

Tutorial 2: To understand state space problem Formulation

Aim : To understand state space based problem

Formulation of all problems so that problem

solving Agent can be applied

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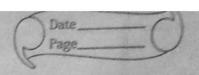
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Tutoriel 2: To understand state space problem.

Aim: To understand state space based problem formulation of Al problems so that problem solving Agent

Can be applied

Theory & First we understand problem solving agent
Algorithm shown in fig. 3 shows agent program to

problem solving agent. Agent first formulates god.

2 problem, then determines or rather searches on

action sequences, ofter which it returns next

action to be executed in a sequential manner

Fununction Simple-problem-solving-Agent seturns an

state: seq, an action sequence, initially empty:

state, some doscription of current world state

goal, a goal, initially null

problem, a problem formulation

state — Update - state (state, percept)

goal - Formulate - goal (state)

problem + Pormulate - problem (state, goal)

seque search (problem)

seq = Rest (seq)
sequen action

Fig 3. Problem solving Agent Architecture

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Defining the problem is referred to as problem.

Formulation. It involves defining following five
things:

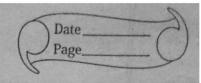
Tritical state - It is starting state that problem is in Actions - It defines all possible actions available to agent, given it is in some state currently. If is function Actions (s) that return list of all possible actions

Transition Model - also known as successor function which defines which state/s the system tend to move to when particular action is executed by the agent. Successive applicantion of transition model gives rise to what is known as stak space Goal Test - This act as a stopping condition when stake passed to this function is goal state it will getern true & searching would stop.

Path cost - It is accomulated cost of performing certain sequence of action. This can help in determining whether action sequence under consideration action is optimal.

Thus a problem can formally specified by identifying initial state, actions, transition model, good test & path cost. In term of problem solving agent solution is path from initial state to goal state, optimal solution is lowest path cost of all solutions.

Process of Binding a solution is called search.



Horking: Based on understanding of problem formulation students need to formulate following problem. They will clearly show state space up to depth level 3 or till goal node which ever is shallowest

- 1. Navigale to kGCF- Workshop from HOD IT cabin with minimum number of moves, moves can be climbing or alightning straignse turning left, sight, walking through a comidar
- 2 · 8 puzzle problèm
- The missionanies & cannibals problem. There are
 three missionanies & three cannibals who must
 ince a river using boat which can carry at most
 two people, under constraint that, for both bonks
 if there are missionanies present on bank they
 cannot be outnumbered by cannibals if they
 were, cannibals would eat missionanies. The
 boat connot cross river by itself with no people
 on board
- 4. M Queen's problem, Arrange N queens on a Mcross
 N chess board where no two queen attack each
 other.
- 5 Two mem vacque cleaner world
- 6. Water Jug problem