Shiny Overview

Nanocourse Lecture 1, 8/4/25

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TAs: Sriya & Ermis!

Nanocourse Intro

Goal

Everyone gets a cool app built in the next 2 days!

Scope

Introduce core Shiny concepts quickly & catalyze further independent learning.

Nanocourse schedule

- Day 1
  - Overview
  - UI side
  - Server side
  - Project time
- Day 2
  - Interactive plots & extras
  - Deployment
  - Project time
  - Project presentations!

Shiny Showcase

1. Kmeans
2. Classic dashboard
3. Fancy external example
4. TO design

Shiny Gallery

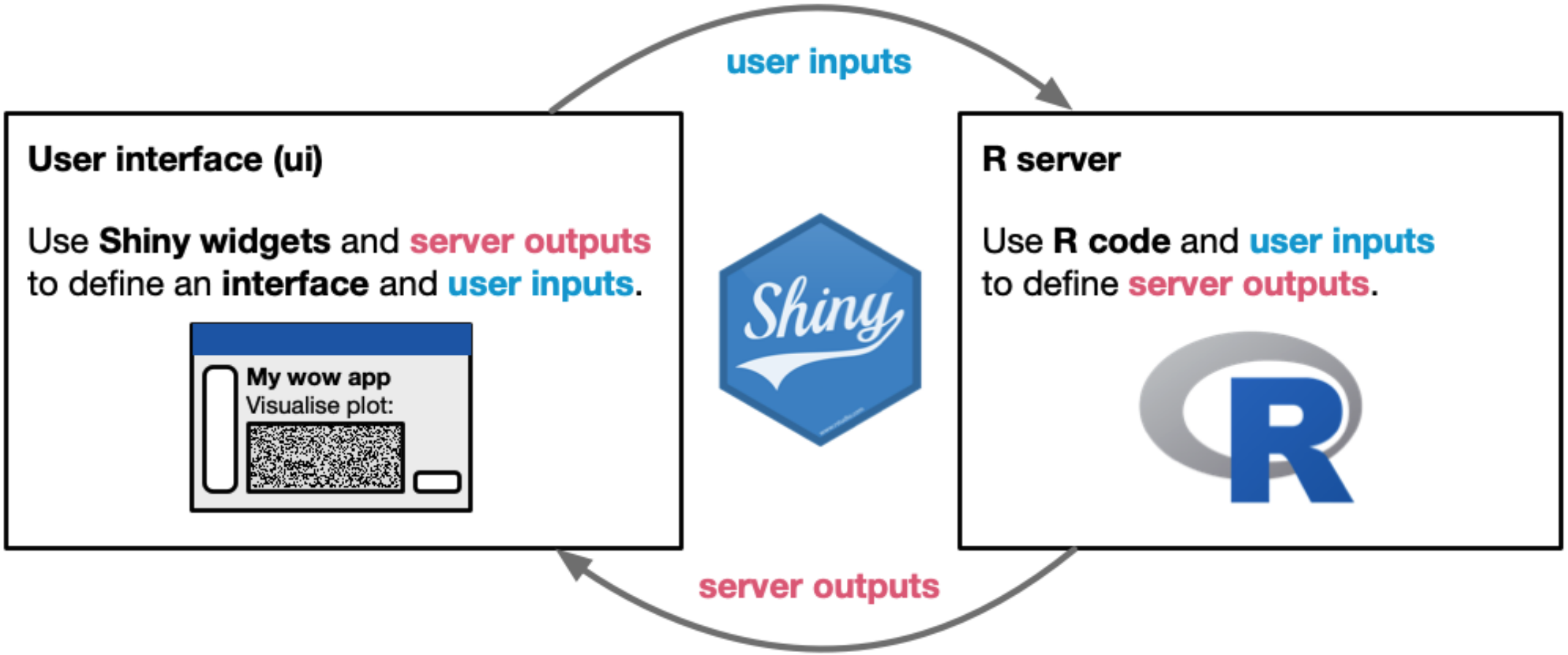
What are Shiny use cases?

- Exploring complex data (for yourself)
- Sharing data
- Teaching quantitative concepts

5 min brainstorm

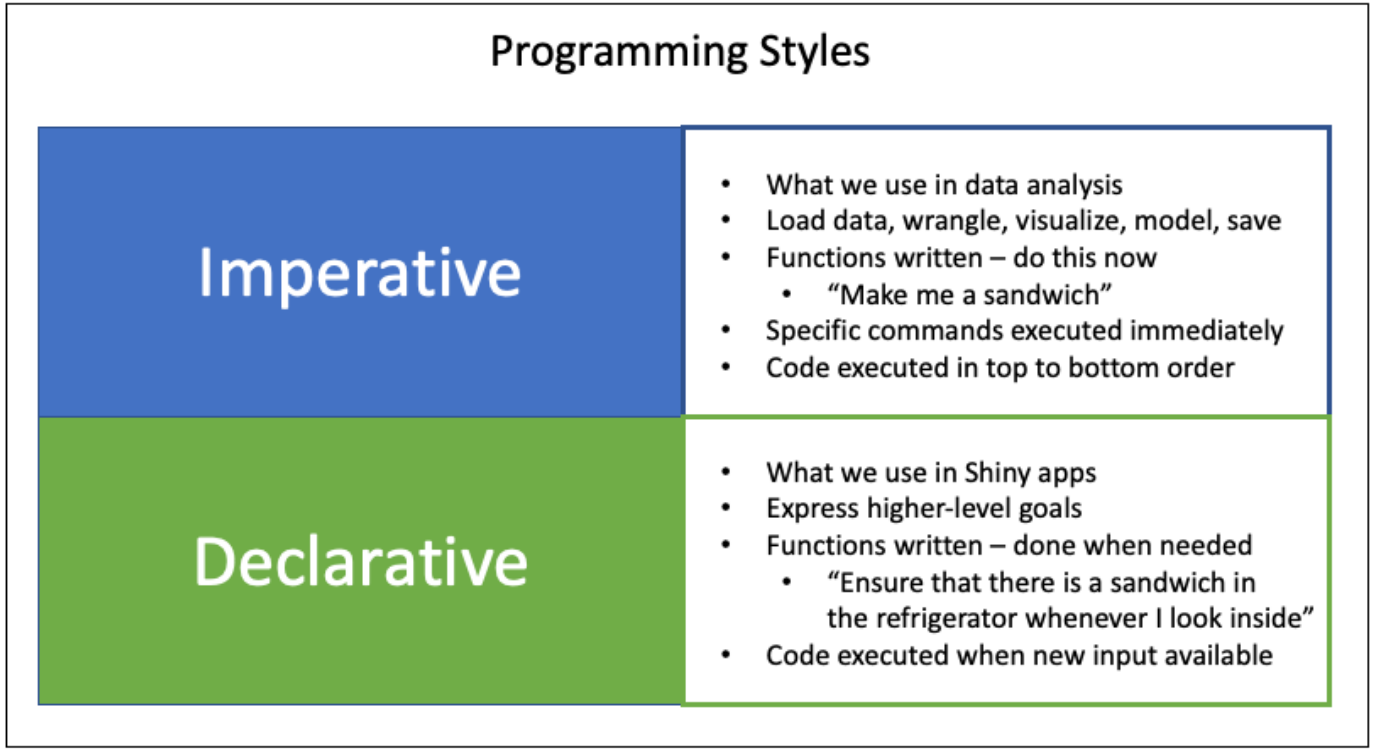
Without any code, what do you want your project app to do? Draw it!

Shiny = server + interface



https://bookdown.org/hneth/i2ds/shiny.html

Warning: Shiny coding may seem weird…

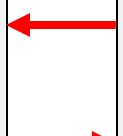


https://bookdown.org/pdr_higgins/rmrwr/a-gentle-introduction-to-shiny.html

Hello World

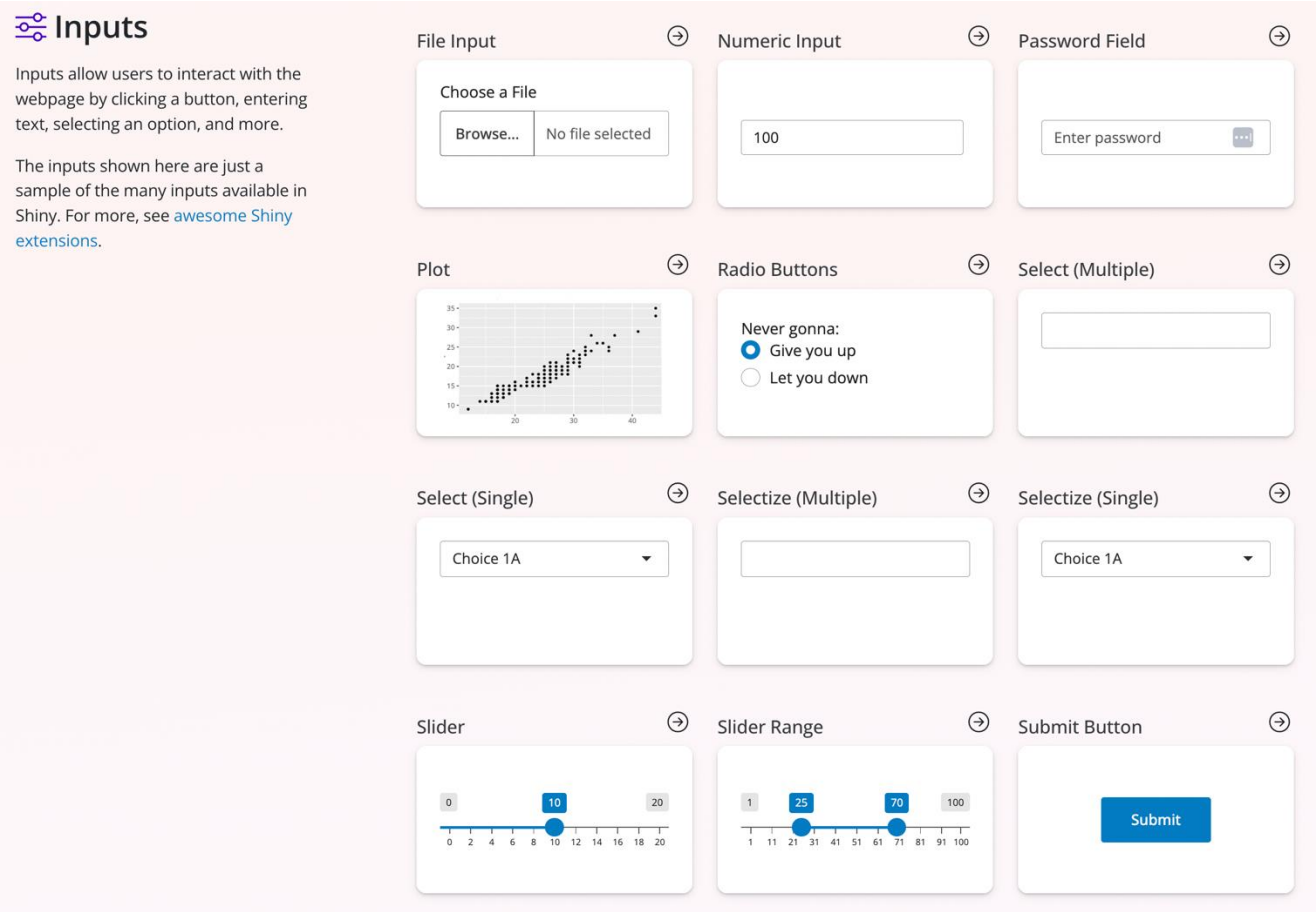
Rstudio > File > New File > Shiny web app

```
# UI

plotOutput(outputId = "distPlot")

sliderInput("bins", min = 1, max = 50)
```



```
# Server

output$distPlot <- renderPlot({

bins <- seq(min, max, input$bins)

hist(..., breaks = bins)

})

# Run app

shinyApp(ui = ui, server = server)
```

Shiny inputs

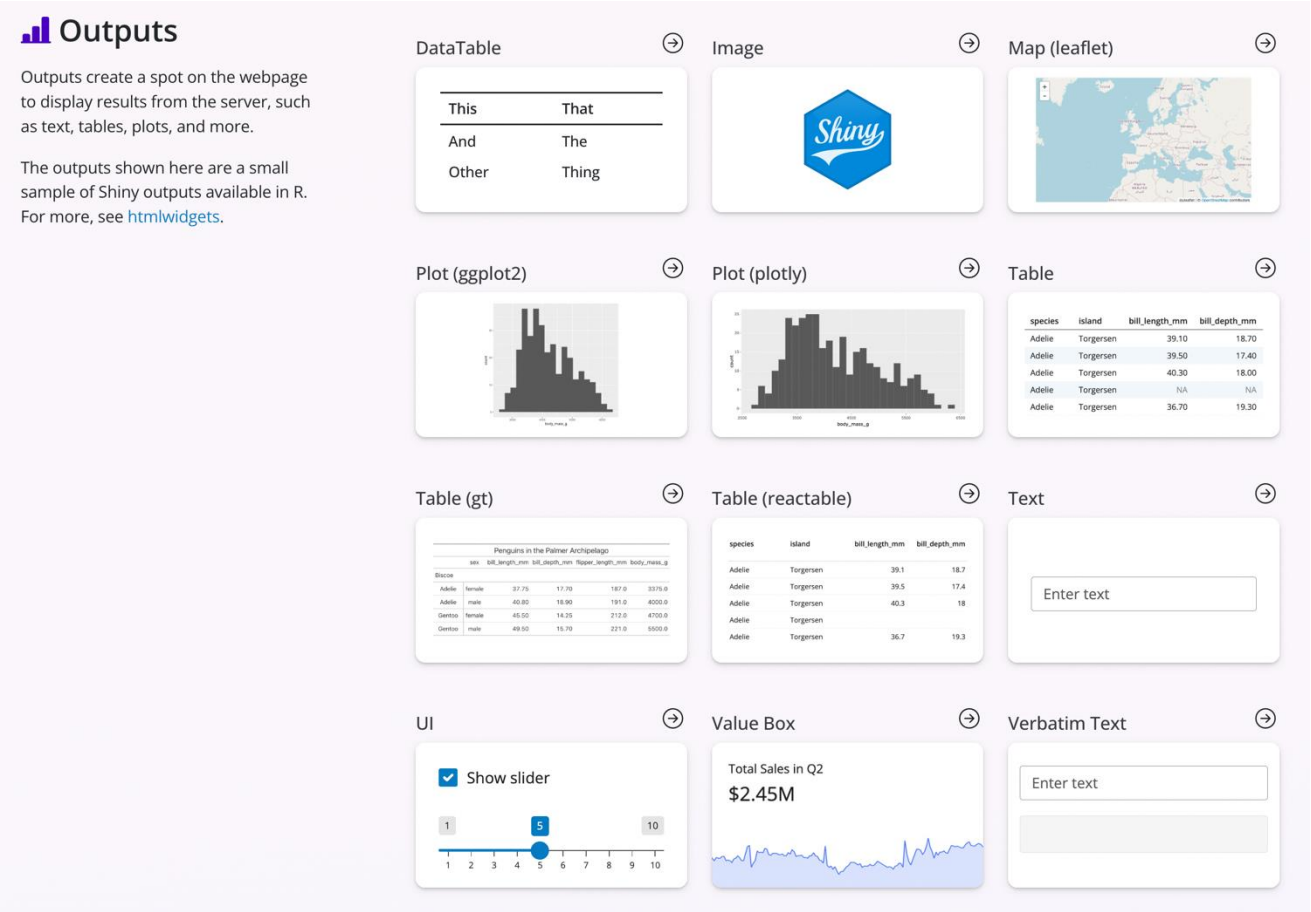


Can you change the old faithful slider to a numeric input?

```
# UI

numericInput()
```

https://shiny.posit.co/r/components/

Shiny outputs



Can you add a Verbatim Text output of the faithful dataset?

```
# UI

plotOutput(),
verbatimTextOutput()

# Server

renderPrint({faithful})
```

https://shiny.posit.co/r/components/

Coding example: curve fitting

add logistic curve intro

Day 1

- Shiny Overview (Scott)
- UI side (Sriya)
- Server side (Ermis)
- Projects

Independent projects

- Start simple!
- Instructors will check in with you. We are here to help!
- Please see us if you don’t have data / project ideas.
- Day 1 Goal: Get some part of your app functional!

Hello World

Rstudio > File > New File > Shiny web app

```
# User interface: ----------
ui <- fluidPage(
    # App title:
    titlePanel("The Title"),
    sidebarLayout(
        sidebarPanel(
            # inputs are provided here
        ),
        mainPanel(
            # outputs are shown here
        )
    )
)
```

```
# Server: ----------
server <- function(input, output) {
   # R code turning data and inputs
into outputs
}

# Run the app: ----------
shinyApp(ui = ui, server = server)
```

Deployment primer – shinapps.io button in rstudio & shinylive editor

Interactive curve fitting

- Logistic growth on whiteboard
  - Discuss app vision
  - Set initial goal & plan
- Walk through section 1 of static R analysis (R refresher too)
- Convert Old faithful app to step 1 logistic growth app