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Sommario/riassunto	Shows the newest developments in the field of multi-parametric model predictive control and optimization and their application for drug delivery systems This book is based on the Modelling, Control and Optimization of Biomedical Systems (MOBILE) project, which was created to derive intelligent computer model-based systems for optimization of biomedical drug delivery systems in the cases of diabetes, anaesthesia, and blood cancer. These systems can ensure reliable and fast calculation of the optimal drug dosage without the need for an online computer—while taking into account the specifics and constraints of the patient model, flexibility to adapt to changing patient characteristics and incorporation of the physician’s performance criteria, and maintaining the safety of the patients. Modelling Optimization and Control of Biomedical Systems covers:

mathematical modelling of drug delivery systems; model analysis, parameter estimation, and approximation; optimization and control; sensitivity analysis & model reduction; multi-parametric programming and model predictive control; estimation techniques; physiologically-based patient model; control design for volatile anaesthesia; multiparametric model based approach to intravenous anaesthesia; hybrid model predictive control strategies; Type I Diabetes Mellitus; in vitro and in silico block of the integrated platform for the study of leukemia; chemotherapy treatment as a process systems application; and more. Introduces readers to the Modelling, Control and Optimization of Biomedical Systems (MOBILE) project Presents in detail the theoretical background, computational tools, and methods that are used in all the different biomedical systems Teaches the theory for multi-parametric mixed-integer programming and explicit optimal control of volatile anaesthesia Provides an overview of the framework for modelling, optimization, and control of biomedical systems This book will appeal to students, researchers, and scientists working on the modelling, control, and optimization of biomedical systems and to those involved in cancer treatment, anaesthesia, and drug delivery systems.
