Data Science with R Workflow
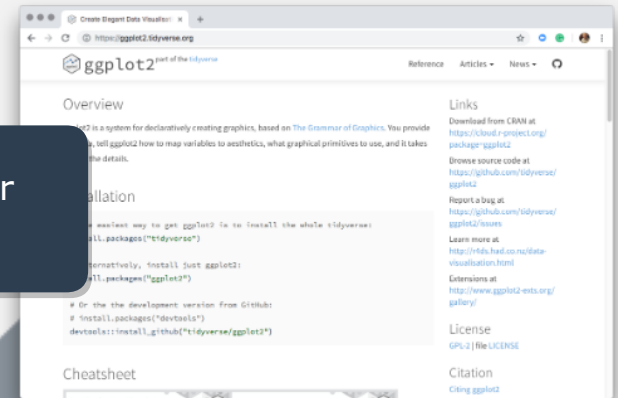
Are you struggling to learn data science? We can help.
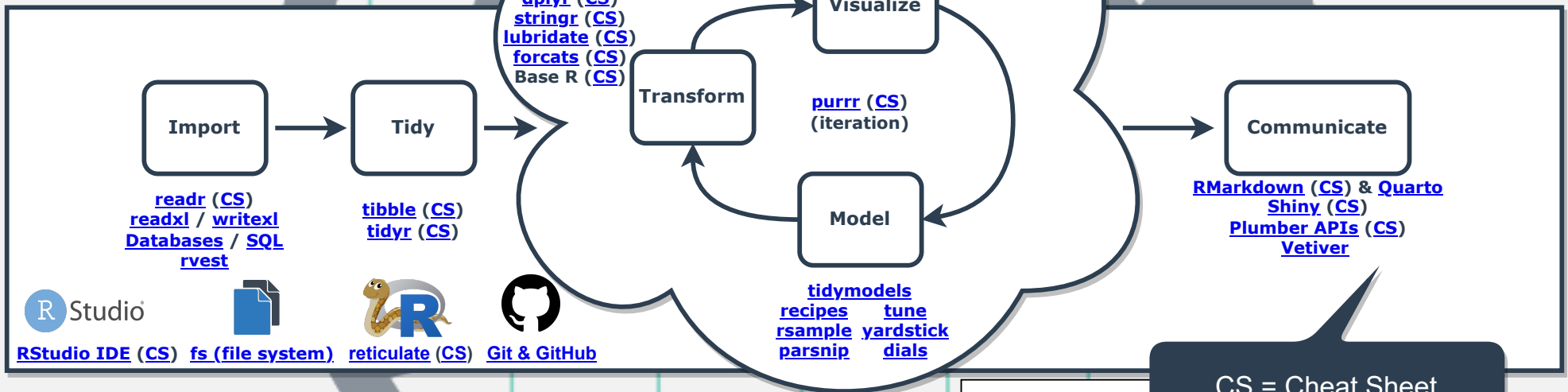
The **5-Course R-Track Program** has helped 5,238 students land data science jobs, pay raises, and promotions. Achieve your goals. Become the data scientist you were meant to be.

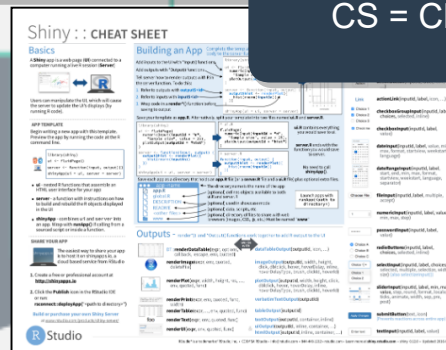**5-Course R-Track**
The Ultimate Online Data Science Progam

Click the links for Documentation

ggplot2 part of the tidyverse

Overview

ggplot2 is a system for declaratively creating graphics, based on The Grammar of Graphics. You provide the data, tell ggplot2 how to map variables to aesthetics, what graphical primitives to use, and it takes care of the details.

Installation

The easiest way to get ggplot2 is to install the whole tidyverse:

```
install.packages("tidyverse")
```

Alternatively, install just ggplot2:

```
install.packages("ggplot2")
```

```
# Or the development version from GitHub:
# install.packages("devtools")
devtools::install_github("tidyverse/ggplot2")
```

Cheatsheet

Links
Download from CRAN at https://cloud.r-project.org/package=ggplot2
Browse source code at https://github.com/tidyverse/ggplot2
Report a bug at http://github.com/tidyverse/ggplot2/issues
Learn more at http://r4ds.had.co.nz/data-visualisation.html
Extensions at http://www.ggplot2-exts.org/gallery/

License
GPL-2 | file LICENSE

Citation
Citing ggplot2

ggplot2 (CS)
plotly (CS)
gt & **reactable**

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

Visualize

Transform

purrr (CS) (iteration)

Model

Communicate

Import

Tidy

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

tibble (CS)
tidyr (CS)

RMarkdown (CS) & **Quarto**
Shiny (CS)
Plumber APIs (CS)
Vetiver

tidymodels
recipes   **tune**
rsample   **yardstick**
parsnip   **dials**

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

CS = Cheat Sheet

Shiny :: CHEAT SHEET

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/

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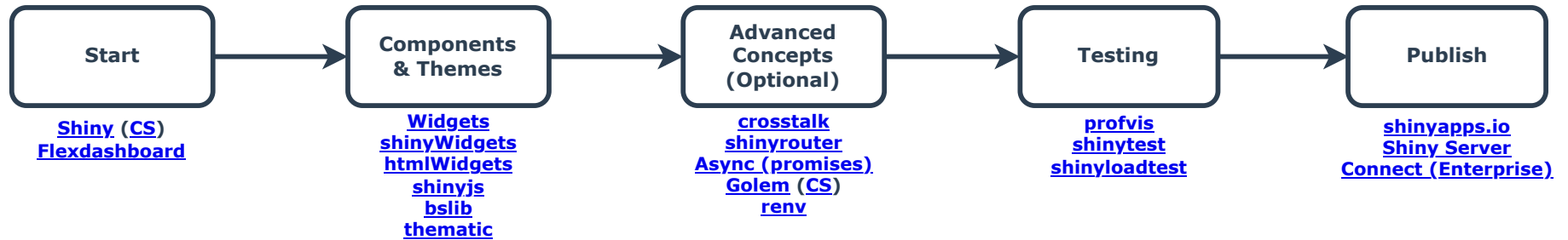**5-Course R-Track Program**
Become a Data scientist in 6-months or less

Business Science University
university.business-science.io

version: 5.1

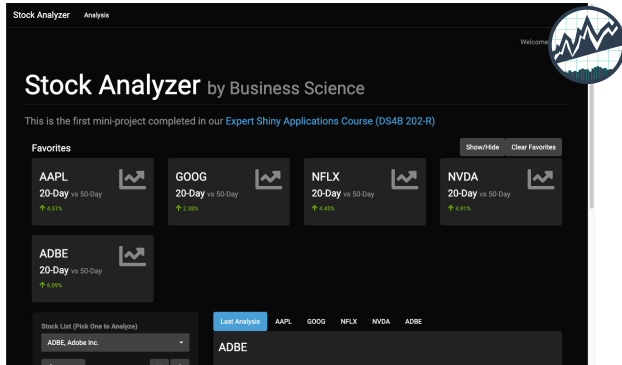# Data Science with R

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

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

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

- APIs (getting lat/long, bboxes, & sf's):
  - [osmdata]() - OpenStreet Overpass API
  - [osrm]() - OpenStreet Routes API
  - [tmaptools]() - OpenStreet Nominatum API
- Geocoding - [tidygeocoder]()
- Simple Features (sf objects): [sf]() ([CS]()) (tidy)
- Spatial Objects (sp objects): [sp]() (non-tidy, pre-sf)

Geospatial Viz

- Static:
  - [tmap]() - Thematic Maps
  - [cartography]() ([CS]()) - Thematic Maps
- Interactive:
  - [mapview]() - Quick interactive maps
  - [leaflet]() ([CS]()) - leaflet.js in R
  - [plotly]() ([CS]()) - plotly.js (maps) in R

Interoperability

- Python: [reticulate]() (**[CS]()**)   Java: [rJava]()
- C++: [Rcpp]()   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:**
  - [vetiver](), [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]()