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Nota di contenuto	Cover; Title Page; Copyright; Contents; List of figures; Preface; Notation and terms; Chapter 1 Introduction; 1.1 Motivation and applications; 1.2 General description of the search problem; 1.3 Solution approaches in the literature; 1.4 Methods of local search; 1.5 Objectives and structure of the book; References; Chapter 2 Problem of search for static and moving targets; 2.1 Methods of search and screening; 2.1.1 General definitions and notation; 2.1.2 Target location density for a Markovian search; 2.1.3 The search-planning problem; 2.2 Group-testing search 2.2.1 General definitions and notation2.2.2 Combinatorial group-testing search for static targets; 2.2.3 Search with unknown number of targets and erroneous observations; 2.2.4 Basic information theory search with known location probabilities; 2.3 Path planning and search over graphs; 2.3.1 General BF* and A* algorithms; 2.3.2 Real-time search and learning real-time A* algorithm; 2.3.3 Moving target search and the fringe-retrieving A* algorithm; 2.4 Summary; References; Chapter 3 Models of search and decision making; 3.1 Model of search

based on MDP; 3.1.1 General definitions
 3.1.2 Search with probabilistic and informational decision rules
 3.2 Partially observable MDP model and dynamic programming approach;
 3.2.1 MDP with uncertain observations; 3.2.2 Simple Pollock model of search; 3.2.3 Ross model with single-point observations; 3.3 Models of moving target search with constrained paths; 3.3.1 Eagle model with finite and infinite horizons; 3.3.2 Branch-and-bound procedure of constrained search with single searcher; 3.3.3 Constrained path search with multiple searchers; 3.4 Game theory models of search; 3.4.1 Game theory model of search and screening
 3.4.2 Probabilistic pursuit-evasion games
 3.4.3 Pursuit-evasion games on graphs; 3.5 Summary; References; Chapter 4 Methods of information theory search; 4.1 Entropy and informational distances between partitions; 4.2 Static target search: Informational LRTA* algorithm; 4.2.1 Informational LRTA* algorithm and its properties; 4.2.2 Group-testing search using the ILRTA* algorithm; 4.2.3 Search by the ILRTA* algorithm with multiple searchers; 4.3 Moving target search: Informational moving target search algorithm; 4.3.1 The informational MTS algorithm and its properties
 4.3.2 Simple search using the IMTS algorithm
 4.3.3 Dependence of the IMTS algorithm's actions on the target's movement; 4.4 Remarks on programming of the ILRTA* and IMTS algorithms; 4.4.1 Data structures; 4.4.2 Operations and algorithms; 4.5 Summary; References; Chapter 5 Applications and perspectives; 5.1 Creating classification trees by using the recursive ILRTA* algorithm; 5.1.1 Recursive ILRTA* algorithm; 5.1.2 Recursive ILRTA* with weighted distances and simulation results; 5.2 Informational search and screening algorithm with single and multiple searchers
 5.2.1 Definitions and assumptions

Sommario/riassunto

Presents a probabilistic and information-theoretic framework for a search for static or moving targets in discrete time and space. Probabilistic Search for Tracking Targets uses an information-theoretic scheme to present a unified approach for known search methods to allow the development of new algorithms of search. The book addresses search methods under different constraints and assumptions, such as search uncertainty under incomplete information, probabilistic search scheme, observation errors, group testing, search games, distribution of search efforts, single and multiple searchers
