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Short Book Reviews

Modern Multivariate Statistical Techniques: Regression, Classification, and Manifold Learning

Alan Julian Izenman

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Readership: Advanced undergraduate students, graduate students, and researchers in statistics, computer science, artificial intelligence, psychology, cognitive sciences, business, medicine, bioinformatics, and engineering.

This massive opus is not a textbook to go through in one course – unless the course is a pretty long one! Izenman has an ambitious task to cover multivariate techniques from traditional multivariate methods, such as multiple regression, principal components, canonical variates, linear discriminant analysis, factor analysis, clustering, multidimensional scaling, and correspondence analysis, to the newer methods of density estimation, projection pursuit, neural networks, multivariate reduced-rank regression, nonlinear manifold learning, bagging, boosting, random forests, independent component analysis, support vector machines, and classification and regression trees – this long list is all from the back cover of the book. Being not a master in all these areas I do not wish to give final judgement how well Izenman succeeds in all these matters but that much as I have been browsing the book, I think he has done excellent job.

Izenman states in the Preface that it is hoped that this book will be enjoyed by those who wish to understand the current state of multivariate statistical analysis in an age of high-speed computation and large data sets. I can easily believe that persons interested in learning new trends of multivariate methods would find Izenman's book very helpful. Yet the classical methods are handled in the book as well, but often derived as special cases of a common theoretical framework. Being a matrix-man, I paid attention to his matrix representation which I found very pleasant. The full-color graphics is quite impressive – well done! There are numerous real-data examples from many scientific disciplines so that not only statisticians may find this book useful and interesting.