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Empirical Bayes

Some Tools, Rules, and Duals

Roger Koenker

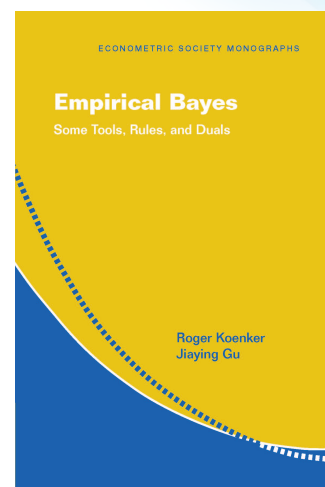
University College London

and Jiaying Gu

University of Toronto

Empirical Bayes methods as envisioned by Herbert Robbins are becoming an essential element of the statistical toolkit. In *Empirical Bayes: Tools, Rules, and Duals*, Roger Koenker and Jiaying Gu offer a unified view of these methods. They stress recent computational developments for nonparametric estimation of mixture models, not only for the traditional Gaussian and Poisson settings, but for a wide range of other applications. Providing numerous illustrations where empirical Bayes methods are attractive, the authors give a detailed discussion of computational methods, enabling readers to apply the methods in new settings.

1. Introduction; 2. The empirical bayes paradigm; 3. Parametric empirical bayes methods; 4. Nonparametric empirical bayes methods; 5. Mixture models; 6. Heteroscedastic gaussian mixture models and longitudinal data; 7. Ranking and selection as compound decisions; 8. Empirical bayes methods for survival analysis; 9. Mixture models for categorical data; 10. Random coefficient models; 11. Inference for empirical bayes procedures; 12. Computational considerations; 13. Conclusion; Bibliography; Subject Index; Names Index.



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'For over a century, most statisticians have known that, in parametric inference problems, Bayes's theorem provides the best achievable informational summary of the data if certain prior information was available. For nearly that long, some statisticians have sought to extract sufficient information from the same data to provide a reasonable substitute for the needed prior information, in effect allowing the analyst to reach near perfection without making unreasonable prior assumptions. Koenker and Gu summarize and advance this program with a welcome display of what may be termed these days 'Natural Intelligence.'

Stephen M. Stigler,
University of Chicago



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