Multivariate Statistical Analysis : a High-Dimensional Approach /

Serdobolskii, V.

Springer Netherlands,
2000

Electronic books

Monografía

This book presents a new branch of mathematical statistics aimed at constructing unimprovable methods of multivariate analysis, multi-parametric estimation, and discriminant and regression analysis. In contrast to the traditional consistent Fisher method of statistics, the essentially multivariate technique is based on the decision function approach by A. Wald. Developing this new method for high dimensions, comparable in magnitude with sample size, provides stable approximately unimprovable procedures in some wide classes, depending on an arbitrary function. A remarkable fact is established: for high-dimensional problems, under some weak restrictions on the variable dependence, the standard quality functions of regularized multivariate procedures prove to be independent of distributions. For the first time in the history of statistics, this opens the possibility to construct unimprovable procedures free from distributions. Audience: This work will be of interest to researchers and graduate students whose work involves statistics and probability, reliability and risk analysis, econometrics, machine learning, medical statistics, and various applications of multivariate analysis

Título: Multivariate Statistical Analysis a High-Dimensional Approach by V. Serdobolskii

Editorial: Dordrecht Springer Netherlands 2000

Descripción física: 1 online resource (xii, 244 pages)

Mención de serie: Theory and Decision Library, Series B: Mathematical and Statistical Methods 41

Spectral Functions of Large Covariance Matrices -- Normal Evaluation of Sample Dependent Functionals -- Discussion -- 5. Estimation of High-Dimensional Inverse Covariance Matrices -- Shrinkage Estimators of the Inverse Covariance Matrices -- Generalized Ridge Estimators of the Inverse Covariance Matrices -- Asymptotically Unimprovable Estimators of the Inverse Covariance Matrices -- 6. Epsilon-Dominating Component-Wise Shrinkage Estimators of Normal Mean -- Estimation Function for the Component-Wise Estimators -- Estimators of the Unimprovable Estimation Function -- 7. Improved Estimators of High-Dimensional Expectation Vectors -- Limit Quadratic Risk for a Class of Estimators of Expectation Vectors -- Minimization of the Limit Quadratic Risk -- Statistics to Approximate the Limit Risk Function -- Statistics to Approximate the Extremal limit Solution -- 8. Quadratic Risk of Linear Regression with a Large Number of Random Predictors -- Spectral Functions of Sample Covariance Matrices -- Functionals Depending on the Statistics Sand?0 -- Functionals Depending on Sample Covariance Matrices and Covariance Vectors -- The Leading Part of the Quadratic Risk and its Estimator -- Special Cases -- 9. Linear Discriminant Analysis of Normal Populations with Coinciding Covariance Matrices -- Problem Setting -- Expectation and Variance of Generalized Discriminant Functions -- Limit Probabilities of the Discrimination Errors -- 10. Population Free Quality of Discrimination -- Problem Setting -- Leading Parts of Functionals for Normal Populations -- Leading Parts of Functionals for Arbitrary Populations -- Discussion -- Proofs -- 11. Theory of Discriminant Analysis of the Increasing Number of Independent Variables -- Problem Setting -- A Priori Weighting of Independent Variables -- Minimization of the Limit Error Probability for a Priori Weighting -- Weighting of Independent Variables by Estimators -- Minimization of the Limit Error Probability for Weighting by Estimators -- Statistics to Estimate Probabilities of Errors -- Contribution of Variables to Discrimination -- Selection of a Large Number of Independent Variables -- Conclusions -- References

Copyright/Depósito Legal: 935013621 936332282 968909946

ISBN: 9789401594684 electronic bk.) 9401594686 electronic bk.) 9789048155934 9048155932 9401594686

Materia: Statistics Artificial intelligence System safety Econometrics Artificial intelligence Econometrics Statistics System safety Statistics, general Quality Control, Reliability, Safety and Risk Econometrics Artificial Intelligence Statistics for Life Sciences, Medicine, Health Sciences

Enlace a formato físico adicional: Print version 9789048155934

Punto acceso adicional serie-Título: Theory and decision library. Series B Mathematical and statistical methods 41

Baratz Innovación Documental

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- informa@baratz.es