

ARTIFICIAL INTELLIGENCE
CLASSIFICATION
algorithmic problems

algorithmic problems

- ◉ Algorithmic problem solving means that not only know computer programming but need other skills as having a good capacity of analysis and abstraction of the problem to develop.
- ◉ By way that computer scientists have identified the algorithmic problems, they should be able to devise a solution so they can solve the problems.

- Once you have designed an algorithmic solution to the problem, the computer must implement it, this involves identifying the problem as it is structured, where you should place the features identified in the analysis and what is expected of each module of the problem (modularity) .

DECISION PROBLEMS

- The decision problems are treatable problems, ie a solution of these problems are either poor or desired.
- A decision problem can be expressed by a set of variables, each variable has its domain so that this set has the values that can be assigned. You must also define restrictions set of variables.
- The solutions to these problems consists in assigning values to variables that satisfy the constraints.

OPTIMIZATION PROBLEMS AND LOCATION

- An optimization problem can be expressed by a set of variables, each variable has its domain so that this set has the values that can be assigned. Also define restrictions set of variables and an objective function to maximize or minimize.
- To determine the optimal solution to these problems is to find a maximum or minimum function corresponding to the first objective function is defined.

- ◉ Location problems is defined as an alternative to determine what the best location that can take a set of items in space.

Problems P and NP

- P problems are treatable problems, that is, these problems can be solved either in as good or bad. A type of decision problems.
- These problems are solved by P algorithms whose complexity is polynomial.
- We can solve problems like any type of transaction such as: a sales system, payment system, customer record. For these problems one can construct a deterministic automaton.

- Los problemas NP se refiere a un conjunto de problemas de decisión que se necesita construir una autómata no determinista para su solución.
- In the set of decision problems is contained a set of problems such that every problem in NP can be transformed in poly nomically set of problems.
- The NP is covered in the set of intractable problems, ie finding the solution but can not be solved by polynomial algorithms

NP-hard Problems

- NP-complete problems are more complicated to solve problems in NP
- Halting Problem: These problems are NP-complete, is to take any program and its data, and subsequently has to decide whether to end or if it is running indefinitely.

- El problema de satisfacibilidad booleana: Este problema se puede reducir al problema de para explicado anteriormente mediante una transformación en la descripción de una maquina de turing que se encarga de probar todos los valores de las variables