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Nonlinear Regression with R

Christian Ritz and Jens Carl Streibig
Springer-Verlag, New York, NY, 2008.
ISBN 978-0-387-09615-5. 144 pp. USD 54.95 (P).
<http://CRAN.R-project.org/package=nlrwr>

The *Use R!* series published by Springer is a wonderful thing. There is nothing else like it, and as far as I know there has never been anything like it, certainly not for open-source software. Slowly but surely both the amount and the quality of documentation available for users of R approaches that available for *Stata* or *SPSS*. As a direct consequence R is losing its *geek status* and is becoming a viable and flexible alternative for routine data analysis and for teaching statistics at various levels.

The book by Ritz and Streibig is a fine example. It documents, explains, and illustrates in considerable detail the venerable `nls()` function, available both in *S* and *R*, that has been described before in [Chambers and Hastie \(1992, Chapter 10\)](#) and [Venables and Ripley \(2002, Chapter 8\)](#). But the material has now been expanded to what is basically a mini-course in nonlinear regression, or, as the authors suggest, an *R* companion to a full nonlinear regression course.

Books of this form are ideal for self-study, because they allow the student to actively run commands and analyze data, while giving enough references for more theoretical study. My guess is that about 95% of the experimenters or researchers using this book will think that the material is quite sufficient for their needs, and will not be interested in further theoretical study. That, I think, is actually one of its greatest strengths.

The book packs a lot of information in 144 pages, and eight chapters:

- I Introduction
- II Getting Started
- III Starting Values and Self-Starters
- IV More on `nls()`
- V Model Diagnostics
- VI Remedies for Model Violations

VII Uncertainties, Hypothesis Testing, and Model Selection

VIII Grouped Data

The titles more or less speak for themselves. The writing is clear and minimal R knowledge will get you a long way through the text. Each chapter has about five exercises, which ask for additional analysis with the data sets and the code in the **nlrwr** package that is available from the Comprehensive R Archive Network (CRAN). There is also a small amount information on the function `glm()` for generalized linear models. In the last chapter `gnls()`, from the package **nlme**, is discussed. Chapter 5–7 discuss many, many regression-related topics – very briefly obviously, but with enough information to follow up in the literature if necessary.

In summary I think the book is excellent, and eminently useful. I hope it will serve as a model for documenting more of the larger R functions and packages.

References

Chambers JM, Hastie TJ (eds.) (1992). *Statistical Models in S*. Chapman & Hall, London.

Venables WN, Ripley BD (2002). *Modern Applied Statistics with S*. 4th edition. Springer-Verlag, New York.

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