

1. Record Nr.	UNINA9910484495603321
Autore	Lan Jianglin
Titolo	Robust Integration of Model-Based Fault Estimation and Fault-Tolerant Control / / by Jianglin Lan, Ronald J. Patton
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021
ISBN	3-030-58760-6
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (XVI, 268 p. 118 illus., 70 illus. in color.)
Collana	Advances in Industrial Control, , 2193-1577
Disciplina	620.0044
Soggetti	Control engineering System theory Control theory Robust statistics Mathematical models Control and Systems Theory Systems Theory, Control System Robustness Mathematical Modeling and Industrial Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Part I: Introduction -- Introduction -- Robust Integration in Fault Diagnosis and Fault-Tolerant Control -- Part II: Strategies for Robust Integration of Fault Estimation and Fault-Tolerant Control -- Sequential Integration of Fault Estimation and Fault-Tolerant Control -- Iterative Integration of Fault Estimation and Fault-Tolerant Control -- Simultaneous Integration of Fault Estimation and Fault-Tolerant Control -- Robust Decoupling Integration of Fault Estimation and Fault-Tolerant Control -- Adaptive Decoupling Integration of Fault Estimation and Fault-Tolerant Control -- Part III: Extension and Application -- Fault-Tolerant Wind Turbine Pitch Control -- Integration of Fault Estimation and Fault-Tolerant Control for Nonlinear Systems with 3-DOF Helicopter Application -- Integration of Fault Estimation and Fault-Tolerant Control for Large-Scale Interconnected Systems.
Sommario/riassunto	Robust Integration of Model-Based Fault Estimation and Fault-Tolerant

Control is a systematic examination of methods used to overcome the inevitable system uncertainties arising when a fault estimation (FE) function and a fault-tolerant controller interact as they are employed together to compensate for system faults and maintain robustly acceptable system performance. It covers the important subject of robust integration of FE and FTC with the aim of guaranteeing closed-loop stability. The reader's understanding of the theory is supported by the extensive use of tutorial examples, including some MATLAB®-based material available from the Springer website and by industrial-applications-based material. The text is structured into three parts: Part I examines the basic concepts of FE and FTC, providing extensive insight into the importance of and challenges involved in their integration; Part II describes five effective strategies for the integration of FE and FTC: sequential, iterative, simultaneous, adaptive-decoupling, and robust decoupling; and Part III begins to extend the proposed strategies to nonlinear and large-scale systems and covers their application in the fields of renewable energy, robotics and networked systems. The strategies presented are applicable to a broad range of control problems, because in the absence of faults the FE-based FTC naturally reverts to conventional observer-based control. The book is a useful resource for researchers and engineers working in the area of fault-tolerant control systems, and supplementary material for a graduate- or postgraduate-level course on fault diagnosis and FTC. Advances in Industrial Control reports and encourages the transfer of technology in control engineering. The rapid development of control technology has an impact on all areas of the control discipline. The series offers an opportunity for researchers to present an extended exposition of new work in all aspects of industrial control.
