



SNS COLLEGE OF ENGINEERING

Kurumbapalayam(Po), Coimbatore – 641 107

Accredited by NAAC-UGC with 'A' Grade

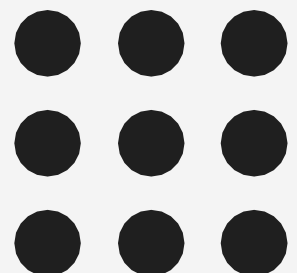
Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai

Department of Artificial Intelligence and Data Science

**Course Name – Introduction to Artificial
Intelligence**

II Year / III Semester

Unit-4 Planning and Learning





Partial Order Planning Algorithm

In partial ordered planning (POP), ordering of the actions is partial. Also partial ordered planning don't specify which action will come first out of the two actions which are placed.

With partial ordered planning, problem can be decomposed, so it can work well in case the environment is non-cooperative.

It combines two action sequence:

- i. First branch covers left sock and left shoe.
- ii. In case, to wear a left shoe, wearing left sock is precondition, similarly.

i. You can understand that if you buy an apple its effect can be eating an apple and the precondition of eating an apple is cutting apple.

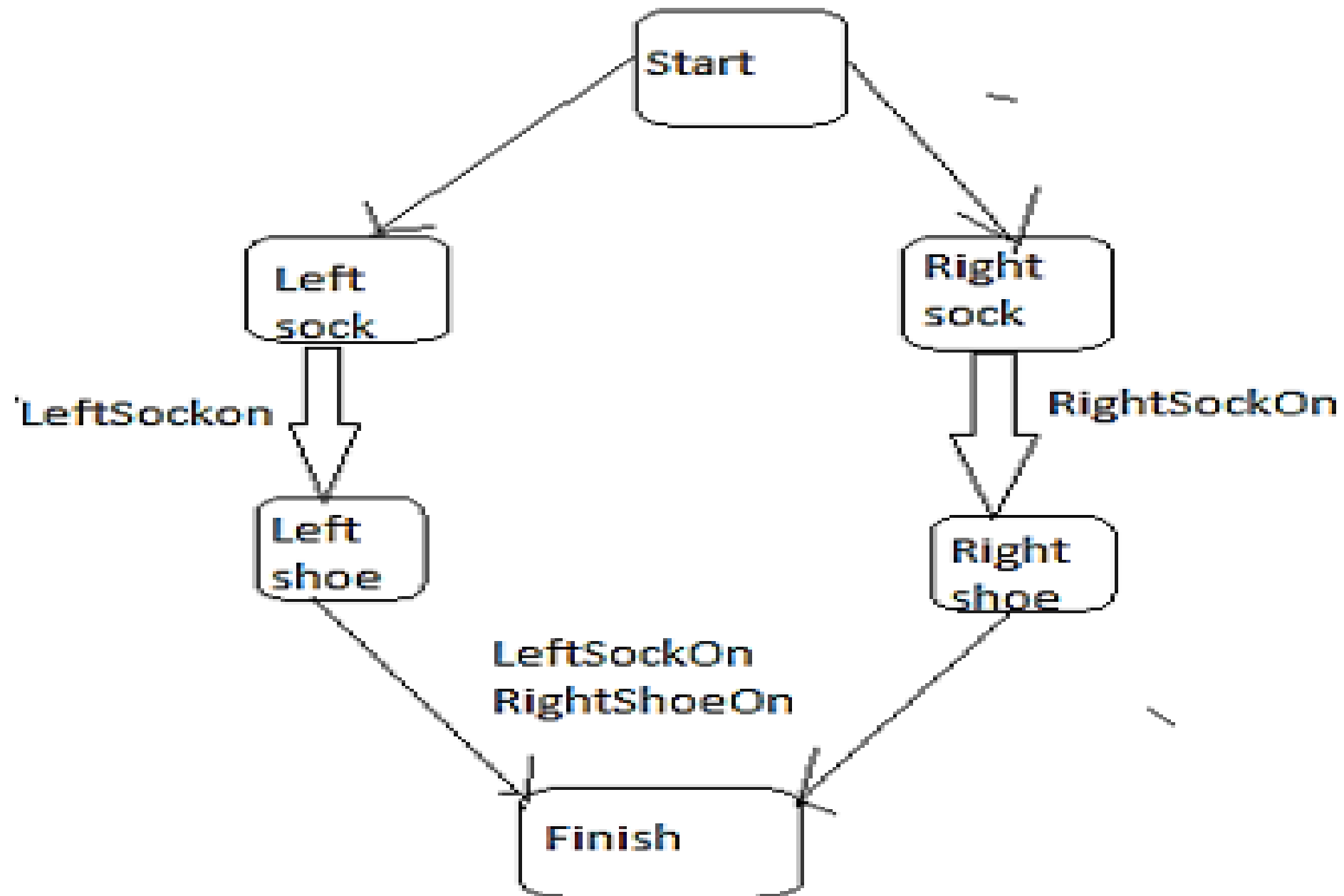
ii. For e.g. Set of Causal Links = {Right-sock-> Right-sock-on}

Set of open preconditions:

i. Preconditions are called open if it cannot be achieved by some actions in the plan.

ii. Consistent Plan is a Solution for POP Problem

iii. A consistent Plan doesn't have cycle of constraints; it doesn't have conflicts in the causal links and doesn't have open preconditions so it can provide a solution for POP problem.



Pop as search problem:

Set of actions:

These are the steps of plan.

For e.g.: Set of Actions = {Start, Rightsock, Rightshoe, Leftsock, Leftshoe, Finish}

Set of ordering constraints/preconditions:

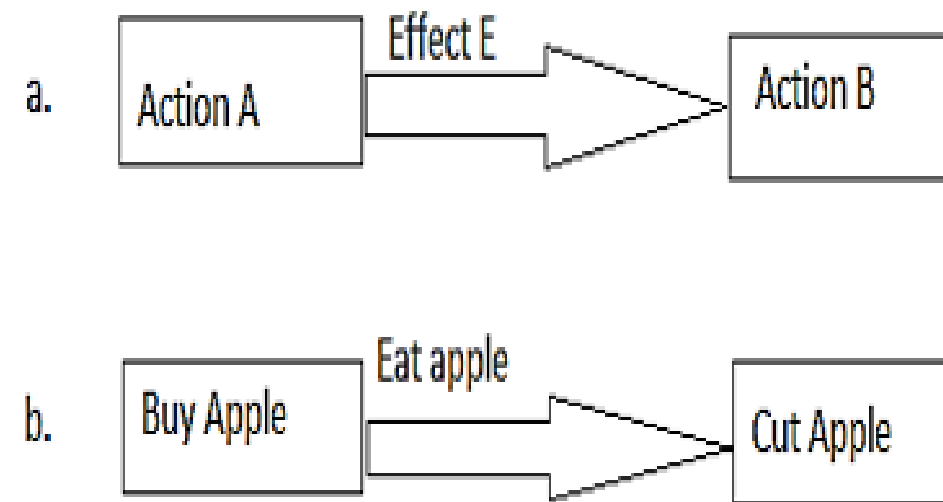
i. Preconditions are considered as ordering constraints.(i.e. without performing action “x” we cannot perform action “y”)

ii. For e.g.: Set of ordering = {Right-sock <right-shoe; left-sock<left-shoe}="" that="" is="" in="" order="" to="" wear="" shoe,="" first="" we="" should="" wear="" a="" sock.<="" p="">

Set of causal links:

Action A achieves effect “E” for action B

enter image description here





i. You can understand that if you buy an apple its effect can be eating an apple and the precondition of eating an apple is cutting apple.

ii. For e.g. Set of Causal Links = {Right-sock-> Right-sock-on

Set of open preconditions:

i. Preconditions are called open if it cannot be achieved by some actions in the plan.

ii. Consistent Plan is a Solution for POP Problem

iii. A consistent Plan doesn't have cycle of constraints; it doesn't have conflicts in the causal links and doesn't have open preconditions so it can provide a solution for POP problem.