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Advanced Topics in Computer Science

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Notes Day 9

Games: Adversarial Search

Examples include Pacman, checkers, chess, and Go.

Probabilities: Must remain non-negative and sum to 1

Numerous games fall under the category of deterministic zero-sum games.

Deterministic: Absence of chance

Zero-sum: Outcome where one side's victory leads to the other's defeat

A singular value can represent the outcomes for both sides.

Adversarial search proves effective for solving these games.

Terminal state: The concluding state of the game

State value: Optimal score attainable by a player in a given state

Game tree: Offspring represent successors in the exploration of future moves

Terminal utility (value of a given state) is invariably deterministic.

Minimax:

Assume the opponent always acts optimally.

Assume sides alternate turns.

Similar to Depth-First Search (DFS) on the tree of game states.

Post-order traversal is employed.

One side endeavors to maximize value, while the other seeks to minimize it.