

# Introduction to Packages

Berkeley R Beginners

Jim Porzak

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# All R Code is in Packages!

- Base R – when you load R you get these
  - base, compiler, datasets, graphics, grDevices, grid, methods, parallel, splines, stats, stats4, tcltk
  - Only updates with each release of R (not on CRAN)
- Recommended packages – installed but not loaded.
  - KernSmooth, MASS, Matrix, boot, class, cluster, codetools, foreign, lattice, mgcv, nlme, nnet, rpart, spatial, survival
  - On CRAN & may update independently of base R
- Other packages – not installed & not loaded
  - CRAN: 4920      - Bioconductor: 671      - Omega: ~ 70
  - Private & in development: ??? (R Forge, GitHub, ...)

# Finding Package you Need - CRAN

- Comprehensive R Archive Network
  - Published packages are “subject to a set of policies”
  - Checked on key platforms and R versions
- CRAN Task Views: <http://cran.rstudio.com/web/packages/>
  - 32 topic summaries by subject matter expert

CRAN Task View: Machine Learning & Statistical Learning

**Maintainer:** Torsten Hothorn

**Contact:** Torsten.Hothorn at R-project.org

**Version:** 2013-07-31

Several add-on packages implement ideas and methods developed at the borderline between computer science and statistics - this field of research is usually referred to as machine learning. The packages can be roughly structured into the following topics:

- *Neural Networks* : Single-hidden-layer neural network are implemented in package [nnet](#) (shipped with base R). Package [RSNNS](#) offers an interface to the Stuttgart Neural Network Simulator (SNNS).
- *Recursive Partitioning* : Tree-structured models for regression, classification and survival analysis, following the ideas in the CART book, are implemented in [rpart](#) (shipped with base R).

- Depends, Suggests, & Enhances (& Reverse)

# Finding Package you Need – Word of Mouth

- <http://crantastic.org/>
  - Hadley’s “...community site for R packages where you can search for, review and tag CRAN packages.”
- <http://www.r-bloggers.com/>
  - Tal Galili’s aggregation of “R news and tutorials contributed by (452) R bloggers” – what’s actually being used
- <http://stackoverflow.com/questions/tagged/r>
  - The “alternate” for R-Help

# Package Mechanics

## Commands

- **Installing**

```
> install.packages(c("tree",  
"vcd", "vcdExtra"))
```

- **Updating**

```
> update.packages(c("tree",  
"vcd", "vcdExtra"))
```

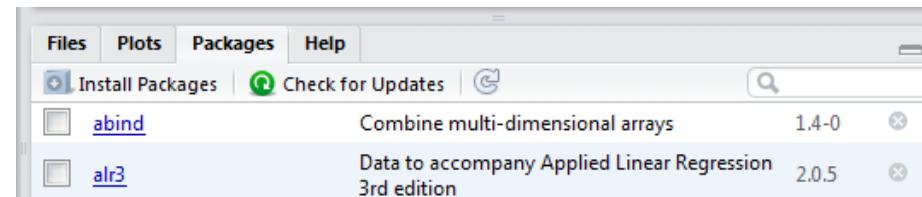
- **Loading**

```
> library("randomForest")  
randomForest 4.6-7 Type  
rfNews() to see new  
features/changes/bug fixes.
```

- **Requiring**

```
> (require("randomForest"))  
[1] TRUE
```

## R-Studio



# Getting Help

1. Package Maintainer
2. Package Author(s)
3. Known package users (via R-Bloggers, etc)
4. R-help
5. Stackoverflow

# Next Step – Build your Own!

- Official R docs – *Writing R Extensions*  
<http://cran.rstudio.com/doc/manuals/r-release/R-exts.html#Creating-R-packages>
- Hadley’s *Advanced R Programming*  
<http://adv-r.had.co.nz/Philosophy.html>

# Questions? Comments?

- Now would be the time!



- [jporzak@gmail.com](mailto:jporzak@gmail.com)