**DESCRIPTION**

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 targets and search agents, as well as online or offline search schemes. The proposed approach is associated with path planning techniques, optimal search algorithms, Markov decision models, decision trees, stochastic local search, artificial intelligence and heuristic information-seeking methods. Furthermore, this book presents novel methods of search for static and moving targets along with practical algorithms of partitioning and search and screening.

*Probabilistic Search for Tracking Targets* includes complete material for undergraduate and graduate courses in modern applications of probabilistic search, decision-making and group testing, and provides several directions for further research in the search theory.

*The authors:*
• Provide a generalized information-theoretic approach to the problem of real-time search for both static and moving targets over a discrete space.

• Present a theoretical framework, which covers known information-theoretic algorithms of search, and forms a basis for development and analysis of different algorithms of search over probabilistic space.

• Use numerous examples of group testing, search and path planning algorithms to illustrate direct implementation in the form of running routines.

• Consider a relation of the suggested approach with known search theories and methods such as search and screening theory, search games, Markov decision process models of search, data mining methods, coding theory and decision trees.

• Discuss relevant search applications, such as quality-control search for nonconforming units in a batch or a military search for a hidden target.

• Provide an accompanying website featuring the algorithms discussed throughout the book, along with practical implementations procedures.

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