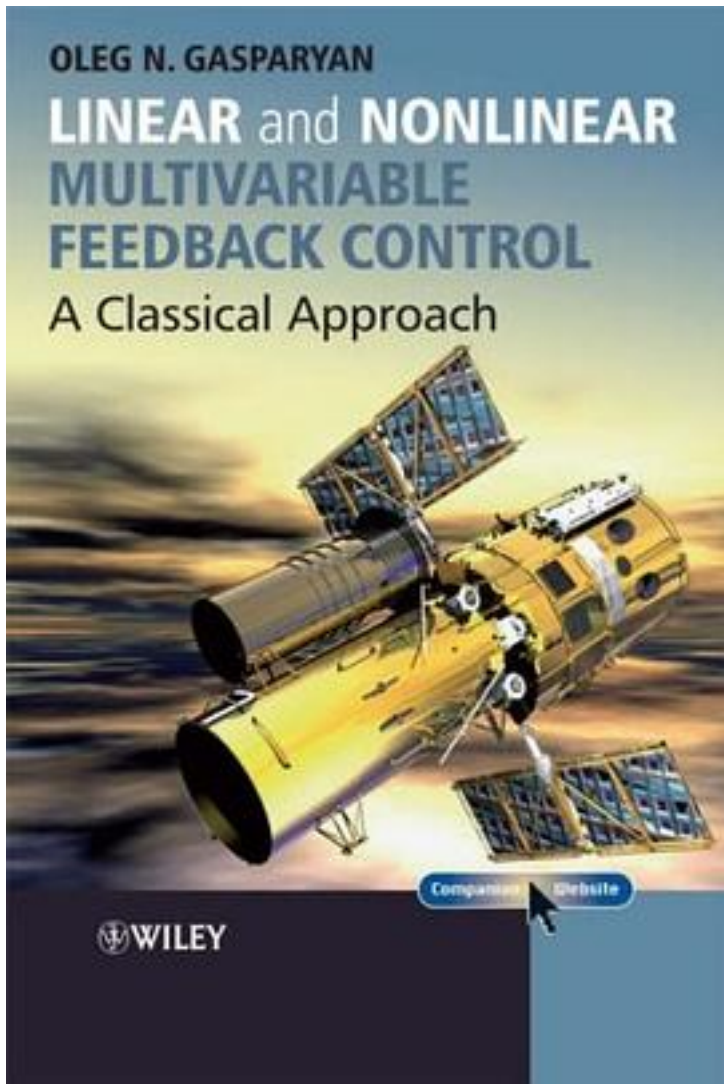


Linear and Nonlinear Multivariable Feedback Control



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出版者:John Wiley & Sons Inc

出版时间:2008-3

装帧:HRD

isbn:9780470061046

在线阅读本书

Automatic feedback control systems play crucial roles in many fields, including manufacturing industries, communications, naval and space systems. At its simplest, a control system represents a feedback loop in which the difference between the ideal (input) and actual (output) signals is used to modify the behaviour of the system. Control systems are in our homes, computers, cars and toys. Basic control principles can also be found in areas such as medicine, biology and economics, where feedback mechanisms are ever present. *Linear and Nonlinear Multivariable Feedback Control* presents a highly original, unified control theory of both linear and nonlinear multivariable (also known as multi-input multi-output (MIMO)) feedback systems as a straightforward extension of classical control theory. It shows how the classical engineering methods look in the multidimensional case and how practising engineers or researchers can apply them to the analysis and design of linear and nonlinear MIMO systems. This comprehensive book: uses a fresh approach, bridging the gap between classical and modern, linear and nonlinear multivariable control theories; includes vital nonlinear topics such as limit cycle prediction and forced oscillations analysis on the basis of the describing function method and absolute stability analysis by means of the primary classical frequency-domain criteria (e.g. Popov, circle or parabolic criteria); reinforces the main themes with practical worked examples solved by a special MATLAB-based graphical user interface, as well as with problems, questions and exercises on an accompanying website. The approaches presented in *Linear and Nonlinear Multivariable Feedback Control* form an invaluable resource for graduate and undergraduate students studying multivariable feedback control as well as those studying classical or modern control theories. The book also provides a useful reference for researchers, experts and practitioners working in industry

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目录:

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