Data Science with R Workflow
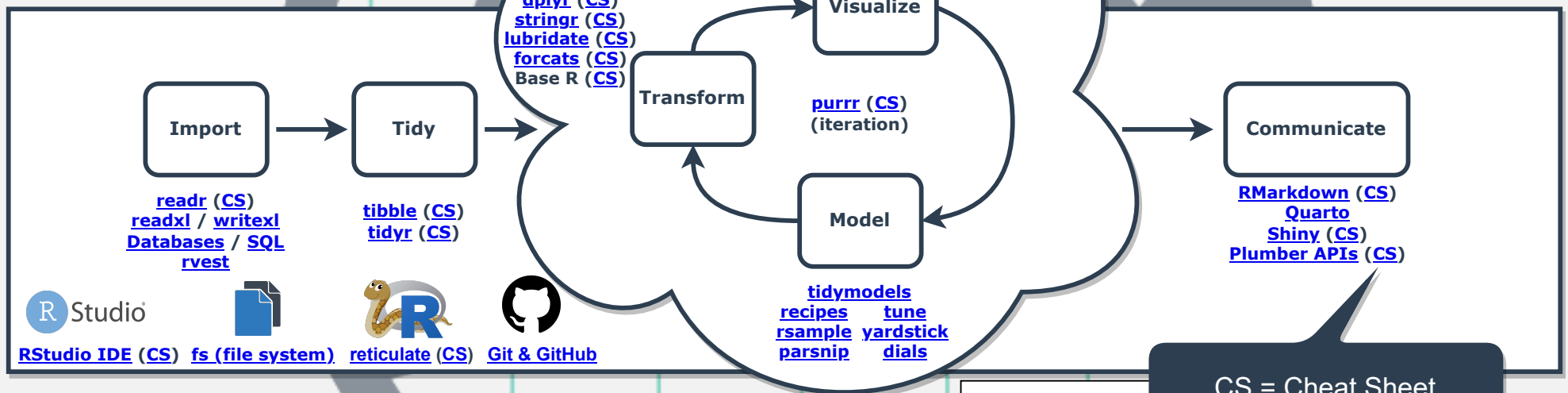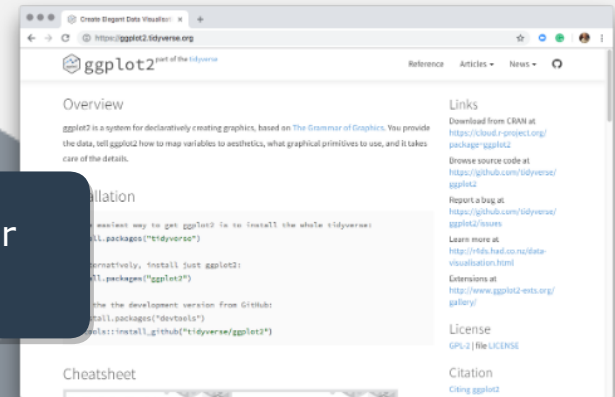
Are you struggling to learn data science? We can help.

The **5-Course R-Track Program** has helped 5,238 students land data science jobs, pay raises, and promotions. Achieve your goals. Become the data scientist you were meant to be.

5-Course R-Track
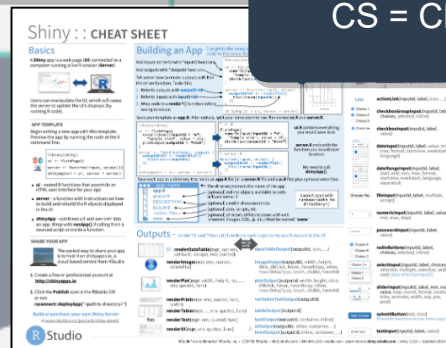The Ultimate Online Data Science Progam

Click the links for Documentation

CS = Cheat Sheet

ggplot2 (CS)
plotly (CS)
gt

dplyr (CS)
stringr (CS)
lubridate (CS)
forcats (CS)
Base R **(CS)**

Visualize

purrr (CS)
(iteration)

Transform

Model

Import → Tidy →

Communicate

readr (CS)
readxl / **writexl**
Databases / **SQL**
rvest

tibble (CS)
tidyr (CS)

tidymodels
recipes   tune
rsample yardstick
parsnip   dials

RMarkdown (CS)
Quarto
Shiny (CS)
Plumber APIs (CS)

RStudio IDE (CS)   **fs (file system)**   **reticulate (CS)**   **Git & GitHub**

Important Resources

- **R For Data Science Book:** http://r4ds.had.co.nz/
- **Big Book of R:** https://www.bigbookofr.com/
- **Rmarkdown:** Book and Cookbook
- **More Cheatsheets:** https://www.rstudio.com/resources/cheatsheets/
- **tidyverse packages:** https://www.tidyverse.org/
- **Connecting to databases:** https://db.rstudio.com/
- **Reproducible Environments:** https://environments.rstudio.com/

5-Course R-Track
The Ultimate Online Data Science Progam
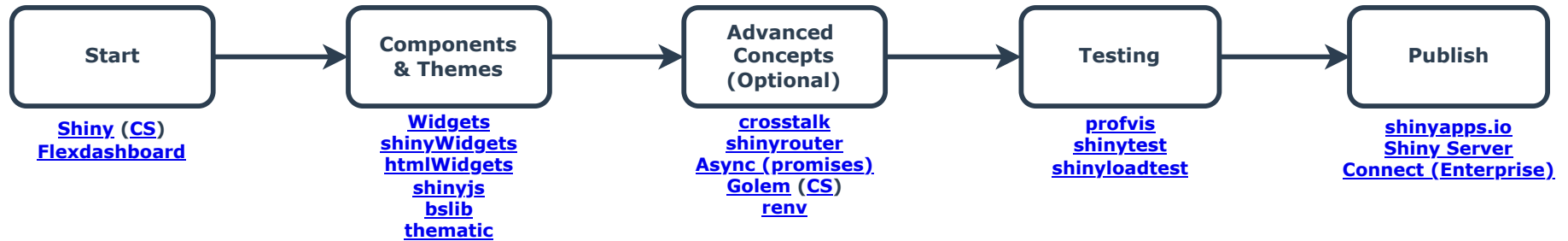
5-Course R-Track Program
Become a Data scientist in 6-months or less

Business Science University
university.business-science.io

version: 5.0

Data Science with **R**

Web Applications & the "Shinyverse"

Start	→	Components & Themes	→	Advanced Concepts (Optional)	→	Testing	→	Publish

Start
Shiny (**CS**)
Flexdashboard

Components & Themes
Widgets
shinyWidgets
htmlWidgets
shinyjs
bslib
thematic

Advanced Concepts (Optional)
crosstalk
shinyrouter
Async (promises)
Golem (**CS**)
renv

Testing
profvis
shinytest
shinyloadtest

Publish
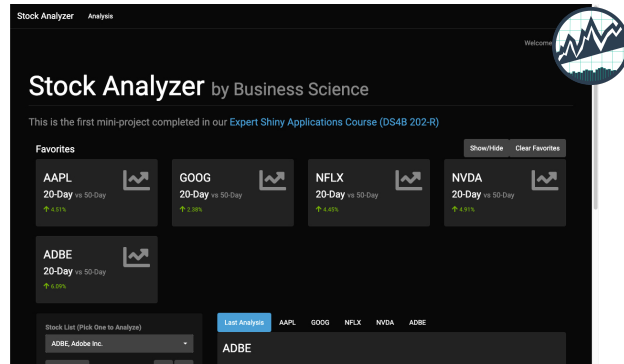**shinyapps.io**
Shiny Server
Connect (Enterprise)

Flexdashboard Apps

Flexdashboard is an RMarkdown-based dashboard tool that can be used to integrate shiny components at runtime. Development is fast and efficient, but layouts are not as open to modification as building an app using Shiny.

Shiny Apps

Shiny is an R-Package that enables web app development from R. Contains R functions for common HTML structures, UI Controls (Components/Widgets), and web framework tools. The framework if highly flexible, but users require more knowledge of HTML & CSS.

Shiny App - AWS Multi-User App
Built in Expert Apps Course (Demo Our App Gallery)

Start Learning Today with 5-Course R-Track Program

Shiny Themes & Dashboards

Flexdashboard Gallery

Themes Layouts

Shiny Gallery
shinythemes
shinydashboard
shinydashboardPlus

Semantic
shiny.semantic
semantic.dashboard

Bootstrap 4
bs4Dash

Argon
argonR
argonDash

ShinyMobile (**CS**)

Web Frameworks & Tools

Bootstrap & Themes
Bootstrap 3
Bootstrap 4
Bootswatch
bslib
thematic

Fonts & Icons
Font Awesome
Google Fonts

Chrome Browser
Chrome DevTools

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Data Science with R

Special Topics

Text Analysis & NLP

- Text Mining with R (Book): tidytext
- NLP: textrecipes, Book (SMLTAR)

Machine Learning

- AutoML: H2O (CS)
- ML (Tidymodels): tidymodels.org
  - parsnip - ML
  - recipes - Feature Engineering
  - tune - Hyperparameter Tuning
  - rsample - Resampling
  - yardstick - Accuracy Metrics
- ML (pre-Tidymodels): caret (CS)
- MLR: mlr & mlr3 (CS)
- MLVerse: mlverse

Deep Learning

- R Interface to TensorFlow
- Keras (CS), TF Estimators, TensorFlow (Core)
- Torch for R

Time Series Analysis

- Time Series Data Wrangling: timetk
- Time Series Visualization: timetk
- Feature Engineering: timetk
- Convert between classes: timetk & tsbox
- Generating Future Series: timetk

Forecasting

- Prophet, ARIMA, Boost, ML: modeltime
- Ensembles: modeltime.ensemble
- Resampling & Backtesting: modeltime.resample
- Deep Learning: modeltime.gluonts
- H2O AutoML: modeltime.h2o

Anomaly Detection

- Identify anomalies: anomalize, timetk

Network Analysis

- Network Data Transformations (Tidy): tidygraph
- Network Data Transformations: igraph

Network Viz

- Static:
  - ggraph - Graph plotting utilities for ggplot2
- Interactive (JavaScript):
  - networkD3 - D3 Networks in R
  - plotly (CS) - plotly.js (network graphs) in R

Speed & Scale

- Faster than dplyr & pandas: data.table (CS)
- Dplyr SQL & DT backends: dtplyr, dbplyr
- Parallel Processing w/ purrr: furrr
- Larger than RAM: Arrow, sparklyr (CS)

Exploratory (EDA)

- DataExplorer, skimr, correlationfunnel, janitor

Geospatial Analysis

- Geocoding (getting lat/long, bboxes, & sf's):
  - ggmap - Google API (requires key)
  - osmdata - OpenStreet Overpass API
  - tmaptools - OpenStreet Nominatum API
- Simple Features (sf objects): sf (CS) (tidy)
- Spatial Objects (sp objects): sp (non-tidy, pre-sf)

Geospatial Viz

- Static:
  - ggmap - Google API (requires key)
  - osmplotr - Impressive Maps via OSM
  - tmap - Thematic Maps
  - cartography (CS) - Thematic Maps
- Interactive (JavaScript):
  - leaflet (CS) - leaflet.js in R
  - plotly (CS) - plotly.js (maps) in R

Interoperability

- Python: reticulate (**CS**)
- C++: Rcpp
- Java: rJava
- D3: r2d3

Financial Analysis

- Getting financial data: tidyquant & quantmod
- Quantitative Analysis: tidyquant & xts/TTR
- Portfolio Analysis: tidyquant & PerformanceAnalytics

Financial Viz

- Static:
  - tidyquant - Financial ggplot2 geoms
- Interactive:
  - highcharter - highchart.js in R
  - dygraphs - xts plotting
  - plotly (CS) - plotly.js (financial) in R

Miscellaneous Tools

- **Production:**
  - plumber, targets, renv
- **Building R Packages:** R packages Book
  - devtools (CS), usethis, pkgdown
- **Advanced Concepts** (Advanced R Book)
  - rlang & Tidy Evaluation (CS)
- **Making Blogs & Books:**
  - blogdown, bookdown
- **Posting Code (GitHub, Stack Overflow):**
  - reprex