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| Nota di contenuto       | Preface. -- Acknowledgments. -- Terms and Symbols. -- Definitions of Mathematical and Statistical Terms. -- 1 Introduction. -- 1.1 The Goal. -- 1.2 The Nature of a Multidimensional System. -- 1.2.1 Description of Multidimensional Systems. -- 1.2.2 Correlations between the Variables. -- 1.2.3 Mahalanobis Distance. -- 1.2.4 Robust Engineering/Taguchi Methods. -- 1.3 Multivariate Diagnosis The State of the Art. -- 1.3.1 Principal Component Analysis. -- 1.3.2 Discrimination and Classification Method. -- 1.3.3 Stepwise Regression. -- 1.3.4 Test of Additional Information (Rao's Test). -- 1.3.5 Multiple Regression. -- 1.3.6 Multivariate Process Control Charts. -- 1.3.7 Artificial Neural Networks. -- 1.4 Approach. -- 1.4.1 Classification versus Measurement. -- 1.4.2 Normals versus Abnormals. -- 1.4.3 Probabilistic versus Data Analytic. -- 1.4.4 Dimensionality Reduction. -- 1.5 Refining the Solution Strategy. -- 1.6 Guide to This Book. -- 2 MTS and MTGS. -- 2.1 A Discussion of Mahalanobis Distance. -- 2.2 Objectives of MTS and MTGS. -- 2.2.1 Mahalanobis Distance (Inverse Matrix Method). -- 2.2.2 Gram Schmidt Orthogonalization Process. -- 2.2.3 Proof That Equations 2.2 and 2.3 Are the Same. -- 2.2.4 Calculation of the Mean of the Mahalanobis Space. -- 2.3 Steps in MTS. -- 2.4 Steps in MTGS. -- 2.5 Discussion of Medical Diagnosis Data: Use of MTGS and MTS Methods. -- 2.6 Conclusions. -- 3 Advantages and Limitations of MTS and MTGS. -- 3.1 Direction of Abnormalities. -- |

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Sommario/riassunto

Cuttingedge measurement technology for multidimensional systems  
The MahalanobisTaguchi Strategy presents methods for developing multidimensional measurement scales that are up to date with the most current trends in multivariate diagnosis/pattern recognitionnamely, using measures and procedures that are data analytic and not dependent upon the distribution of the characteristics defining the system. Applications for these measurement scales are also explored across a wide range of disciplines from manufacturing to medicine. This book presents methods that integrate mathematical and statistical concepts such as Mahalanobis distance and GramSchmidts orthogonalization method with the principles of Taguchi methods. These completely new systems of measurement and analysis move beyond anything Dr. Taguchi has done in the past. Coverage includes the refined MahalanobisTaguchi system, the MahalanobisTaguchiGramSchmidt method, the Adjoint Matrix method, and other advanced topics, along with a detailed examination of each method. In addition to examining how realworld problems are solved using these methods, critical comparisons are made between the methods covered here and existing multivariate diagnosis/pattern recognition techniques. The MahalanobisTaguchi Strategy: A Pattern Technology System is an essential book for engineers, designers, and statistical quality experts and programmers in the fields of engineering and computer science, as well as researchers in finance, medicine, statistics, and general science.

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