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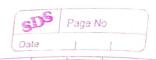
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Tutorial 2: To understand state space

Aim: To understand state space based problem
fromulation of AI problems so that problem
solving Agent can be applied.

Theory: First we understand the problem solving agent. Algorithm shown in fig. 3 shown agent program for problem solving agent. Agent first formulates gool and problem, then determines or rother searcher an action sequence, after which it returns the pext action to be executed in a sequential manner.

Tunction GIMPLE - PROBLEM - SOLVING - AGENT (percent)
returns an action.

Static: Seq. on oction sequence, initially empty.

State, some description of current would state

good, a goal, initially null

problem, a problem formulation.

State - UPDATE - STATE (State, percent)

If seq is empty then do goal ← FORMULATE - GOAL (State)

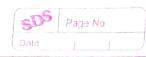
problem - FamulATE - PROBLEM (State, 9001)

seq - SEARCH (problem)

action - FIRST (seq)

Seq - REST (509)

return action.



Defining the problem is referred to as problem formulation. It involves defining following live things:

Initial State: It is the starting state that the

Actions It defines all passible actions available
to agent given it is in some state cumintly.
It is a function Action(s) that returns list
of all possible actions

Model transition also known as successor function which define which states the system tend to move to when a particular action is executed by the agent. Successive application of transition model gives rise to what is known as state space.

Goal Test: This och as a stopping condition when
the state passed to this function is goal
state it will return tour and searching would
stop

Path Cost: It is a commulated cost of performing

Certain Sequence of actions. This can help

in determining weather action sequence under

Consider action is optimal.



Thus a problem can formally specified by identifying initial state, actions (operators), transition mode) Couccerra function), goal test & path Cost. It term of problem solving agent solution is the path from initial state to goal state optimal solution is locuest path cost of all solutions. process of finding a solution 15 colled Search

working: Bosed on understanding of problem formulation stadents need to formulate following problem. They will clearly show state spale Up to depth level 3 or till goal node which ever is shallowerd ...

1. Neavigate to KGCE workshop from HOD 17 cabin with minimum number of moves , moves Can be dimbing or alighting staircose, turning left right walking through a corridor

2. 8 puzzel problem

3. The missionaries and connibals problem. There are three missionaries and there cannibals who must cross driver using a boat which can comy at most two people, under constraint that, for both banks, if there are missionaries present on blank. they cannot be outnumbered by connibals if they were the connibals would edt the missionanits. The boat connot cross the siver by itself with nu people on board.

1. N Queen's problem Arrange N queens on a N cross N chess board where no two queens affack each other