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Titolo	Mixed-integer representations in control design : mathematical foundations and applications // by Ionela Prodan, Florin Stoican, Sorin Olaru, Silviu-Iulian Niculescu
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Soggetti	Control engineering System theory Calculus of variations Robotics Automation Control and Systems Theory Systems Theory, Control Calculus of Variations and Optimal Control; Optimization Robotics and Automation
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction -- Non-Covex Region Characterization by Hyperplane Arrangements -- Mixed-Integer Representations -- Examples of Multi-Agent Control Problems -- Conclusions.
Sommario/riassunto	In this book, the authors propose efficient characterizations of the non-convex regions that appear in many control problems, such as those involving collision/obstacle avoidance and, in a broader sense, in the description of feasible sets for optimization-based control design involving contradictory objectives. The text deals with a large class of systems that require the solution of appropriate optimization problems over a feasible region, which is neither convex nor compact. The proposed approach uses the combinatorial notion of hyperplane arrangement, partitioning the space by a finite collection of

hyperplanes, to describe non-convex regions efficiently. Mixed-integer programming techniques are then applied to propose acceptable formulations of the overall problem. Multiple constructions may arise from the same initial problem, and their complexity under various parameters - space dimension, number of binary variables, etc. - is also discussed. This book is a useful tool for academic researchers and graduate students interested in non-convex systems working in control engineering area, mobile robotics and/or optimal planning and decision-making.

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