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from Offshore Oil Platform Structural Health Monitoring Studies; 2.3 Aerospace Structures; 2.3.1 Operational Evaluation for Aerospace Structures; 2.3.2 Data Acquisition for Aerospace Structures; 2.3.3 Feature Extraction and Statistical Modelling for Aerospace Structures; 2.3.4 Statistical Models Used for Aerospace SHM Applications; 2.3.5 Concluding Comments about Aerospace SHM Applications; 2.4 Civil Engineering Infrastructure; 2.4.1 Operational Evaluation for Bridge Structures
2.4.2 Data Acquisition for Bridge Structures2.4.3 Features Based on Modal Properties; 2.4.4 Statistical Classification of Features for Civil Engineering Infrastructure; 2.4.5 Applications to Bridge Structures; 2.5 Summary; References; 3 Operational Evaluation; 3.1 Economic and Life-Safety Justifications for Structural Health Monitoring; 3.2 Defining the Damage to Be Detected; 3.3 The Operational and Environmental Conditions; 3.4 Data Acquisition Limitations; 3.5 Operational Evaluation Example: Bridge Monitoring; 3.6 Operational Evaluation Example: Wind Turbines
3.7 Concluding Comment on Operational EvaluationReferences; 4 Sensing and Data Acquisition; 4.1 Introduction; 4.2 Sensing and Data Acquisition Strategies for SHM; 4.2.1 Strategy I; 4.2.2 Strategy II; 4.3 Conceptual Challenges for Sensing and Data Acquisition Systems; 4.4 What Types of Data Should Be Acquired?; 4.4.1 Dynamic Input and Response Quantities; 4.4.2 Other Damage-Sensitive Physical Quantities; 4.4.3 Environmental Quantities; 4.4.4 Operational Quantities; 4.5 Current SHM Sensing Systems; 4.5.1 Wired Systems; 4.5.2 Wireless Systems; 4.6 Sensor Network Paradigms
4.6.1 Sensor Arrays Directly Connected to Central Processing Hardware

Sommario/riassunto

Written by global leaders and pioneers in the field, this book is a must-have read for researchers, practicing engineers and university faculty working in SHM. Structural Health Monitoring: A Machine Learning Perspective is the first comprehensive book on the general problem of structural health monitoring. The authors, renowned experts in the field, consider structural health monitoring in a new manner by casting the problem in the context of a machine learning/statistical pattern recognition paradigm, first explaining the paradigm in general terms then explaining the process