
# What I've learned about running Shiny in production

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# $ whoami


LIBERTY
MEN IN GREEN

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# $ agenda


Where

Learn

Why

When not to use


Where

Learn

Why

When not to use

+

# Production

Define

Goals


Where

Learn

Why

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+

# Production

Define

Goals

=

Challenges

Tools

Tips

Conclusion

# Where to run Shiny

- R Studio Shiny Server Pro
- R Studio Connect
- ShinyApps.io
- Self Hosted

# Learning about Shiny

- Documentation - https://shiny.rstudio.com
- Videos and written tutorials - https://shiny.rstudio.com/tutorial
- Blogs
  - R Studio - https://blog.rstudio.com/categories/shiny
  - Dean Attali - https://deanattali.com
- Twitter - #rstats

# Why use Shiny

- Interactive R application
- Fast prototyping
- Build and deploy model in R
  - No code rewrite
- Open-source R package

# Reasons not to use Shiny

- High throughout
  - R is an interpreted computer language
- Multi-page applications

# Definition of Production

- Users relying on an environment with consequences when it’s down

# Goals of Production

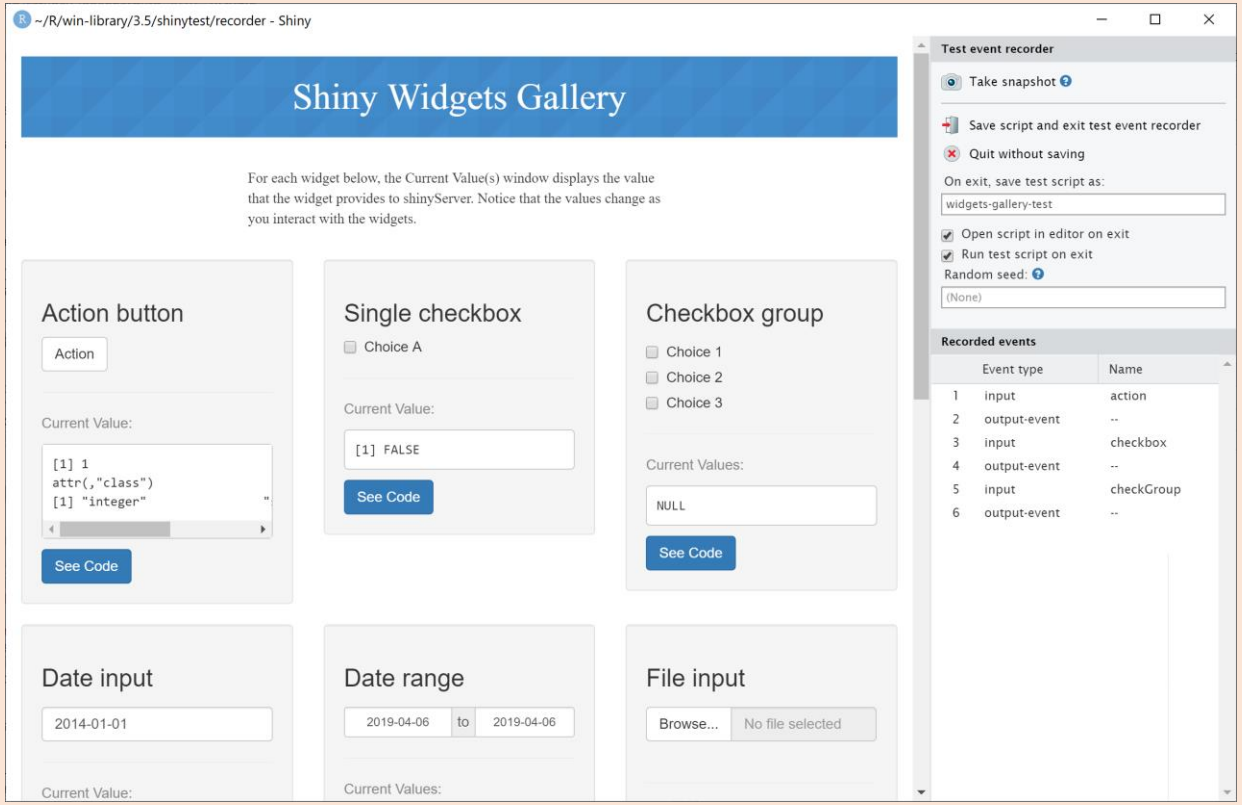
- Uptime
- Secure
- Bug free
- Performance

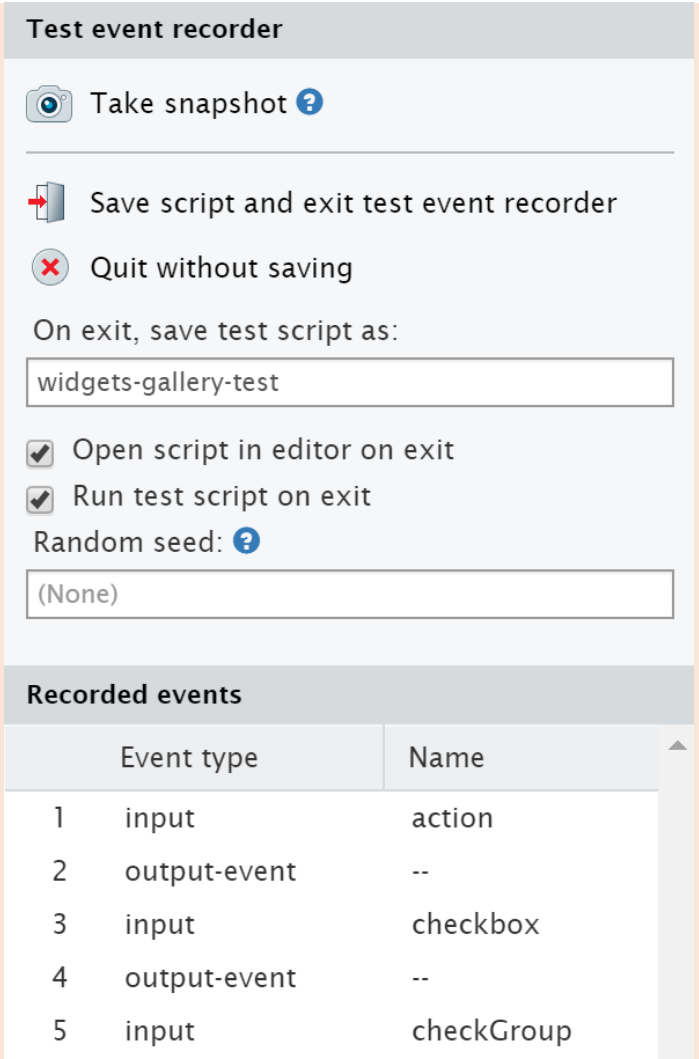
# Challenges to Shiny in Production

- Organisation - Proving it can be production ready
- Cultural – Team's willingness to adopt
- Technical – R developers are not traditional web or software developers

# Tools: shinytest

- https://rstudio.github.io/shinytest/



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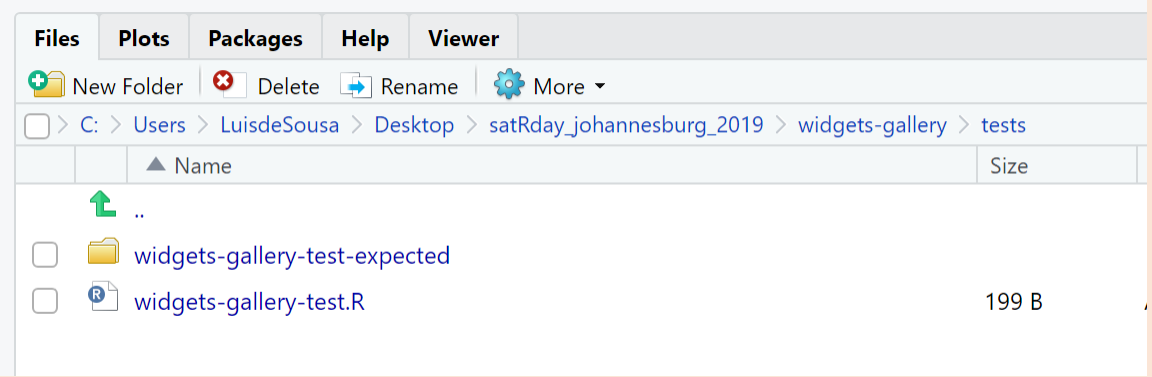


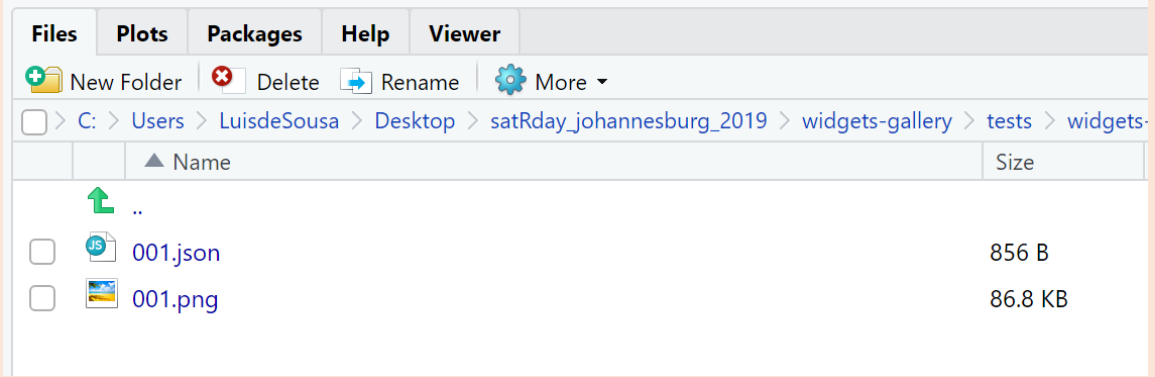


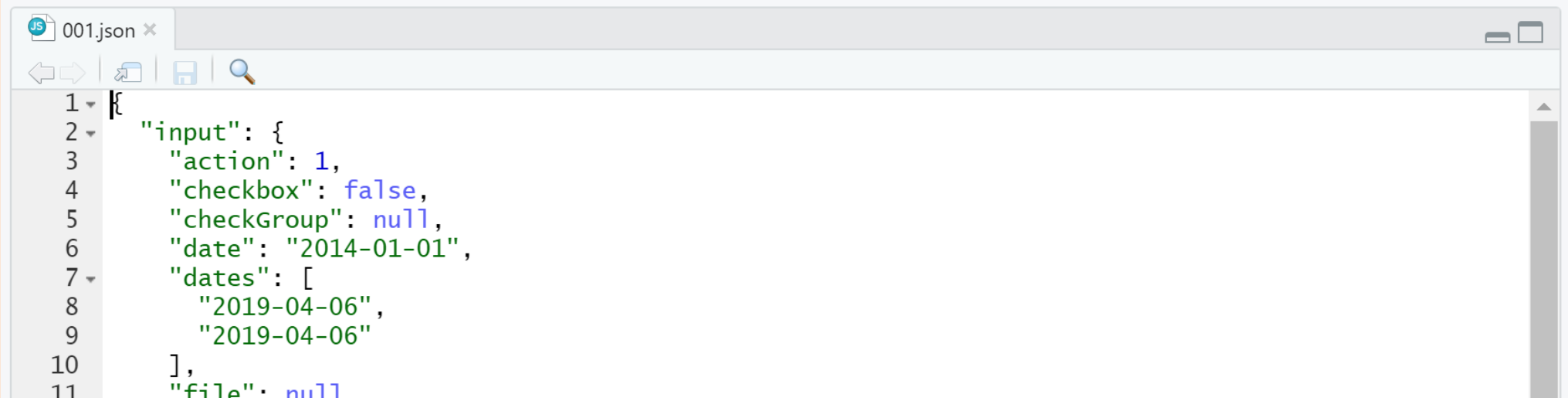

# Tools: shinytest

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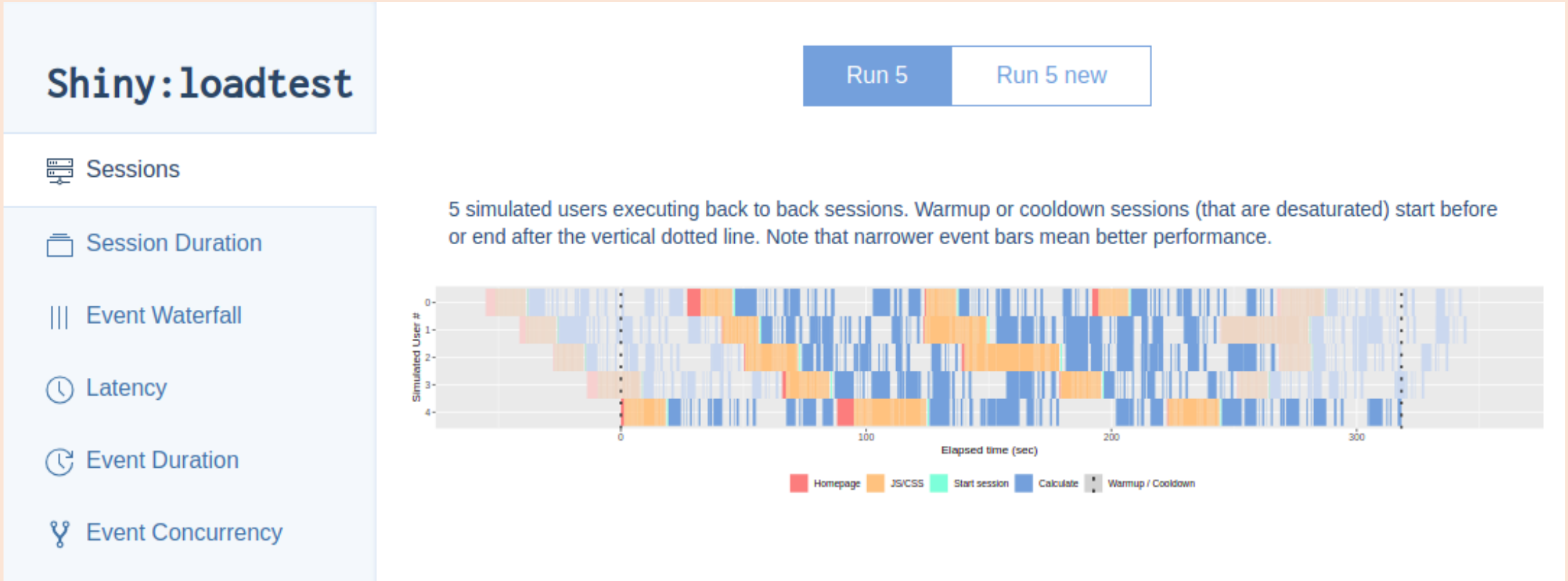
widgets-gallery-test.R

Compare Results | Run Tests

```
1  app <- ShinyDriver$new("../")
2  app$snapshotInit("widgets-gallery-test")
3
4  app$setInputs(action = "click")
5  app$setInputs(checkbox = FALSE)
6  app$setInputs(checkGroup = character(0))
7  app$snapshot()
8
```

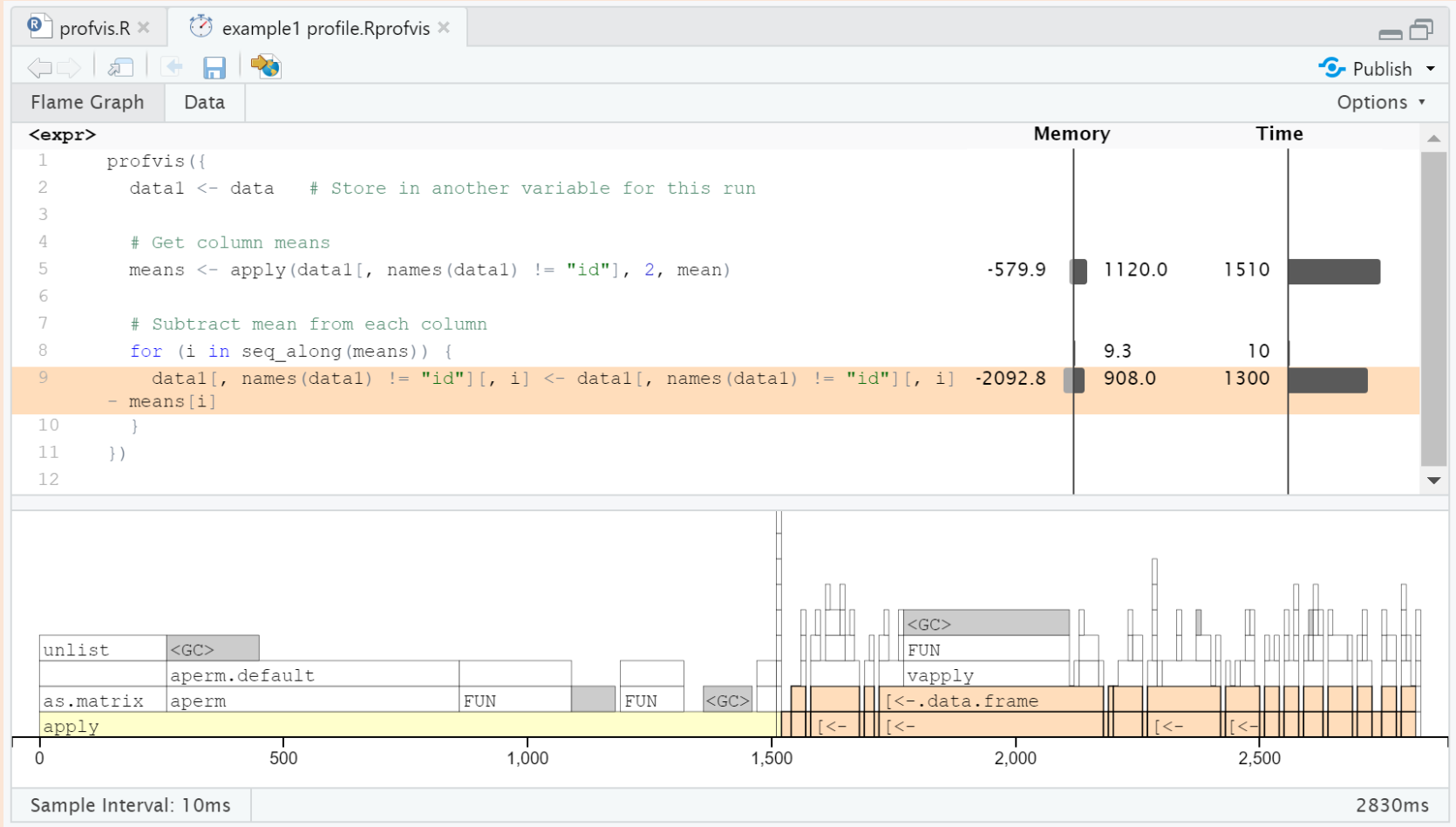
# Tools: shinyloadtest

- https://rstudio.github.io/shinyloadtest/
- Record, Replay and Analyse



# Tools: profvis

- https://rstudio.github.io/profvis/



# Tools: Asynchronous programming

- https://rstudio.github.io/promises/
- “DO use promises if you have a Shiny app with long-running operations, and want to serve multiple users simultaneously.”
- “DON’T use promises to improve the performance of Shiny apps for a single user.”

# Tools: Feather

- https://github.com/wesm/feather
- Binary columnar serialization for data frames
- Long running query that interrupts user experience

# Tips: Setting up Production pipeline

- Linting
- Version control
- Code reviews and documentation
- Testing
- Deployment
  - CI / CD
    - Docker and Kubernetes
  - RStudio Connect

# Tips: Filter as close to source as possible

- Move data wrangling as close to data source as possible

# Tips: Plot caching

- https://shiny.rstudio.com/articles/plot-caching.html

```
output$plot <- renderCachedPlot(
  {
    # Plotting code here...
  },
  cacheKeyExpr = { list(input$n, dataset()) }
)
```

# Tips: Horizontal scaling

- Shiny applications can be scaled horizontally for high loads

# Conclusion

- Use the tools and tips covered
- These things take time
  - Start early
  - Retrofitting is difficult
- Deploying in production is a team effort
  - Learn on the expertise of your friendly IT/Engineering resource

# Resources

- https://github.com/luisdza/satRday_johannesburg_2019
- https://resources.rstudio.com/shiny/shiny-in-production-principles-practices-and-tools-joe-cheng
- https://twitter.com/_ColinFay/status/1085930604305235970