Integrated Vehicle Dynamics and Control
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DESCRIPTION

A comprehensive overview of integrated vehicle system dynamics exploring the fundamentals and new and emerging developments

This book provides a comprehensive coverage of vehicle system dynamics and control, particularly in the area of integrated vehicle dynamics control. The book consists of two parts, (1) development of individual vehicle system dynamic model and control methodology; and (2) development of integrated vehicle dynamic model and control methodology. The first part focuses on investigating vehicle system dynamics and control according to the three directions of vehicle motions, including longitudinal, vertical, and lateral. Corresponding individual control systems, e.g. Anti-lock Brake System (ABS), Active Suspension, Electric Power Steering System (EPS), are introduced and developed respectively.

Particular attention is paid in the second part of the book to develop integrated vehicle dynamic control system. Integrated vehicle dynamics control system is an advanced system that coordinates all the chassis control systems and components to improve the overall vehicle performance including safety, comfort, and economy. Integrated vehicle dynamics control has been an important research topic in the area of vehicle dynamics and control over the past two decades. The research topic on integrated vehicle dynamics control is investigated comprehensively and intensively in the book through both theoretical analysis and experimental study. In this part, two types of control architectures, i.e. centralized and multi-layer, have been developed and compared to demonstrate their advantages and disadvantages.
• Integrated vehicle dynamics control is a hot topic in automotive research; this is one of the few books to address both theory and practice of integrated systems

• Comprehensively explores the research area of integrated vehicle dynamics and control through both theoretical analysis and experimental study

• Addresses a full range of vehicle system topics including tyre dynamics, chassis systems, control architecture, 4 wheel steering system and design of control systems using Linear Matrix Inequality (LMI) Method

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