. AI: Cheat sheet QL: all as refference cheet sheet

D on'GH'S Always talks about an agent

wows

i

acts

on

an

enviroment

- intelligent agant: (1)

oucts intelligently (duh). o the actions it' bakes are appropriate for it's goalpechos o learns from it's experiences o makes appropriate choices given

and finite computation

perceptual limits - symbol-system; is the Reasoning is symbol manipulate

(the necessary and *sufficie*nt means *f*or *ge*neral in*telligant*oche) - The question " (+) is an intelligent agurt, makes appropriate

choices given ... and the symbol-system is any system

*Hut acts' intelligently is er* eent Pellows *t*he SSH! - Non determinism ; is an algorithm type Mat, given the

Same input, can have a completely different outcomel

behaviors. - (2): when (t), an intelligent agent, acts intelligently on

a search algorithm, it must make certain it's computation. This is

choices during

why when given the same input for the search, it can ultimately give us auswer

a different as it has acted intelligently upon the alguer i thon (guessed choices). This is why álgar*it*her

the relalesa nou-*de fe*rmeáristiche

search

unce

- Cantor's theorem ; is a funda mental result that states Meat

for any set, Me set of all subsets of (the power set of,

denoted by I has a strictly greater cardinality than itself! ©i (state cantor's). The power set of an an countably

finite set, is uncountably in file as it consists of the cardinality of the real numbers. 2. To search' an infitite bit strings, would mean you would have to search it's power set that is

uncountabl*y infinit*e - SAT problem ; is the problem of determining if there

exists an interpretation Mat statute's fie's a given Bodeer

Formula @: (state SAT) ; It relates to the finite bit string as

it is either found or not found through intelligunt

doices by the apeut (not too sure on this one). @: (stale SAT), with a boolean variables there are

29. different possible bit strings of length in . This makes the search space exponentia 1. In principle it can be searched but is very expensive. Ace To search this space using brube force lakes worse they polynomial time,

( (state sat). The agent might be trying to find an

assignment *to the* vari*ables satisfyi*n*g an expressione C*since it intelligently uses it's in*put*s) Boolean ex*p*ressiou*s*

are a way of expressing what it's brying to complete, Pus NP) asks whether every problem whose solution can

be quickly verified can also be solved quickly. B (stat Pus NP), SAT can then be feasiable il

P=NP as w allows for non-determinism lie the agent takes control of the outcomel. Church-turing thesis states that any symbol manipulation

can be carried out on a during machine © (state CTT). Our agent is known to act intelligently

and reinforces the fact that it can (as a tm)

through the intelligent manipulation of symbols. (?) Constrain't satis*facti*on pro*b*lemi is *a mati mab*icol provestilen that is defined as a set of objects whose state must satisfy a number of constraints limitations

Var=[x,, . . - xn J of variables xi Dan = [De .... Dn] of finite sets pi of size si Con = a finite set of constraints that may may not be satisfie

by la novel instantienting di with a value in Di

Binary decision diagram (BDP). Answe*r to* It is a data structure that is used to represent a

boolean *f*unchion ordered; if different variables appear in the same order on all patis from the root reduced. If when lowl high children of Me node ccennot be the same

ROBDD

(x, or yd)

Answer to ig. Bei e A BOD is satisfiable .

B . when it completes Me

M M and it, or 53). SAT problem. Turing Machine; is an abstract machine that att operutes

on à tape of symbols using a table of rules. ® state lering machine). (A relates to one as it can

be modelled as a TM where bape is the enviroment. Hulting problemi ou

(computer program)

a Pering machine *, determ*in*e*s (given an input) if it should half or continue. Klix) = { 1 il program o state hulting problem). It is impossible to determine up

(A) will ever find a solution!

input a

. Gg. SAY = Di {0, 13, sitz for search space size 2" y stale var, Donn, con J SAT approach above (I Mink!)

*COM*

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3) Korstan For son algorithm to be admissable it

must not overestimate the cost of reaching Me goal, (current point estimate the cost must not be > Heen the lowest possible cost to that node).

3 conditions)

must not underestimate

termination i

, estimation For some ÉSo, every are costs te finite branching En'larcen, n') } is finite for each node n ) see B DD

D

& Non - determinism can be applied to search with regards to at. It uses the heuristic function to determine the shortest path, but can sometimes outputs

give us different with the . sance inputs! The Ct) uses this to calculate Me search intelligently!