

Data Science with



Special Topics

Time Series Analysis

- Time-aware tibbles: tibbletime & tsibble
- Convert between classes: timetk & tsbox
- Time Series Index Summary: timetk
- Generating Future Series: timetk

Forecasting

- ARIMA, ETS, etc: forecast & fable
- Tidy, glance, augment for forecast models: sweep
- Converting forecast prediction to tibble: sweep

Anomaly Detection

• Identify anomalies: anomalize

Financial Analysis

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

Financial & Time Viz

- · Static:
- tidyquant Financial ggplot2 geoms
- Interactive:
 - o <u>highcharter</u> highchart.js in R
 - o dygraphs xts plotting
 - o plotly plotly.js (financial) in R

Text Analysis & NLP

- Text Mining with R (Book): tidytext
- H2O word2vec: Word embeddings
- o text2vec: fast vectorization, topic modeling
- o udpipe: UDPipe C++ lib in R

Network Analysis

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

Network Viz

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

Geospatial Analysis

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

Geospatial Viz

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

Machine Learning

- Multi-Threaded/Scalable/Production MI:
 - o H2O (CS)
 - Extreme Gradient Boosting: xqboost
 - R + Spark: sparklyr (CS)
 - Sparkling Water (Spark + H2O): <u>rsparkling</u>
- ML (Tidy): parsnip
- ML: caret (CS)

Deep Learning

- R Interface to TensorFlow Homepage:
 - Keras (CS)
 - TF Estimators
 - TensorFlow (Core)

Speed & Scale

- Fastest Single-Node Speed: data.table (CS)
- Distributed Cluster (Spark): sparklyr (CS)

Interoperability

- Python: reticulate Java: rJava
- C++: Rcpp

Miscellaneous Tools

- Interactive Plotting: <a href="https://html//h
- Building R Packages: R packages Book
 - Pkg Development Tools: devtools (CS)
 - o R Templates: usethis
 - Build Web Doc's: pkgdown
- Advanced Concepts (Advanced R Book)
 - o rlang & Tidy Evaluation (CS)
- Making Blogs & Books:
 - Make a Website/Blog: blogdown
 - Write a Web Book: bookdown
- Posting Code (GitHub, Stack Overflow): reprex







