AI Search Problems

1 Problem Formulation

An AI search problem is defined by a state space, an initial state, a goal state, a set of actions, and a cost function. The objective is to find a sequence of actions that transforms the initial state into a goal state.

2 Search Strategies

- **Uninformed Search**: Breadth-first search, depth-first search, uniform cost search.

- **Informed Search**: Greedy best-first search, A* search.

3 Heuristics

A heuristic function estimates the cost from a given state to the goal. Admissible heuristics guarantee optimal solutions when used with A* search.

4 Applications

AI search is fundamental in robotics, game AI, route planning, and automated reasoning.