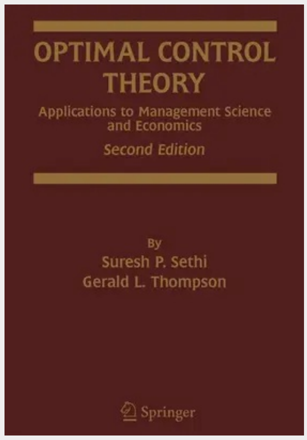
Sethi / Thompson

Optimal Control Theory

Applications to Management Science and Economics



Optimal control methods are used to determine optimal ways to control a dynamic system. The theoretical work in this field serves as a foundation for the book, which the authors have applied to business management problems developed from their research and classroom instruction. Sethi and Thompson have provided management science and economics communities with a thoroughly revised edition of their classic text on Optimal Control Theory. The new edition has been completely refined with careful attention to the text and graphic material presentation. Chapters cover a range of topics including finance, production and inventory problems, marketing problems, machine maintenance and replacement, problems of optimal consumption of natural resources, and applications of control theory to economics. The book contains new results that were not available when the first edition was published, as well as an expansion of the material on stochastic optimal control theory.

Sethi and Thompson have provided management science and economics communities with a thoroughly revised edition of their classic text on Optimal Control Theory. Central to the book is its extraordinarily wide range of optimal control theory applications. Chapter 5 covers finance; Chapter 6 considers production and inventory problems; Chapter 7 covers marketing problems; Chapter 9 treats machine maintenance and replacement; Chapter 10 deals with problems of optimal consumption of natural resources (renewable or exhaustible); and Chapter 11 discusses a number of applications of control theory to economics. The book has been successfully used as a professional reference tool and as a graduate course book. Its usefulness lies in its emphasis on building applied models of realistic problems faced in a variety of business management situations. The new edition has been completely refined with careful attention to the text and graphic material presentation. In Chapter 3, models have been added that use mixed (control and state) constraints, current value formulations, and terminal conditions. Chapter 4 now covers more advanced material on pure state constraints as they relate to mixed constraints. Each of these chapters contains new results that were not available when the first edition was published. Another important change is the expansion of the material on stochastic optimal control theory, which has become the new Chapter 13. This new chapter provides a brief introduction to stochastic optimal control problems, and it contains formulations of simple stochastic models in production, marketing and finance, and their solutions. Optimal control methods are used to determine optimal ways to control a dynamic system. The theoretical work in this field serves as a foundation for the book, which the authors have applied to business management problems developed from their research and classroom instruction.

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