R Shiny, Sparklyr, and RConnect

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Building ML pipelines, SparklyR usage and integration with Shiny, and deploying to RConnect

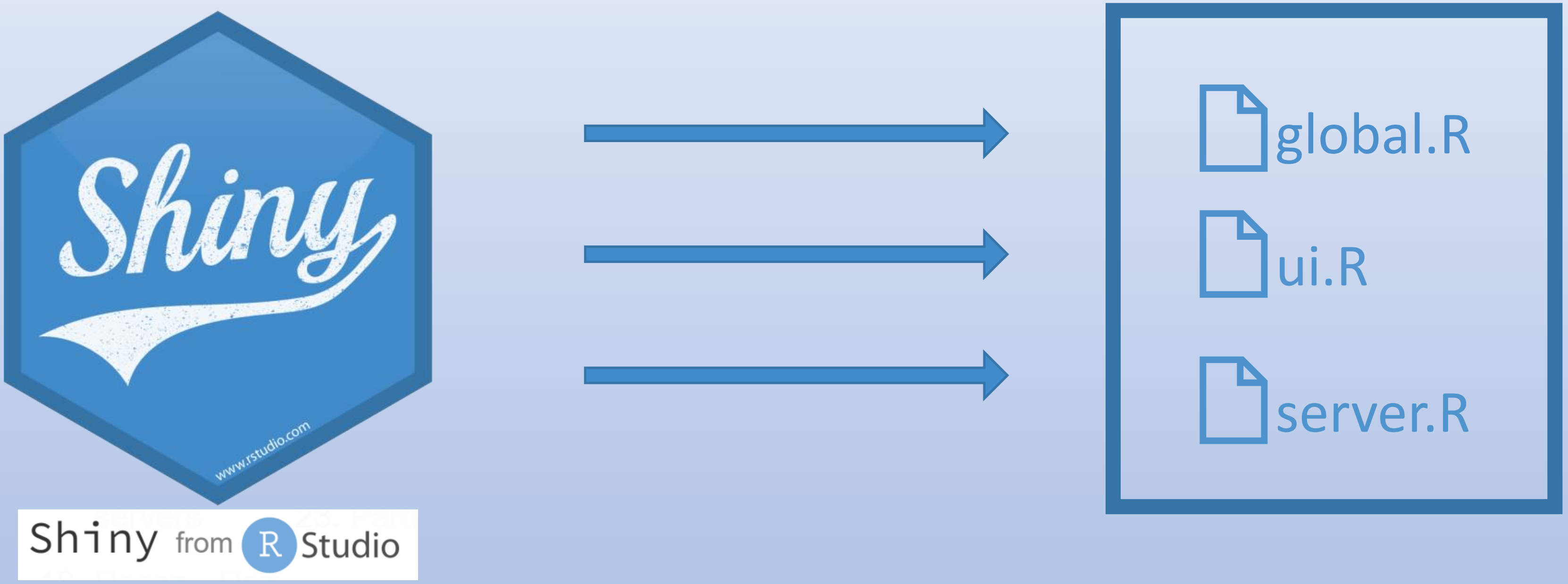
Shiny from R Studio

R Package: For rapid and easy development of interactive web apps

“Shiny combines the computational power of R with the interactivity of the modern web”

https://shiny.rstudio.com/

Shiny from R Studio

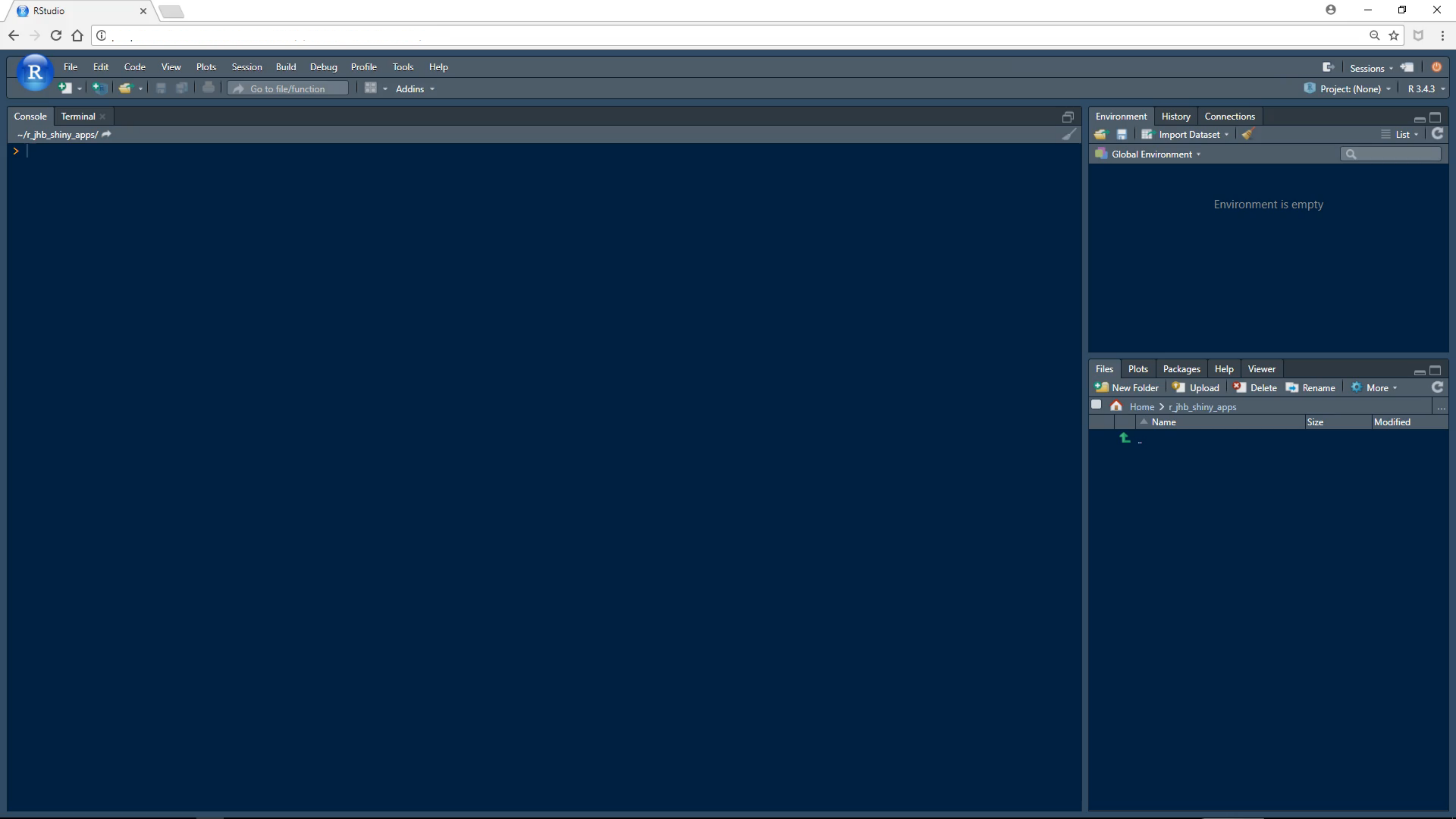


global.R

ui.R

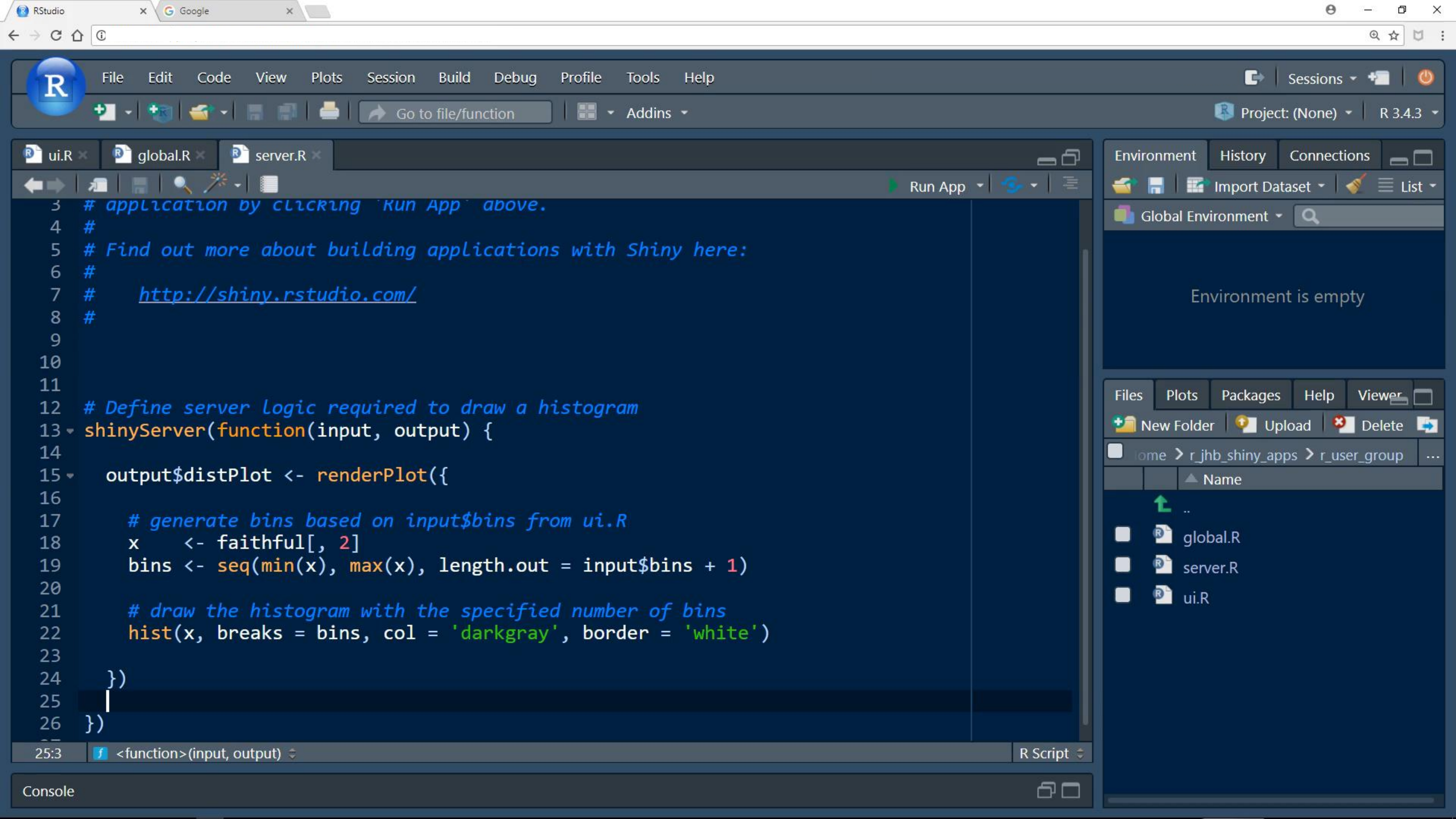
server.R

https://shiny.rstudio.com/



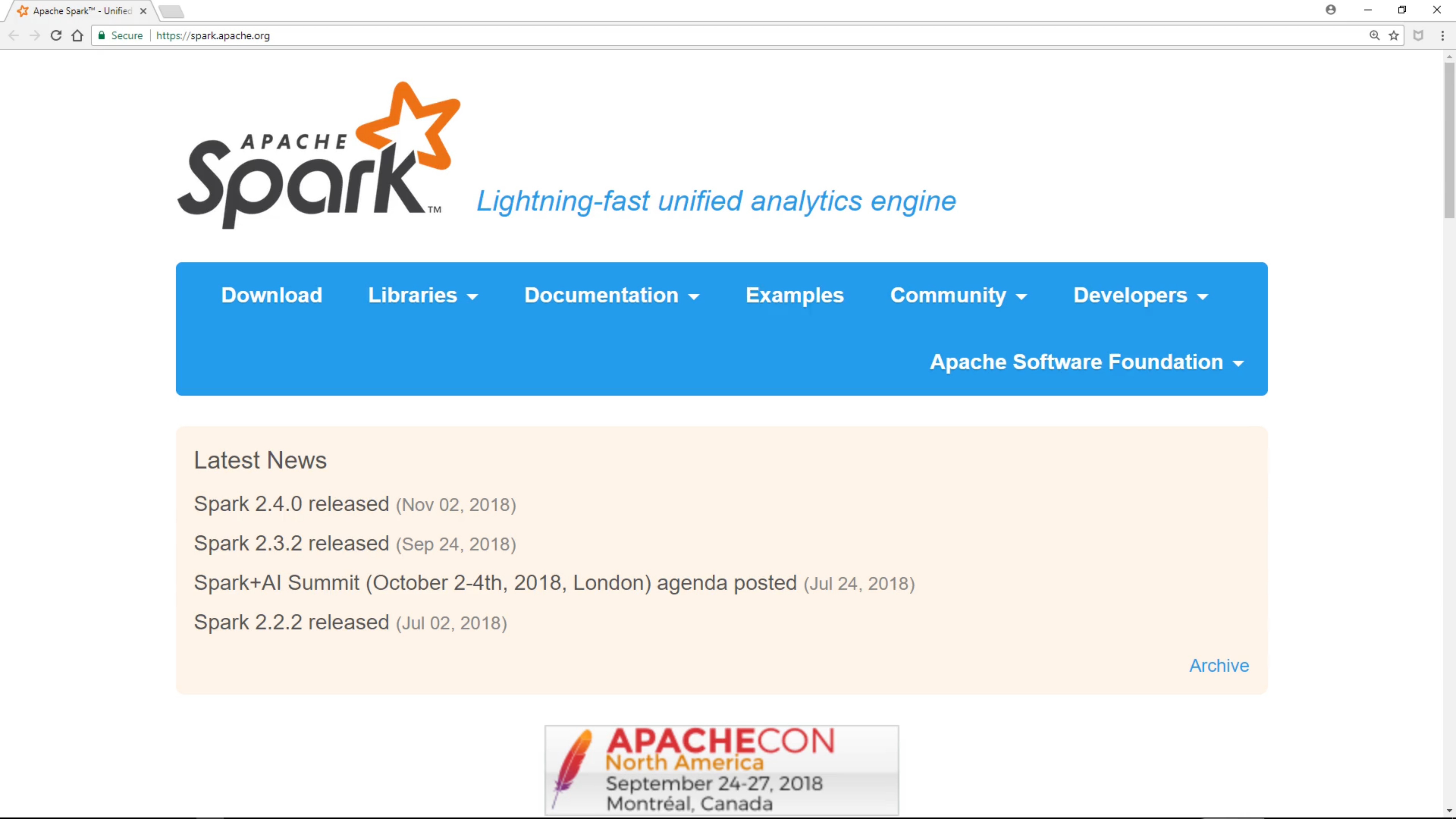
```
~/r_jhb_shiny_apps/
>
```

Environment is empty



```
# application by clicking 'Run App' above.
#
# Find out more about building applications with Shiny here:
#
#    http://shiny.rstudio.com/
#



# Define server logic required to draw a histogram
shinyServer(function(input, output) {

  output$distPlot <- renderPlot({

    # generate bins based on input$bins from ui.R
    x    <- faithful[, 2]
    bins <- seq(min(x), max(x), length.out = input$bins + 1)

    # draw the histogram with the specified number of bins
    hist(x, breaks = bins, col = 'darkgray', border = 'white')

  })

})
```

sparklyr
www.rstudio.com



Lightning-fast unified analytics engine

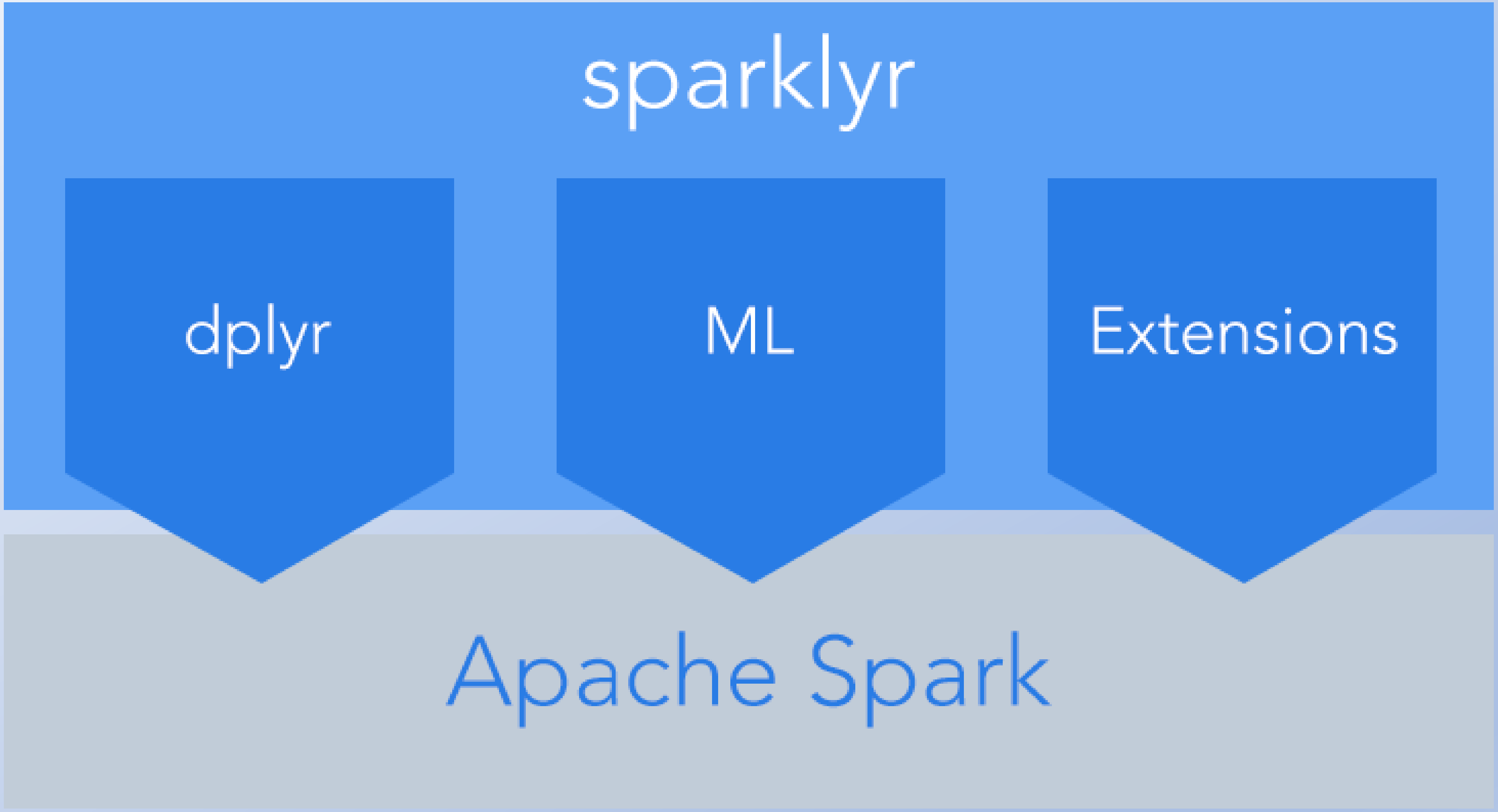
Latest News

Spark 2.4.0 released (Nov 02, 2018)

Spark 2.3.2 released (Sep 24, 2018)

Spark+AI Summit (October 2-4th, 2018, London) agenda posted (Jul 24, 2018)

Spark 2.2.2 released (Jul 02, 2018)



sparklyr

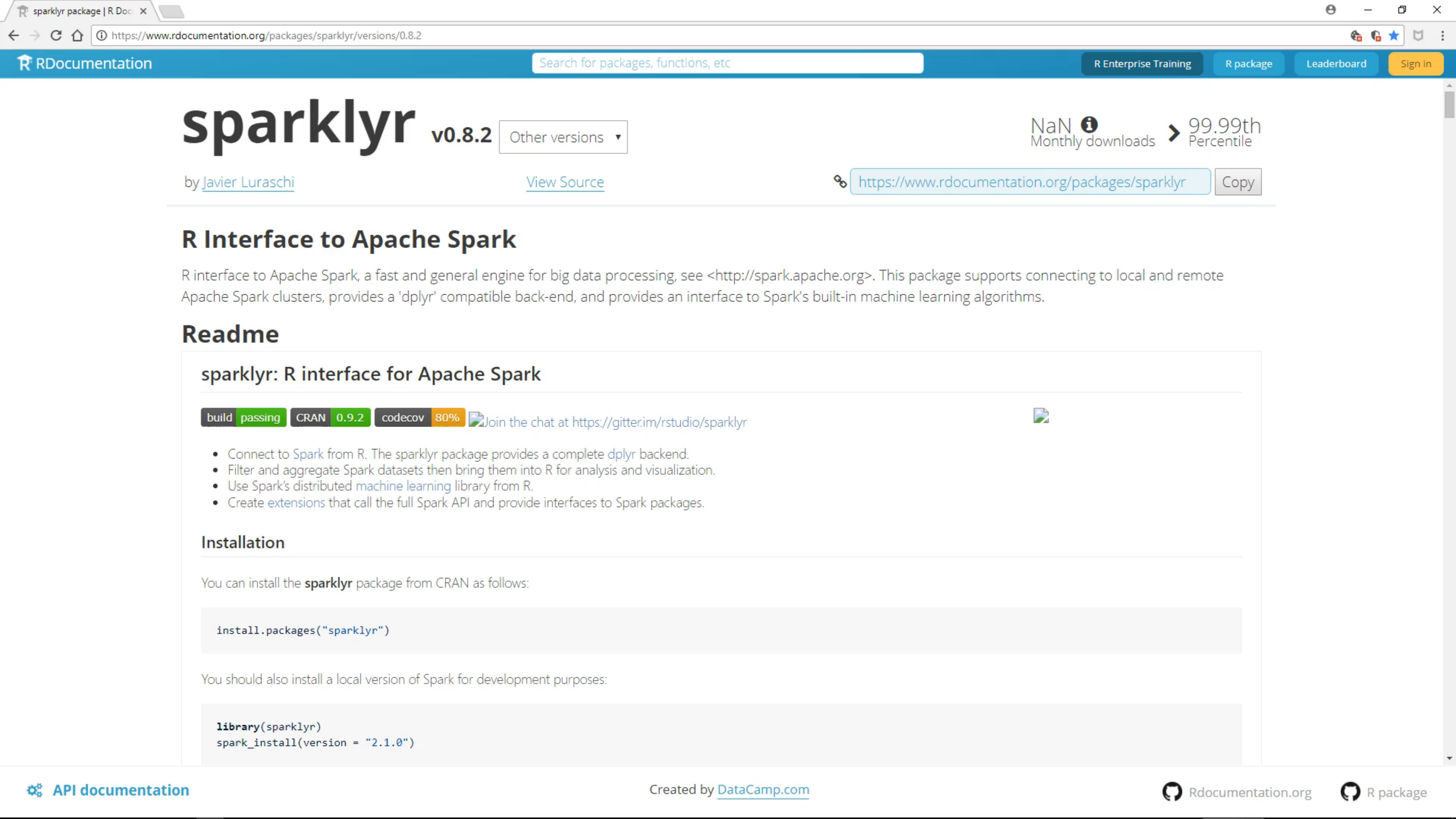
dplyr

ML

Extensions

Apache Spark

- https://www.rdocumentation.org/packages/sparklyr/versions/0.8.2
- https://spark.rstudio.com/



sparklyr v0.8.2

by Javier Luraschi

https://www.rdocumentation.org/packages/sparklyr

R Interface to Apache Spark

R interface to Apache Spark, a fast and general engine for big data processing, see <http://spark.apache.org>. This package supports connecting to local and remote Apache Spark clusters, provides a 'dplyr' compatible back-end, and provides an interface to Spark's built-in machine learning algorithms.

Readme

sparklyr: R interface for Apache Spark

Join the chat at https://gitter.im/rstudio/sparklyr

- Connect to Spark from R. The sparklyr package provides a complete dplyr backend.
- Filter and aggregate Spark datasets then bring them into R for analysis and visualization.
- Use Spark's distributed machine learning library from R.
- Create extensions that call the full Spark API and provide interfaces to Spark packages.

Installation

You can install the **sparklyr** package from CRAN as follows:

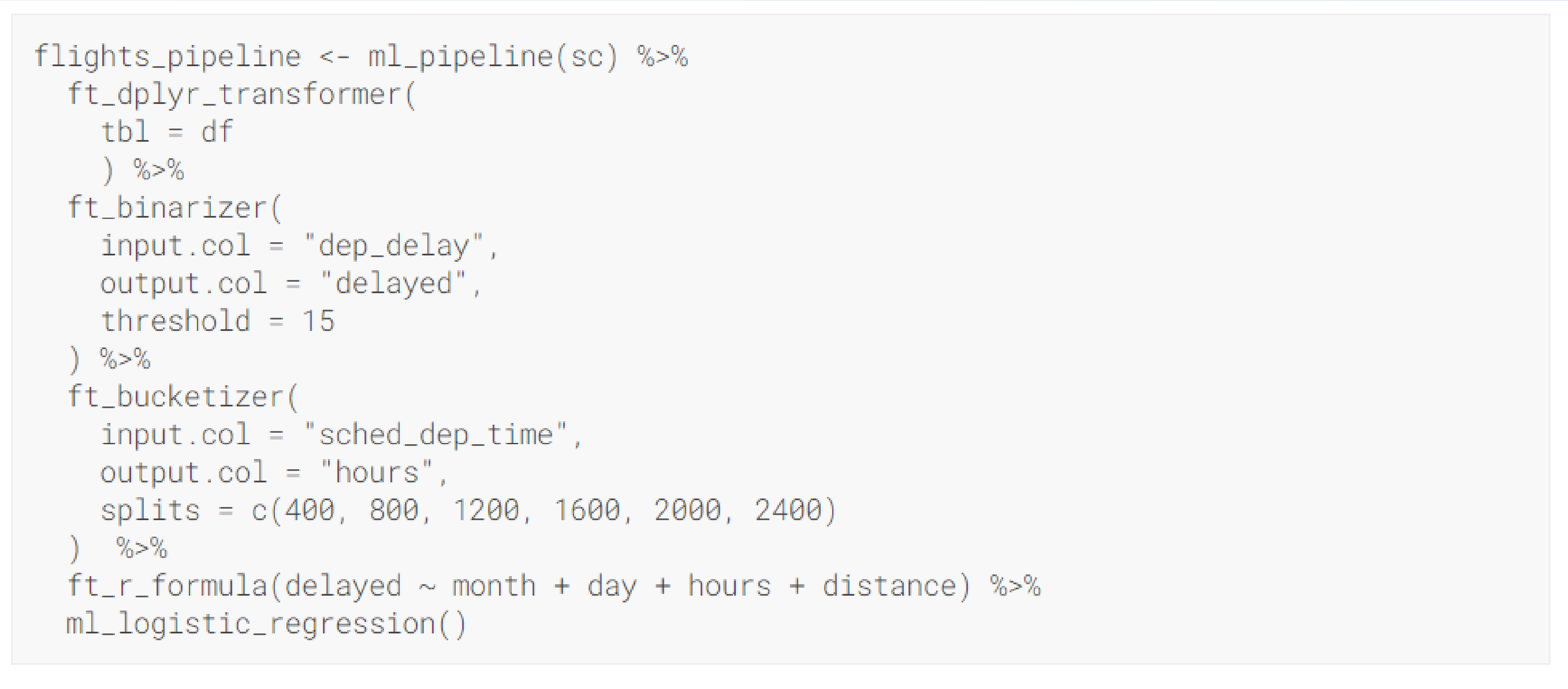
```
install.packages("sparklyr")
```

You should also install a local version of Spark for development purposes:

```
library(sparklyr)
spark_install(version = "2.1.0")
```

Created by DataCamp.com

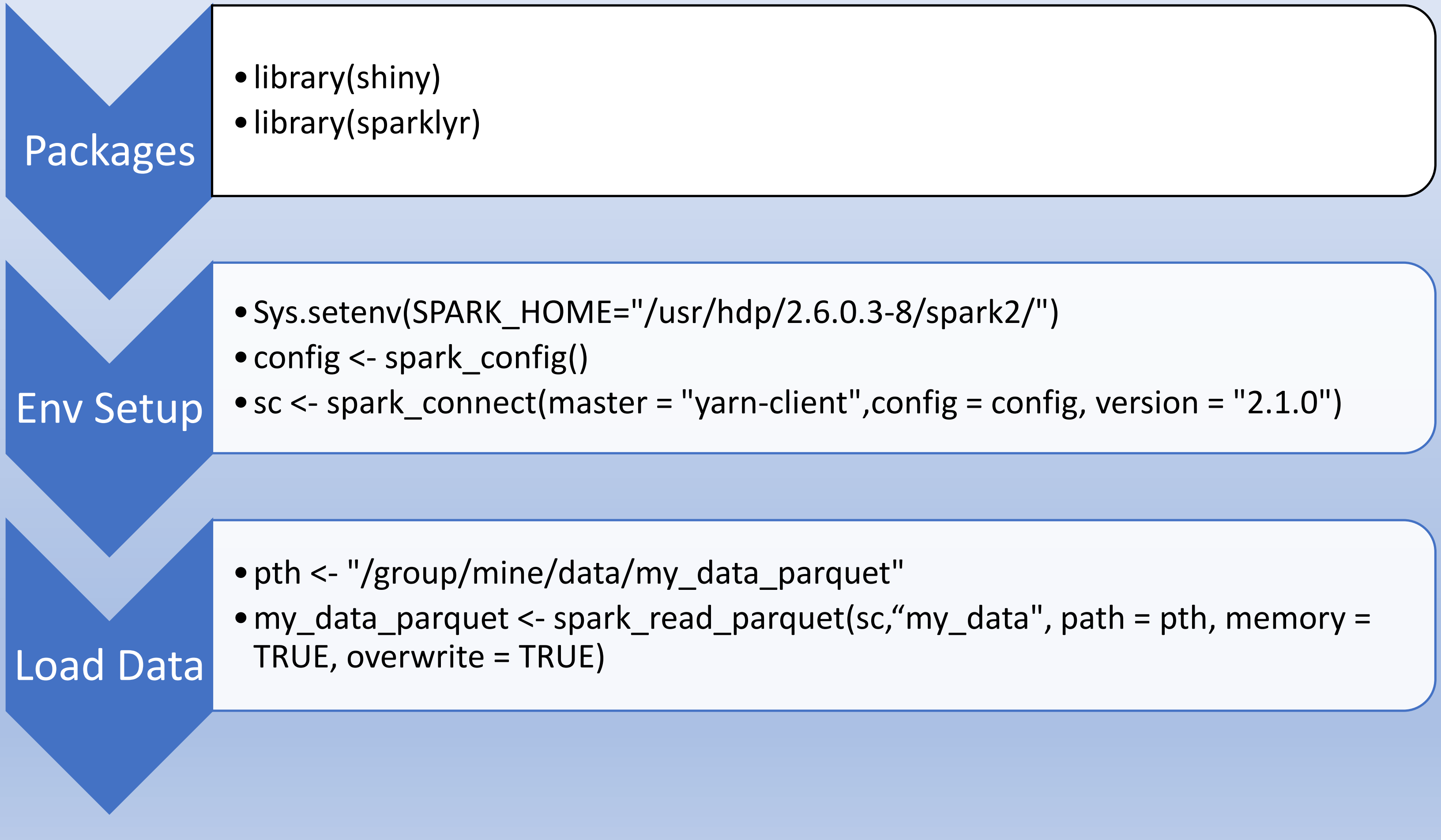
ML Pipelines



```r
flights_pipeline <- ml_pipeline(sc) %>%
  ft_dplyr_transformer(
    tbl = df
    ) %>%
  ft_binarizer(
    input.col = "dep_delay",
    output.col = "delayed",
    threshold = 15
  ) %>%
  ft_bucketizer(
    input.col = "sched_dep_time",
    output.col = "hours",
    splits = c(400, 800, 1200, 1600, 2000, 2400)
  )  %>%
  ft_r_formula(delayed ~ month + day + hours + distance) %>%
  ml_logistic_regression()
```

- https://spark.rstudio.com/guides/pipelines/

Shiny and SparklyR



Packages

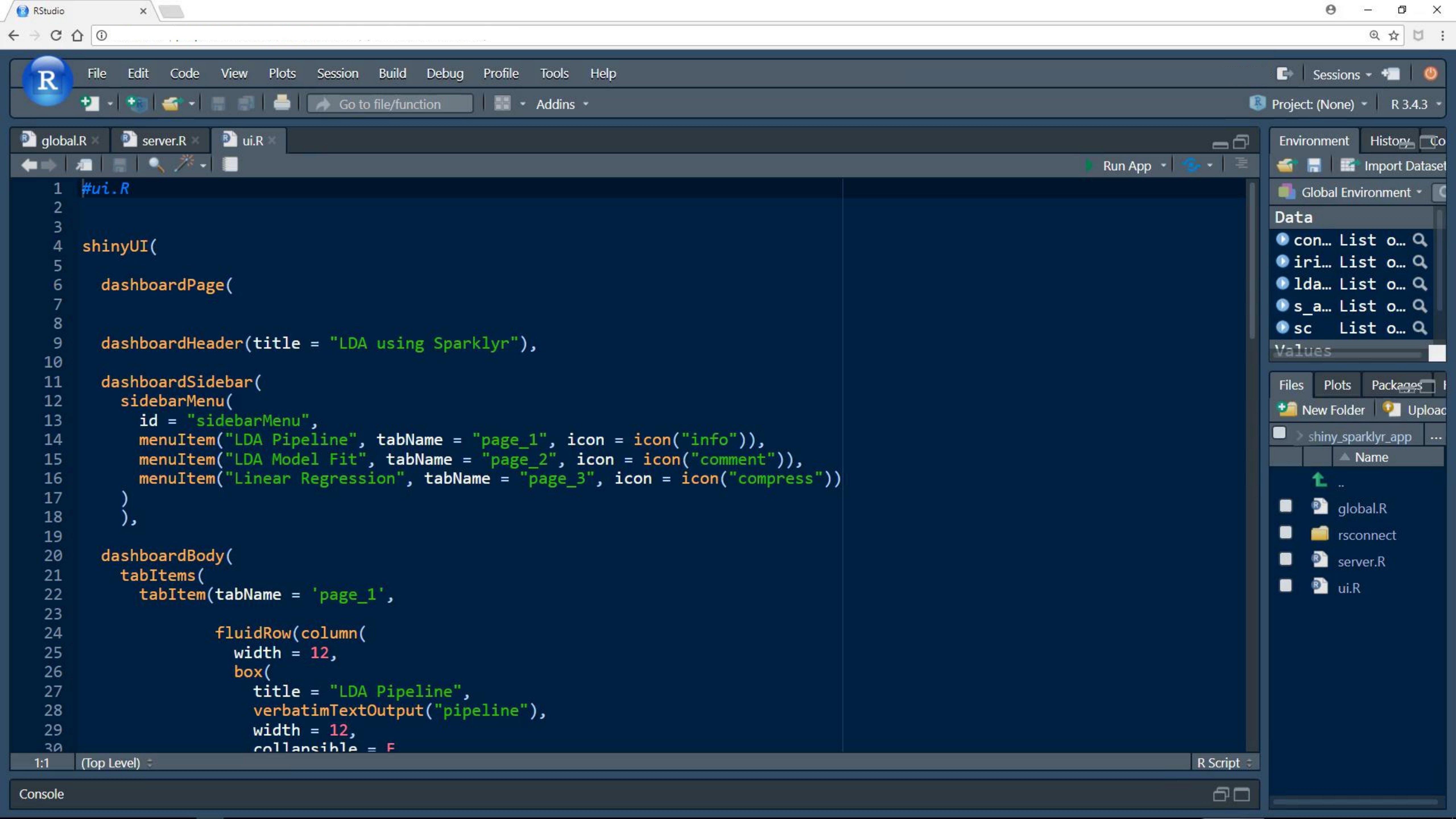
- library(shiny)
- library(sparklyr)

Env Setup

- Sys.setenv(SPARK_HOME="/usr/hdp/2.6.0.3-8/spark2/")
- config <- spark_config()
- sc <- spark_connect(master = "yarn-client",config = config, version = "2.1.0")

Load Data

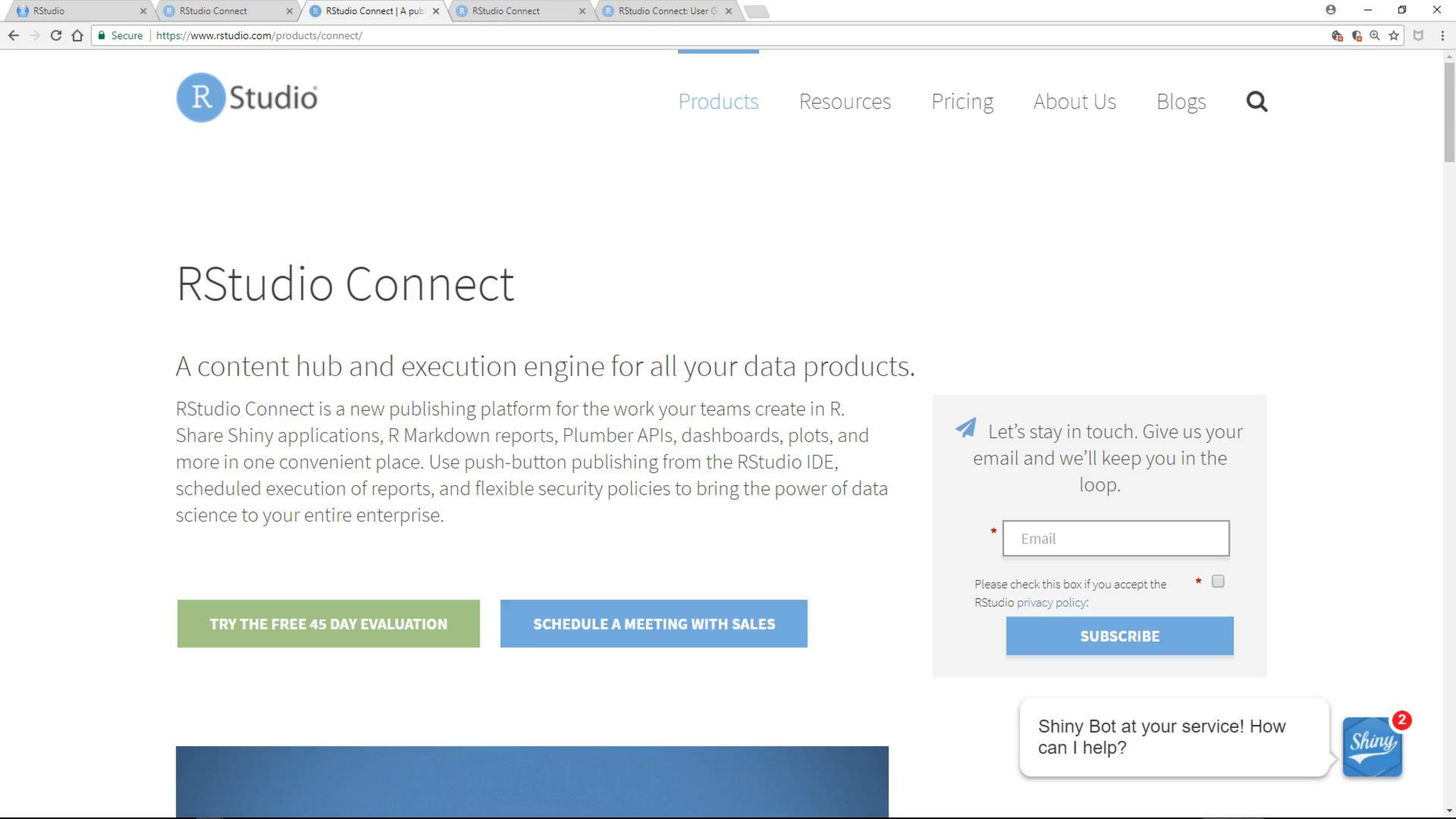
- pth <- "/group/mine/data/my_data_parquet"
- my_data_parquet <- spark_read_parquet(sc,“my_data", path = pth, memory = TRUE, overwrite = TRUE)



```
#ui.R


shinyUI(

  dashboardPage(


  dashboardHeader(title = "LDA using Sparklyr"),

  dashboardSidebar(
    sidebarMenu(
      id = "sidebarMenu",
      menuItem("LDA Pipeline", tabName = "page_1", icon = icon("info")),
      menuItem("LDA Model Fit", tabName = "page_2", icon = icon("comment")),
      menuItem("Linear Regression", tabName = "page_3", icon = icon("compress"))
    )
    ),

  dashboardBody(
    tabItems(
      tabItem(tabName = 'page_1',

               fluidRow(column(
                width = 12,
                box(
                 title = "LDA Pipeline",
                 verbatimTextOutput("pipeline"),
                 width = 12,
                 collapsible = F
```

RStudio Connect

“Distribute data science across your organisation”



RStudio Connect

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