Lecture 4 (Uninformed Search)

1 Simple Reflex Agent

1. Selects action based on the current percepts
2. Operates using *if-then-else* rules
3. Such an agent cannot reach a goal effectively (no such notion present)

2 Problem Solving Agents

1. Adopt a goal
2. Perform a sequence of steps with objective of reaching goal

3 Search Problem Formulation

1. S, the state space
2. $s_0 \in S$, the initial start state
3. $G \subset S$, the set of end states (is usally dynamic and hence defined by a *goal test*)
4. $A : S \times R \to S$, the successor function (R can be any set depending on the "algorithm")

4 Modelling Assumptions

1. Agent knows current state
2. Discrete states and actions
3. Known and deterministic action outcomes

5 Space State Graph

Constructing a graph using the states and the successor function

6 Search Trees

1. s_0 is the root node

2. Check if node contains the goal
3. Else *expand* the node
4. Nodes in the tree show states but depict the *plan* for those states instead of actual representation

```
function TreeSearch(problem, strategy):
    initialise with initial state
    while true:
        if no candidates for expansion, return failure
        choose a leaf node according to strategy
        if node contains goal state return solution
        else expand node and add resulting nodes to search tree
```