Nonlinear Control Systems. Analysis and Design

Description:

A thorough yet highly readable introduction to the complex world of nonlinear science

Today's technological advances have brought about a growing demand for better performance. This, coupled with the availability of low-cost computing power, has led control engineers to face problems of increasingly higher complexity. Consequently, the linear approximations once used to analyze these problems are giving way to more accurate and realistic nonlinear models, forcing both students and industry practitioners to abandon the peripheral view of the linear world and immerse themselves in the reality of nonlinear science. Nonlinear Control Systems: Analysis and Design addresses the need for an up-to-date yet readable pedagogical presentation of this difficult subject. Assuming no previous background on the subject, the author takes readers from the very basics to some of the most current research topics being addressed today.

Highlights of the text include:

- Complete yet concise coverage of both the Lyapunov and Input–Output stability theories
- An introduction to the popular backstepping approach to nonlinear control design
- Thorough discussion of the concept of input–to–state stability
- Coverage of the fundamentals of feedback linearization and related results
- Detailed coverage of the fundamentals of dissipative systems theory and its application in the so-called L2gain control problem
- In–depth discussion of nonlinear observers, a very important problem not commonly covered in introductory textbooks

The author's friendly, accessible treatment of even highly complex topics makes this text an invaluable resource for students and professionals alike.

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