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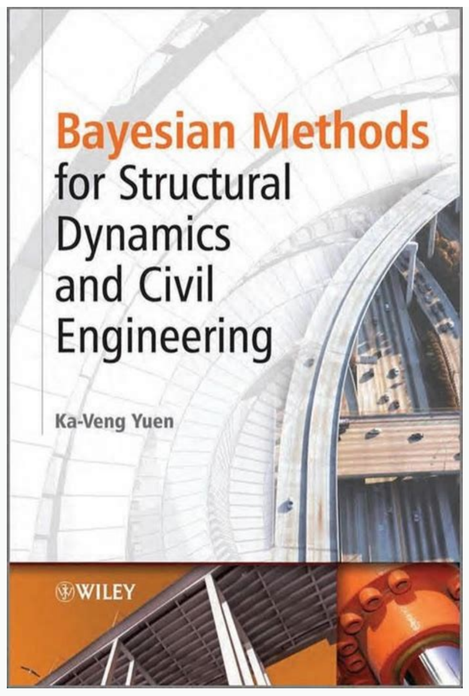
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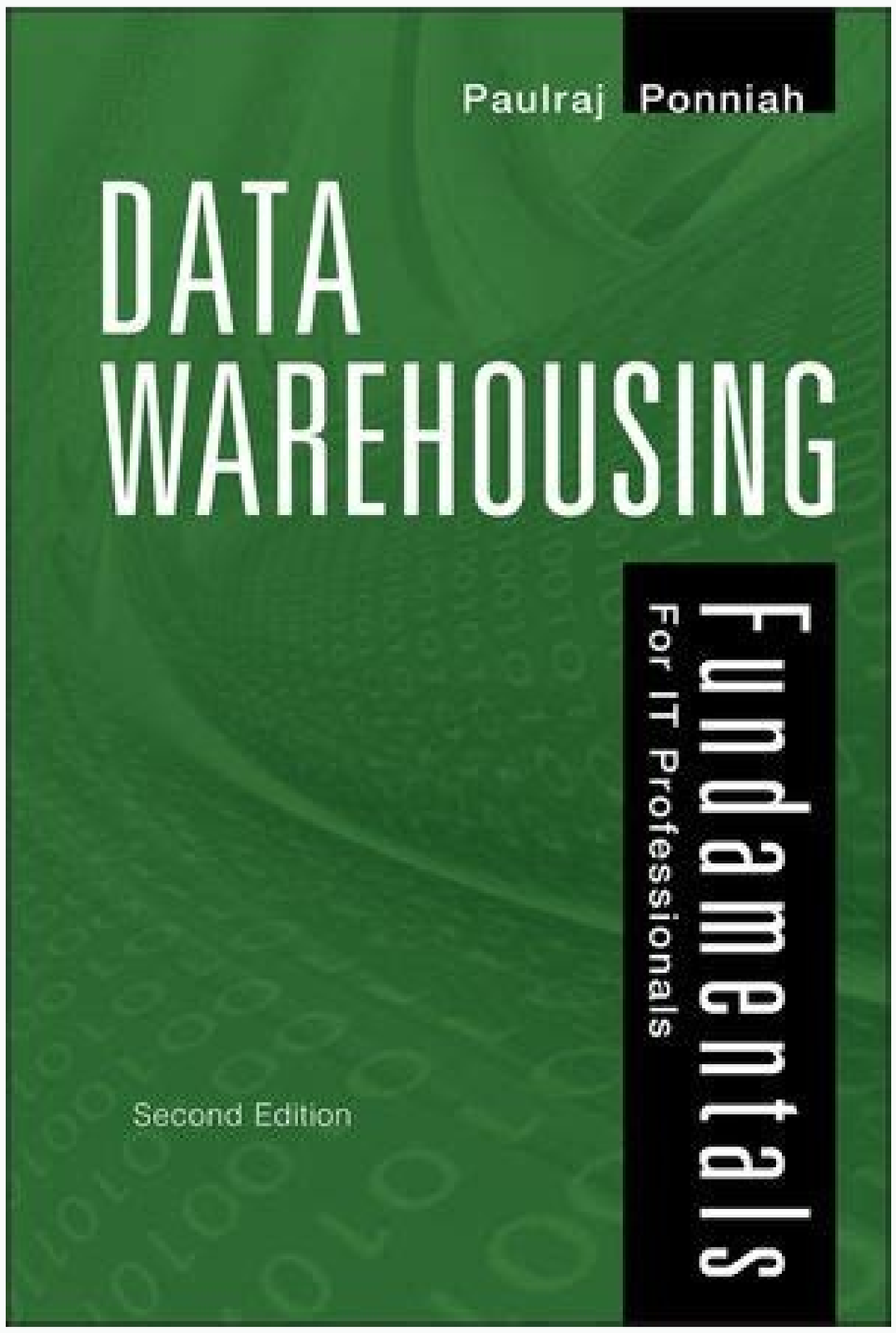
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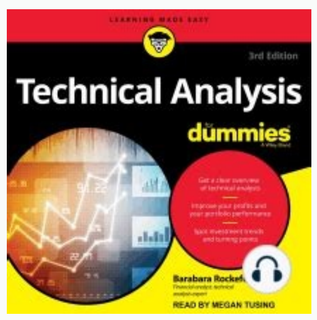
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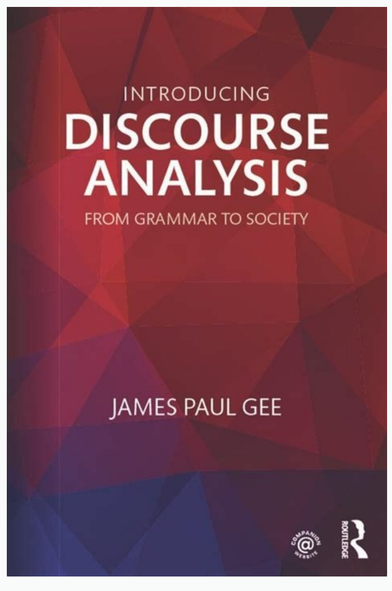
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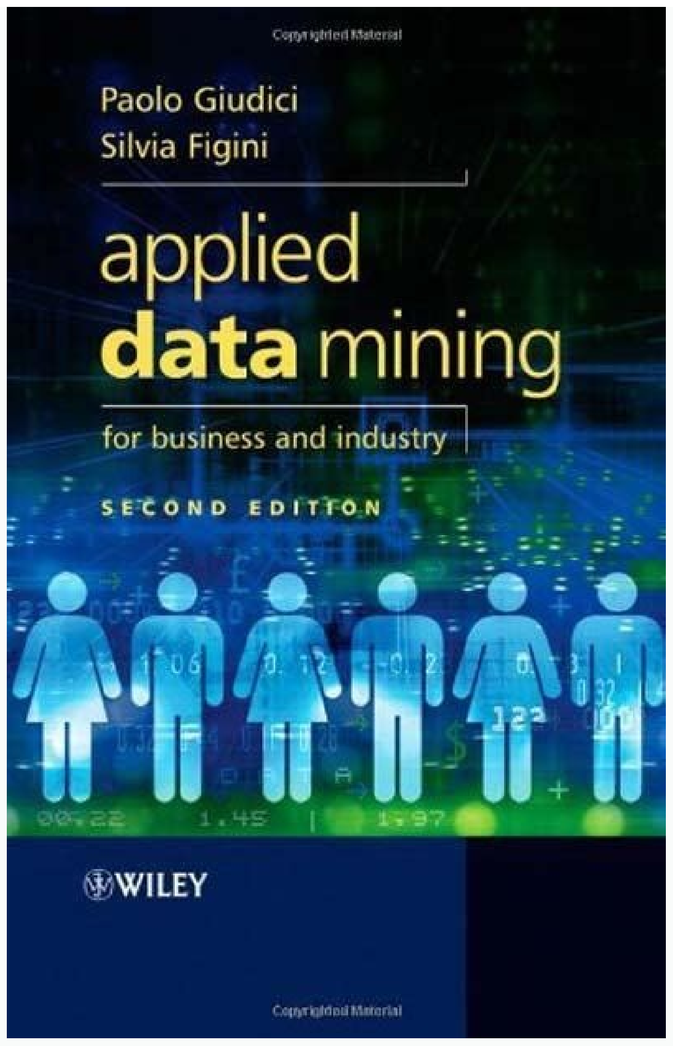

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The new programs are designed to be much easier to use than the scripts in the first edition. In particular, there are now compact high-level scripts that make it easy to run the programs on your own data sets.The book is divided into three parts and begins with the basics: models, probability, Bayes' rule, and the R programming language. The discussion then moves to the fundamentals applied to inferring a binomial probability, before concluding with chapters on the generalized linear model. Topics include metric-predicted variable on one or two groups; metric-predicted variable with one metric predictor; metric-predicted variable with multiple metric predictors; metric-predicted variable with one nominal predictor; and metric-predicted variable with multiple nominal predictors. The exercises found in the text have explicit purposes and guidelines for accomplishment.This book is intended for first-year graduate students or advanced undergraduates in statistics, data analysis, psychology, cognitive science, social sciences, clinical sciences, and consumer sciences in business. 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Accessible, including the basics of essential concepts of probability and random sampling Examples with R programming language and JAGS software Comprehensive coverage of all scenarios addressed by non-Bayesian textbooks: t-tests, analysis of variance (ANOVA) and comparisons in ANOVA, multiple regression, and chi-square (contingency table analysis) Coverage of experiment planning R and JAGS computer programming code on website Exercises have explicit purposes and guidelines for accomplishment Provides step-by-step instructions on how to conduct Bayesian data analyses in the popular and free software R and WinBugsFirst-year Graduate Students and Advanced Undergraduate Students in Statistics, Data Analysis, Psychology, Cognitive Science, Social Sciences, Clinical Sciences and Consumer Sciences in BusinessChapter 1: What's in This Book (Read This First!) 1.1 Real people can read this book 1.2 What's in this book 1.3 What's new in the second edition? 1.4 Gimme feedback (Be polite) 1.5 Thank you! Part I: The Basics: Models, Probability, Bayes' Rule, and R Introduction Chapter 2: Introduction: Credibility, Models, and Parameters 2.1 Bayesian inference is reallocation of credibility across possibilities 2.2 Possibilities are parameter values in descriptive models 2.3 The steps of bayesian data analysis 2.4 Exercises Chapter 3: The R Programming Language 3.1 Get the software 3.2 A simple example of R in action 3.3 Basic commands and operators in R 3.4 Variable types 3.5 Loading and saving data 3.6 Some utility functions 3.7 Programming in R 3.8 Graphical plots: Opening and saving 3.9 Conclusion 3.10 Exercises Chapter 4: What is This Stuff Called Probability? 4.1 The set of all possible events 4.2 Probability: Outside or inside the head 4.3 Probability distributions 4.4 Two-way distributions 4.5 Appendix: R code for figure 4.1 4.6 Exercises Chapter 5: Bayes' Rule 5.1 Bayes' rule 5.2 Applied to parameters and data 5.3 Complete examples: Estimating bias in a coin 5.4 Why bayesian inference can be difficult 5.5 Appendix: R code for figures 5.1, 5.2, etc. 5.6 Exercises Part II: All the Fundamentals Applied to Inferring a Binomial Probability Introduction Chapter 6: Inferring a Binomial Probability via Exact Mathematical Analysis 6.1 The likelihood function: Bernoulli distribution 6.2 A description of credibilities: The beta distribution 6.3 The posterior beta 6.4 Examples 6.5 Summary 6.6 Appendix: R code for figure 6.4 6.7 Exercises Chapter 7: Markov Chain Monte Carlo 7.1 Approximating a distribution with a large sample 7.2 A simple case of the metropolis algorithm 7.3 The metropolis algorithm more generally 7.4 Toward gibbs sampling: Estimating two coin biases 7.5 Mcmc representativeness, accuracy, and efficiency 7.6 Summary 7.7 Exercises Chapter 8: JAGS 8.1 Jags and its relation to R 8.2 A complete example 8.3 Simplified scripts for frequently used analyses 8.4 Example: difference of biases 8.5 Sampling from the prior distribution in jags 8.6 Probability distributions available in jags 8.7 Faster sampling with parallel processing in runjags 8.8 Tips for expanding jags models 8.9 Exercises Chapter 9: Hierarchical Models 9.1 A single coin from a single mint 9.2 Multiple coins from a single mint 9.3 Shrinkage in hierarchical models 9.4 Speeding up jags 9.5 Extending the hierarchy: Subjects within categories 9.6 Exercises Chapter 10: Model Comparison and Hierarchical Modeling 10.1 General formula and the bayes factor 10.2 Example: two factories of coins 10.3 Solution by MCMC 10.4 Prediction: Model averaging 10.5 Model complexity naturally accounted for 10.6 Extreme sensitivity to prior distribution 10.7 Exercises Chapter 11: Null Hypothesis Significance Testing 11.1 Paved with good intentions 11.2 Prior knowledge 11.3 Confidence interval and highest density interval 11.4 Multiple comparisons 11.5 What a sampling distribution is good for 11.6 Exercises Chapter 12: Bayesian Approaches to Testing a Point ("Null") Hypothesis 12.1 The estimation approach 12.2 The model-comparison approach 12.3 Relations of parameter estimation and model comparison 12.4. 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Kruschke is Professor of Psychological and Brain Sciences, and Adjunct Professor of Statistics, at Indiana University in Bloomington, Indiana, USA. He is eight-time winner of Teaching Excellence Recognition Awards from Indiana University. He won the Troland Research Award from the National Academy of Sciences (USA), and the Remak Distinguished Scholar Award from Indiana University. He has been on the editorial boards of various scientific journals, including Psychological Review, the Journal of Experimental Psychology: General, and the Journal of Mathematical Psychology, among others.After attending the Summer Science Program as a high school student and considering a career in astronomy, Kruschke earned a bachelor's degree in mathematics (with high distinction in general scholarship) from the University of California at Berkeley. As an undergraduate, Kruschke taught self-designed tutoring sessions for many math courses at the Student Learning Center. 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