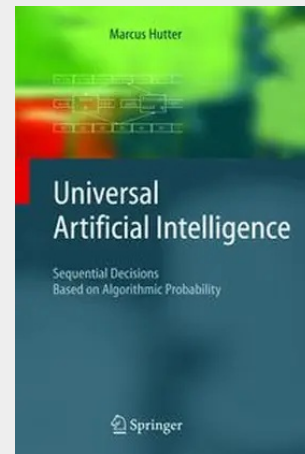


Universal Artificial Intelligence

Sequential Decisions Based on Algorithmic Probability

This book presents sequential decision theory from a novel algorithmic information theory perspective. While the former is suited for active agents in known environment, the latter is suited for passive prediction in unknown environment. The book introduces these two different ideas and removes the limitations by unifying them to one parameter-free theory of an optimal reinforcement learning agent embedded in an unknown environment. Most AI problems can easily be formulated within this theory, reducing the conceptual problems to pure computational ones. Considered problem classes include sequence prediction, strategic games, function minimization, reinforcement and supervised learning. The discussion includes formal definitions of intelligence order relations, the horizon problem and relations to other approaches.

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