

Problem Solving Agents and Uniformed Search

Problem Solving -

1. Goal Formulation

current situation

What agent's performance measures
what successful world states?

Steps to achieve goal - Problem formulation
What actions or states need to be
considered given the goal

Search

Determine actions that leads to states
of known values, then choose best sequence

Search algorithms - input - Problem
output - solution

(See further at actions)

Problem Solving Agent - Special type of Goal Based Agent

Environment -

static - agent assumes that in the future it takes to solve the problem, the environment doesn't change

deterministic - solution when executed will work!

discrete - can have more than one solution

observable (fully) - initial state is known

Deterministic, fully observable \Rightarrow single state problem

- " Agent knows exactly which state it will be in
- " Solution is a sequence

Defining the problem

initial state - beginning of state

Operator - description of an action in terms of which state is reached by carrying out the action in a given state

Successor Function
Given state x

$S(x) \rightarrow$ set of states of single state problem
 $S(x) \rightarrow$ set of states of multiple state problem

State space - initial state + successor function

Set of states by events. An action given state S can initially state which may not be

Set of states and the relationship between the states

Path - sequence of actions that cause you to move from one state to another

Goal test - apply to our goal state to see if we are in goal

Path cost - some paths are more costly than others. We have some function that can assign cost to the path

Problem-solving
Problem - important part of problem solving
is deciding on what goes into state
and operator descriptions

Uninformed search -
moder on/vdf
Power of search?

AVT Relevant -

Abstraction - The process of
removing detail from a problem

How do we find and test problem solving methods

Toy problems

Small, complex

How does the method perform in real-world problems?

Beautiful day - spring !!

Birds are singing

Trees are starting to bloom

Wearing favorite sneakers

You walk from 2N to 1F

