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Sommario/riassunto

The volume presents recent mathematical methods in the area of optimal control with a particular emphasis on the computational aspects and applications. Optimal control theory concerns the determination of control strategies for complex dynamical systems in order to optimize measures of their performance. The field was created in the 1960's, in response to the pressures of the "space race" between the US and the former USSR, but it now has a far wider scope and embraces a variety of areas ranging from process control to traffic flow optimization, renewable resources exploitation and financial market management. These emerging applications require increasingly efficient numerical methods to be developed for their solution – a difficult task due the huge number of variables. Providing an up-to-date overview of several recent methods in this area, including fast dynamic programming algorithms, model predictive control and max-plus techniques, this book is intended for researchers, graduate students and applied scientists working in the area of control problems, differential games and their applications.