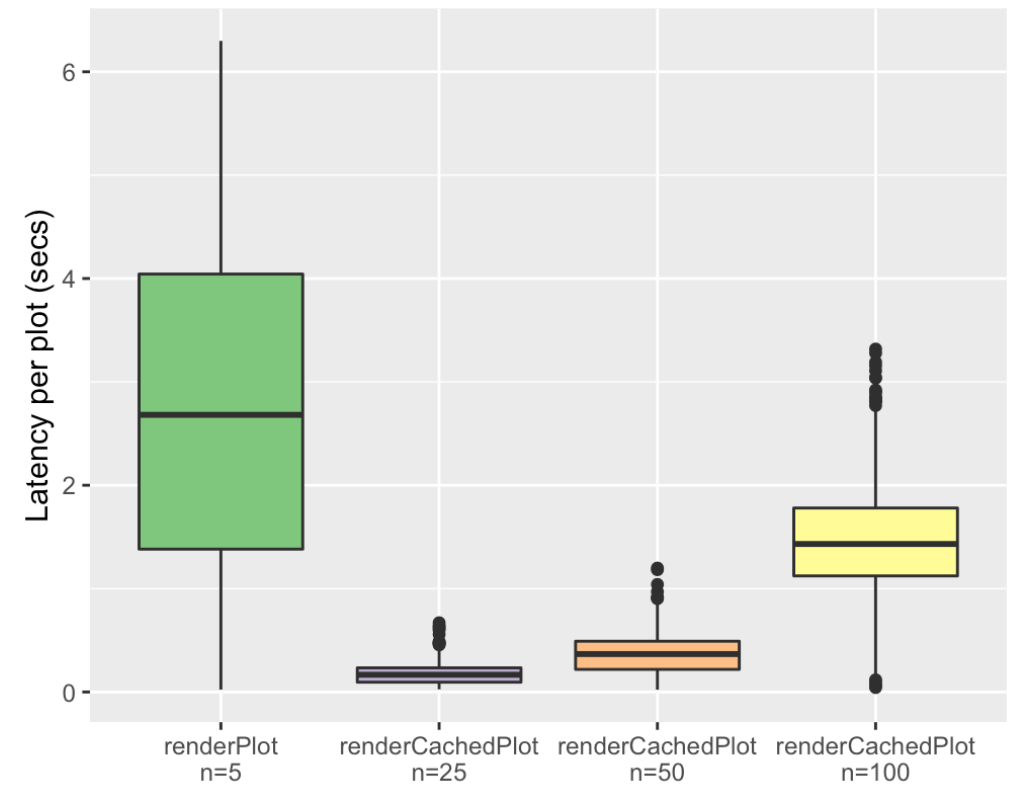
Show	10 ▾	entries	Search: <input type="text"/>		
	Sepal.Length ▴	Sepal.Width ▴	Petal.Length ▴	Petal.Width ▴	Species ▴
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa

Showing 1 to 10 of 150 entries

Previous 1 2 3 4 5 ... 15 Next

# Right out of the shiny box

- Easy to make bootstrap-based web apps
  - Multiple inputs/outputs
  - Fine-tuned reactivity
  - [Dynamic UI](#)
  - [Modules](#)
  - [Bookmarking](#)
- [Shiny 1.2.0](#) (Nov 2018):
  - Plot caching



# Judging a book by its cover

## 16 [shinythemes](#)

Flatly Navbar 1 Plot Table

File input:  
Browse... No file se

Text input:  
general

Slider input:  
1 30 100  
1 11 21 31 41 51 61 71 81 91 100

Default actionButton:  
Search

actionButton with CSS class:  
Action button

Tab 1 Tab 2 Tab 3

Table

speed	dist
4.00	2.00
4.00	10.00
7.00	4.00
7.00	22.00

Verbatim text output  
general, 30, NULL

Header 1  
Header 2  
Header 3

## [shinydashboard](#)

My Dashboard

Search...

Dashboard Widgets Charts Source code for app

Distribution  
Frequency  
data

View 1 View 2  
y  
x

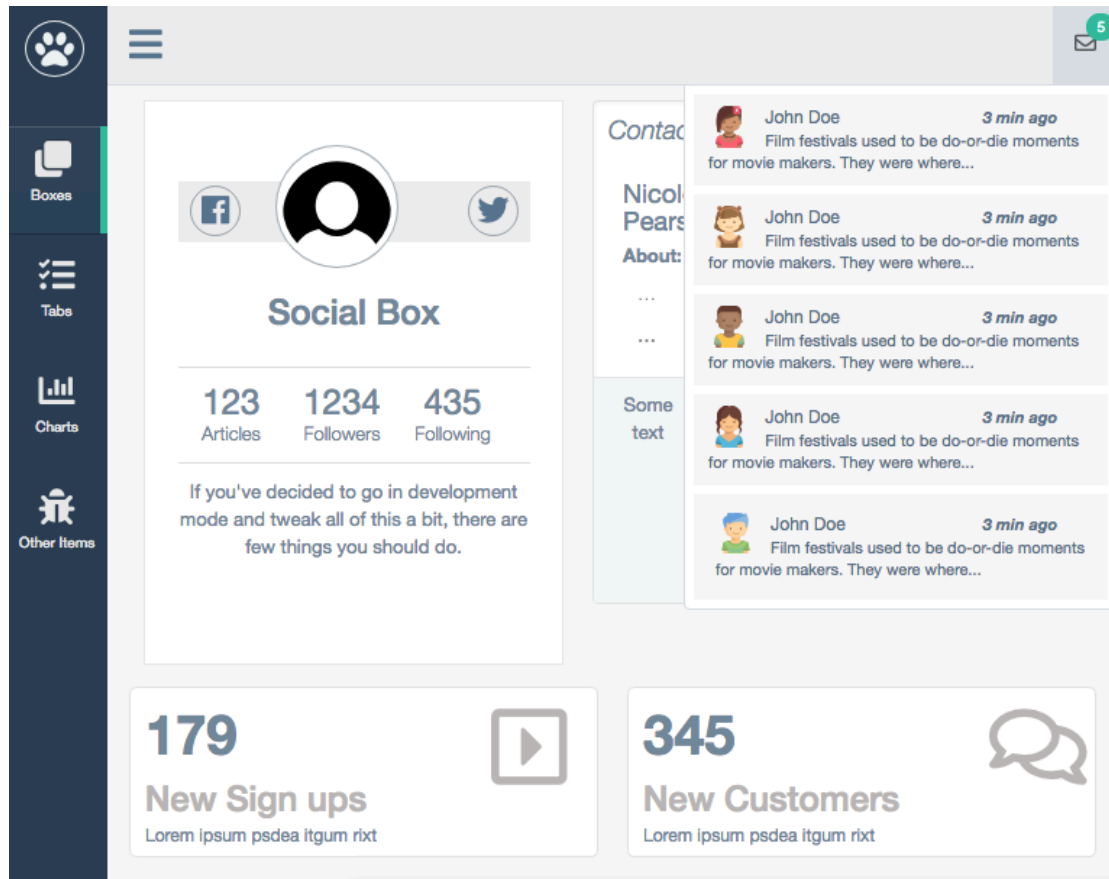
Histogram control  
Count  
1 120 500  
1 50 100 150 200 250 300 350 400 450 500

Appearance  
Fill  
☒ None  
☐ Blue  
☐ Black  
☐ red

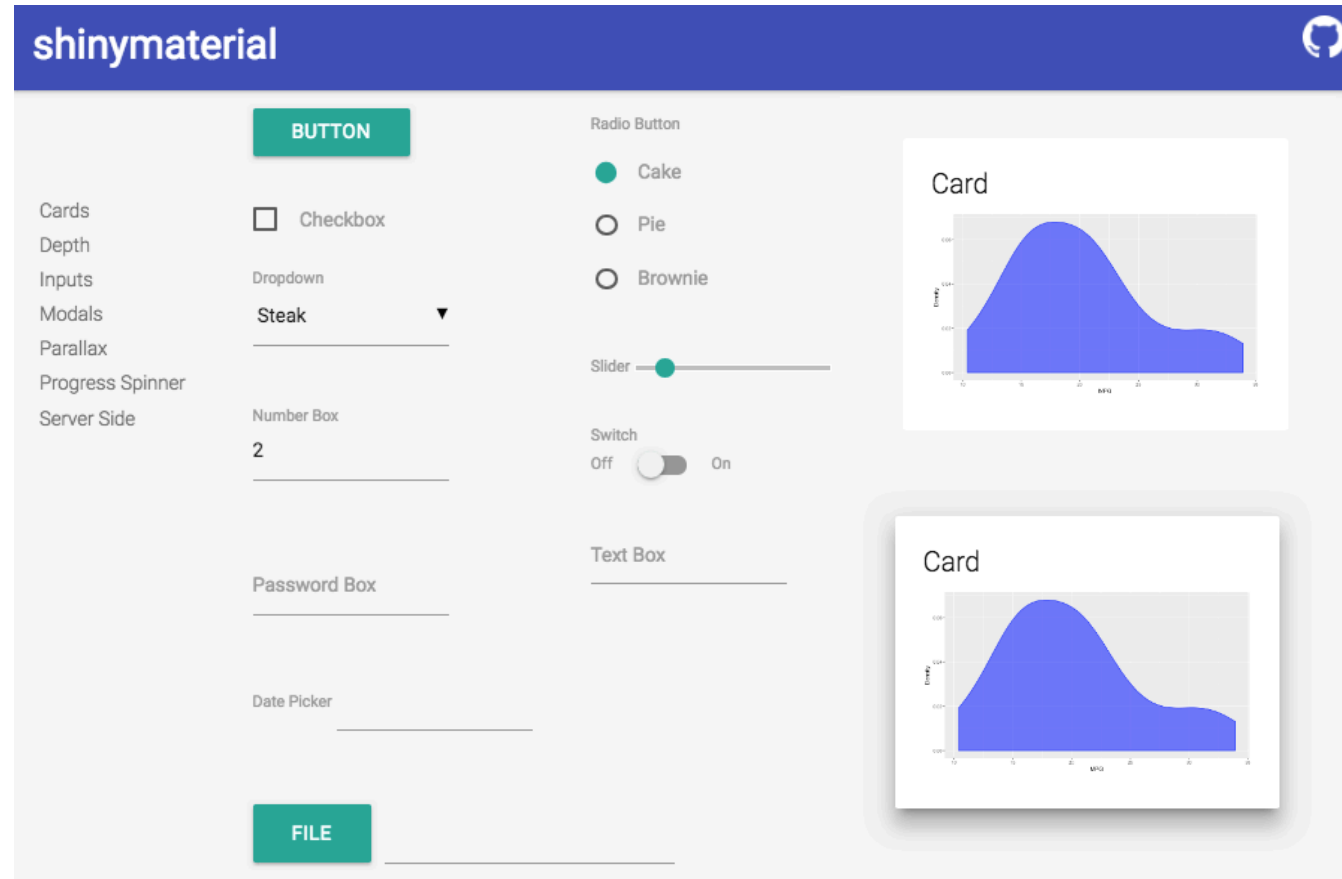
Scatterplot control  
Spread  
60%

# Judging a book by its cover

[gentelellaShiny](#)



[shinymaterial](#)



# Judging a book by its cover

[wired](#) (+ [xkcd](#))

## Wired

Distribution:

☒ Normal

☐ Uniform

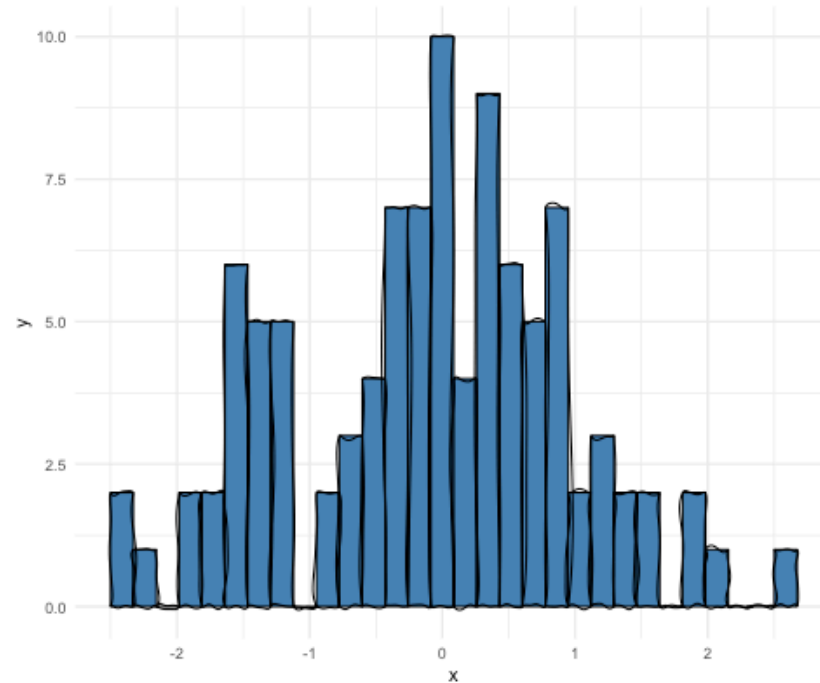
☐ Log-normal

☐ Exponential

Number of observations:

Use log scale ☐

Made with wired.js library



Plot made with the [xkcd](#) package.

[nessy](#)

## {nessy}

NES-style CSS Framework for Shiny.

### Buttons

Normal Primary hit Warning Error

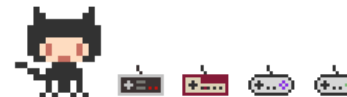
### Radio

yes  
no

### Balloons

Hi! Thanks for coming to today's talk!

### Icons

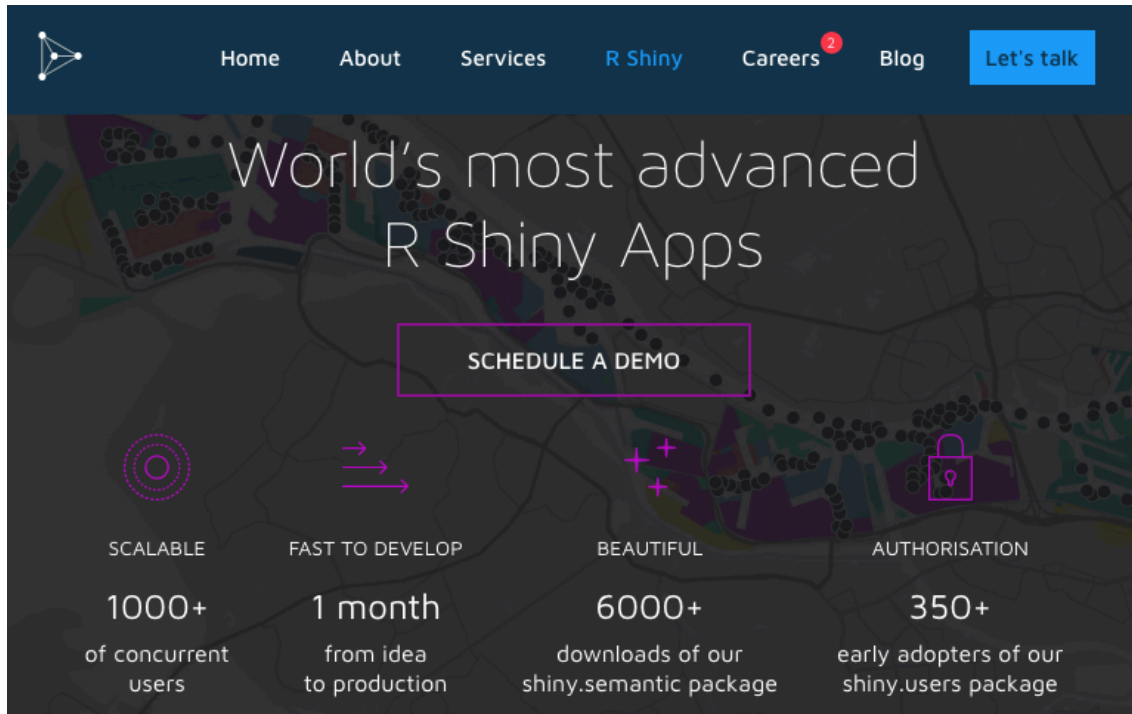


{nessy}, based on NES.css



# Judging a book by its cover

## [appsilon](#)



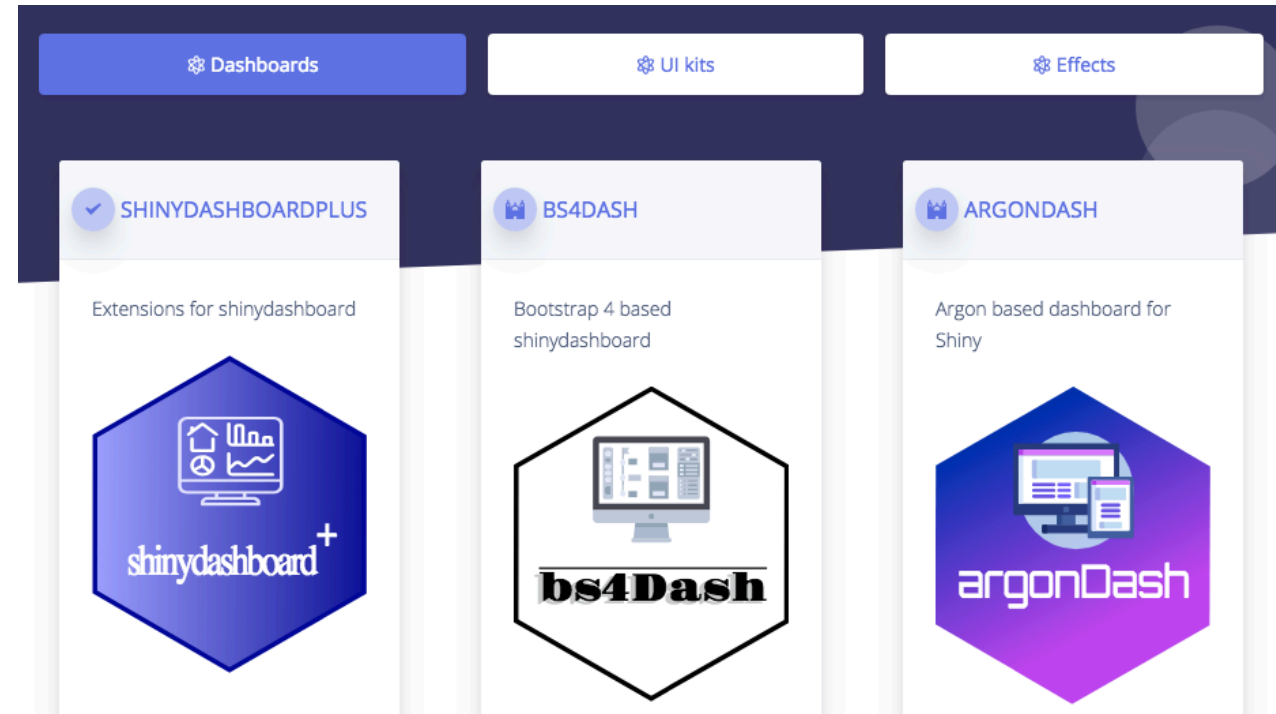
The screenshot shows the appsilon website with a dark blue header containing navigation links: Home, About, Services, R Shiny, Careers (with a red notification badge), Blog, and a blue 'Let's talk' button. The main content area features a map background with the text 'World's most advanced R Shiny Apps' and a 'SCHEDULE A DEMO' button. Below this, four features are listed in a grid:

SCALABLE	FAST TO DEVELOP	BEAUTIFUL	AUTHORISATION
1000+ of concurrent users	1 month from idea to production	6000+ downloads of our shiny.semantic package	350+ early adopters of our shiny.users package

[shiny.semantic](#) + [semantic.dashboard](#)

Also: shiny supports [HTML templates](#)

## [rinterface](#)



The screenshot shows the rinterview website with a dark blue header containing navigation links: Dashboards, UI kits, and Effects. The main content area features three product cards:

- SHINYDASHBOARDPLUS**: Extensions for shinydashboard. The card shows a blue hexagon icon with a monitor and the text 'shinydashboard+'.
- BS4DASH**: Bootstrap 4 based shinydashboard. The card shows a black hexagon icon with a monitor and the text 'bs4Dash'.
- ARGONDASH**: Argon based dashboard for Shiny. The card shows a purple hexagon icon with a monitor and the text 'argonDash'.

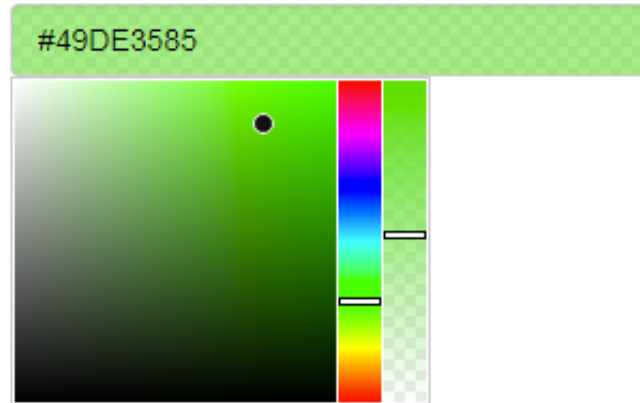
[shinydashboardPlus](#), [bs4Dash](#),  
[argonDash](#) + [argonR](#), [shinybulma](#)

# More ways to add to the UI/UX

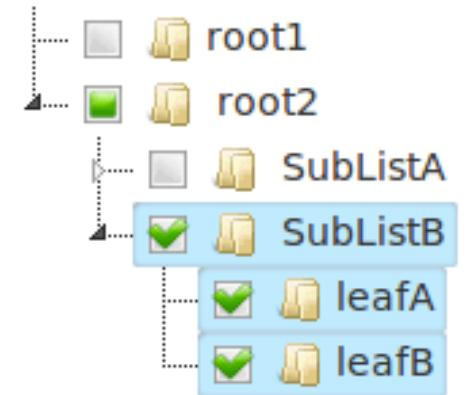
## [shinyAce](#)

```
1 library(shiny)
2 library(shinyAce)
3
4 modes <- dir(system.file('www/ace', package='shinyAce'), "^mode-.*.js$")
5 modes <- sub("^mode-(.*)\\.js$", "\\1", modes)
6
7 themes <- dir(system.file('www/ace', package='shinyAce'), "^theme-.*.js$")
8 themes <- sub("^theme-(.*)\\.js$", "\\1", themes)
9
10 #' Define UI for application that demonstrates a simple Ace editor
11 #' @author Jeff Allen \email{jeff@trestletech.com}
12 shinyUI<
13   pageWithSidebar(
14     # Application title
15     headerPanel("Simple Shiny Ace!"),
16
17     sidebarPanel(
18       selectInput("mode", "Mode: ", choices=modes, selected="plain_text"),
19       selectInput("theme", "Theme: ", choices=themes, selected="textmate"),
20       actionButton("reset", "Reset Text"),
21       HTML("<hr />"),
22       helpText(HTML("A simple Shiny Ace editor.
23 | | | | <p>Created using <a href = \"http://github.com/trestle
24 | | | |
25
26 # Show the simple table
```

## [colourpicker](#)



## [shinyTree](#)




more UI elements:

[shinyWidgets](#), [shinyBS](#), [bsplus](#), [TileMaker](#)

# More ways to add to the UI/UX

## [shinyFeedback](#)

Warn if > 100

Ye be warned

Danger if < 0

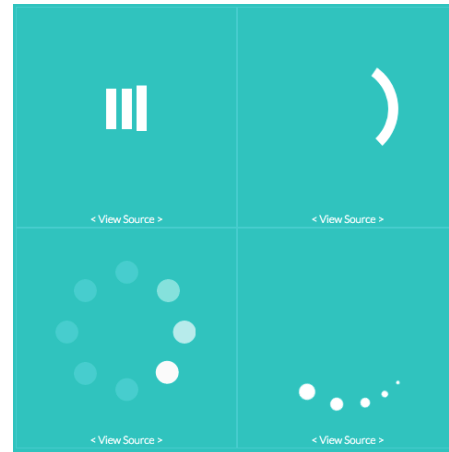
 

Danger, turn back!

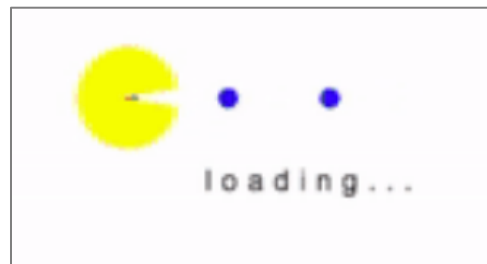
Success if > 3 characters

## [shinycssloaders](#)



## [shinycustomloader](#)



## [rintrojs](#)

step-by-step introductions,  
clickable hints (from intro.js)

## [shinyjs](#)

Easy ways to eg.

- Show/hide
- Enable/disable

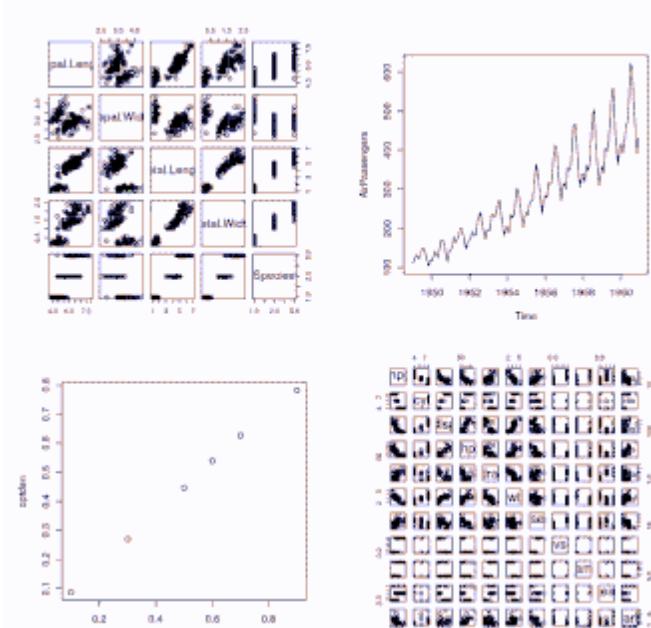
## [shinyEffects](#)

CSS effects

# More ways to add to the UI/UX

## Interact with/edit elements

Drag and drop elements with dragulaR



[shinyjquery](#), [dragulaR](#),  
[shinydnd](#)

[shinysense](#) – "help shiny sense the world around it"

- shinyswiper - cards that can be swiped left/right
- shinydrawr, shinyyearr, shinyviewr, shinymovr

[shiny.router](#) – helps create paged URLs

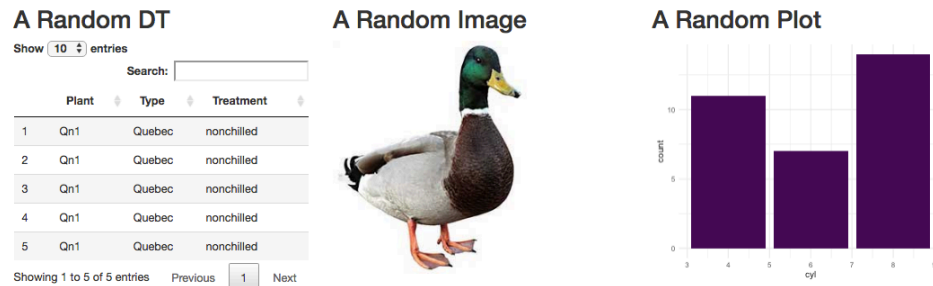
[shiny.i18n](#) – helps with internationalisation

[shiny.collections](#) – "Google Docs-like live collaboration in Shiny"

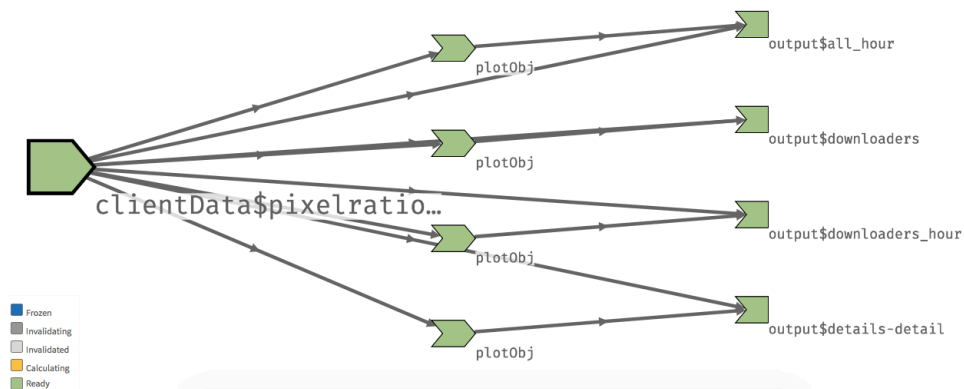
[fullPage](#) – embed multiple shiny apps in one

# Tools to help your shiny workflow

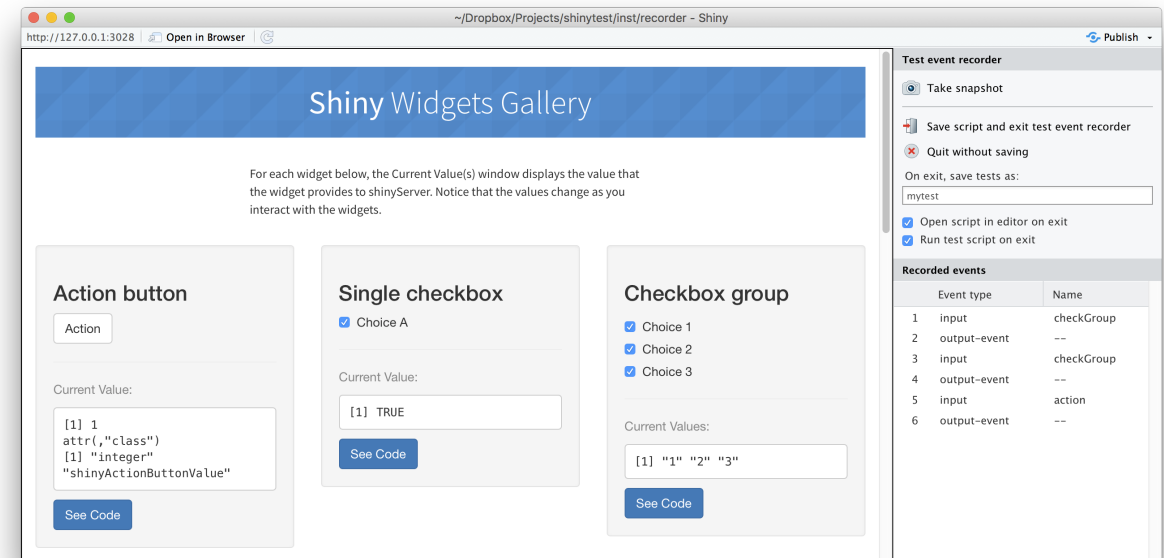
## [shinipsum](#) (for prototyping)



## [reactlog](#) ([talk](#), [demo](#))



## [shinytest](#) (test overall function)



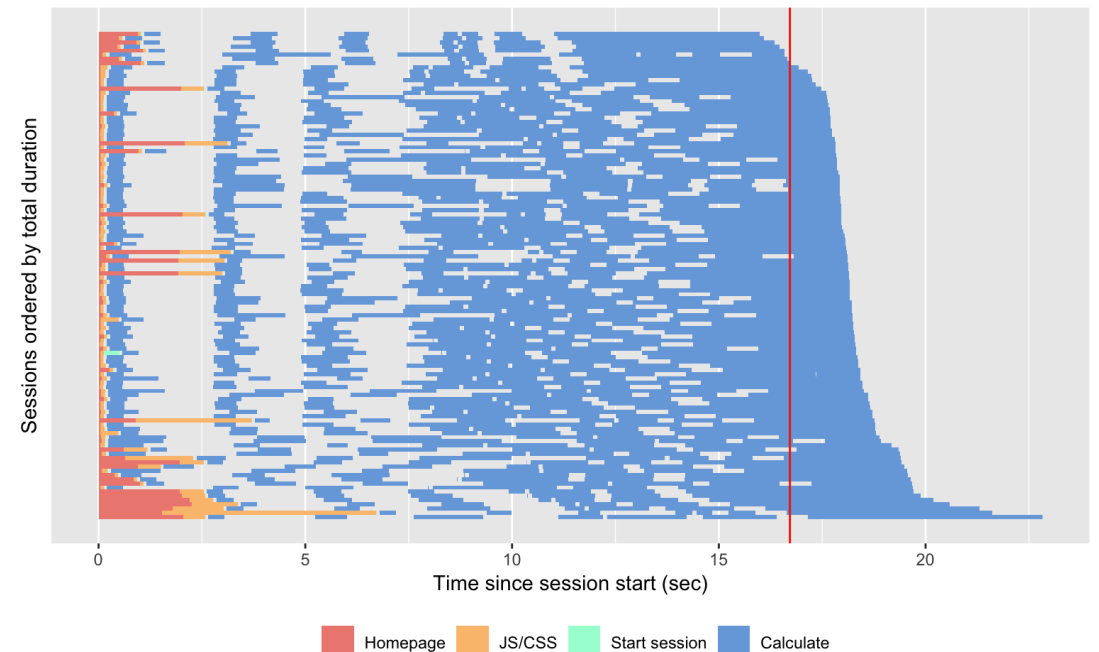
- alternatively, [RSelenium](#)
- unit test underlying functions, eg. [testthat](#)
- [frankenstein](#) to “resurrect” your app
- [shinysnippets](#) to save you some typing

# Tools to help your shiny workflow

## Performance workflow

1. Use **shinyloadtest** to see if it's fast enough
2. If not, use **profvis** to see what's making it slow
3. Optimize
  1. Move work out of Shiny (very often)
  2. Make code faster (very often)
  3. Use caching (sometimes)
  4. Use async (occasionally)
4. Repeat!

[shinyloadtest](#)  
[profvis](#) (+ eg. [microbenchmark](#))



Joe Cheng, [rstudio::conf 2019 keynote](#)



# Tools to help your shiny workflow

## Performance workflow

1. Use **shinyloadtest** to see if it's fast enough
  2. If not, use **profvis** to see what's making it slow
  3. Optimize
    1. Move work out of Shiny (very often)
    2. Make code faster (very often)
    3. Use caching (sometimes)
    4. Use async (occasionally)
  4. Repeat!
- Asynchronous programming
    - [future](#), [promises](#)
    - [ipc](#)
    - [furrr](#)
- Joe Cheng, [rstudio::conf 2019 keynote](#)

# Tools to help your shiny workflow

- Shiny + [Electron](#)
  - Alternative to [shinyapps.io/Shiny Server/RStudio Connect](#)
  - Katie Sasso's UseR 2018 [talk](#)  
(Shiny meets Electron: Turn your Shiny app into a **standalone desktop app** in no time)
  - Columbus Collaboratory's electron-quick-start github [repo](#)
- More materials:
  - Shiny in production: Joe Cheng's [keynote](#) and Kelly O'Briant's (WIP) [book](#)
  - Building Big Shiny Apps - A Workflow [blog post](#)
  - [shinytemplate](#) “an RStudio project template for building prod-ready shiny apps”

# A few sources for shiny updates/advice

- [@ ColinFay/ @Thinkr FR](#)
  - eg. various [advice](#) on working with shiny, especially shiny in production
- [@ pvictorr/ @dreamRs fr](#)
  - eg. [esquisse](#): a package and RStudio add-in for ggplot2 GUI
- [@nic crane](#)
  - eg. a [javascript snippet](#) to get confirmation when clicking back/forward buttons
  - inspired by her, I added [a bit of code](#) for the refresh button as well
- Rstudio also has shiny [tutorials](#), [videos](#) and a [cheatsheet](#)
- Joe Cheng is writing a “Mastering Shiny” [book](#)

# Don't reinvent the wheel: making use of shiny extension packages

---

Münster R User Group

 [@sowla](https://twitter.com/sowla)

 [sowla](https://github.com/sowla)



[2019-MS-RUG-shiny-extensions](https://github.com/2019-MS-RUG-shiny-extensions)