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Autore	Rencher Alvin C. <1934->
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Random Vectors and Matrices; 3.1 Introduction; 3.2 Means, Variances, Covariances, and Correlations; 3.3 Mean Vectors and Covariance Matrices for Random Vectors; 3.3.1 Mean Vectors; 3.3.2 Covariance Matrix; 3.3.3 Generalized Variance; 3.3.4 Standardized Distance; 3.4 Correlation Matrices; 3.5 Mean Vectors and Covariance Matrices for Partitioned Random Vectors; 3.6 Linear Functions of Random Vectors; 3.6.1 Means; 3.6.2 Variances and Covariances; 4 Multivariate Normal Distribution; 4.1 Univariate Normal Density Function
 4.2 Multivariate Normal Density Function
 4.3 Moment Generating Functions; 4.4 Properties of the Multivariate Normal Distribution; 4.5 Partial Correlation; 5 Distribution of Quadratic Forms in y ; 5.1 Sums of Squares; 5.2 Mean and Variance of Quadratic Forms; 5.3 Noncentral Chi-Square Distribution; 5.4 Noncentral F and t Distributions; 5.4.1 Noncentral F Distribution; 5.4.2 Noncentral t Distribution; 5.5 Distribution of Quadratic Forms; 5.6 Independence of Linear Forms and Quadratic Forms; 6 Simple Linear Regression; 6.1 The Model; 6.2 Estimation of (0) , (1) , and (2)
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 6.4 Coefficient of Determination; 7 Multiple Regression: Estimation; 7.1 Introduction; 7.2 The Model; 7.3 Estimation of (1) and (2) ; 7.3.1 Least-Squares Estimator for (1) ; 7.3.2 Properties of the Least-Squares Estimator for (1) ; 7.3.3 An Estimator for (2) ; 7.4 Geometry of Least-Squares; 7.4.1 Parameter Space, Data Space, and Prediction Space; 7.4.2 Geometric Interpretation of the Multiple Linear Regression Model; 7.5 The Model in Centered Form; 7.6 Normal Model; 7.6.1 Assumptions; 7.6.2 Maximum Likelihood Estimators for (1) and (2)
 7.6.3 Properties of (1) and (2)

Sommario/riassunto

The essential introduction to the theory and application of linear models-now in a valuable new edition Since most advanced statistical tools are generalizations of the linear model, it is necessary to first master the linear model in order to move forward to more advanced concepts. The linear model remains the main tool of the applied statistician and is central to the training of any statistician regardless of whether the focus is applied or theoretical. This completely revised and updated new edition successfully develops the basic theory of linear models for regression, analysis of vari
