Ratkowsky, David A.
Nonlinear regression modeling. A unified practical approach. (English) Zbl 0572.62054
Statistics: Textbooks and Monographs, Vol. 48. New York - Basel: Marcel Dekker, Inc. VIII, 276 p. $ 47.50 (1983).

This book is devoted to the study of nonlinear regression methods with a strong emphasis on computational techniques for fitting the models. There is a considerable number of examples from various disciplines. The author indicates that the purpose of the book is to achieve the following objectives:

1. Predicting response values Y for given fixed values of the regressor variable X. 2. Making inferences based upon interpretation of the parameter estimates.

In order to achieve his objectives, the author includes in the book 9 chapters as given below:

Chapter 1. Introduction to regression models; Chapter 2. Assessing nonlinearity in nonlinear regression models; Chapter 3. Yield-density models; Chapter 4. Sigmoidal growth models; Chapter 5. Asymptotic regression models; Chapter 6. Some miscellaneous models; Chapter 7. Comparing parameter estimates from more than one data set; Chapter 8. Obtaining good initial parameter estimates; Chapter 9. Summary: Toward a unified approach to nonlinear regression modelling.

In addition, it provides an appendix containing a collection of computer subroutines.

The reviewer feels that there ought to be a separate chapter on inference related to regression. The present discussion on inference in the book is loosely presented (for example on page 11, phrases like "the LS estimator is badly biased" ought to be defined or corrected). Also in many sections, there is less emphasis in mathematical rigor.

On the positive side, the book contains information which has appeared collectively in a book for the first time. The analysis and fitting of the models: Gompertz, logistic, Richards, Morgan-Mercer-Folden and Weibull in Chapter 4; some miscellaneous models proposed for different data sets are well presented.

This book is a useful addition to the knowledge on regression analysis. It can be used by persons with prior knowledge of the subject and therefore postgraduates and research workers, particularly those in biological and agricultural sciences would find it a welcome addition to their readings.

Reviewer: P.W.A.Dayananda

MSC:

62J02	General nonlinear regression	
62-02	Research exposition (monographs, survey articles) pertaining to statistics	
65C99	Probabilistic methods, stochastic differential equations	
62-04	Software, source code, etc. for problems pertaining to statistics	

Cited in **3** Reviews
Cited in **82** Documents

Keywords:

unified practical approach; examples; Predicting response values; Assessing nonlinearity; Yield-density models; Sigmoidal growth models; Asymptotic regression models; Comparing parameter estimates; computer subroutines; inference; Gompertz; logistic; Richards; Morgan-Mercer- Folden; Weibull; biological and agricultural sciences