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

Learning by Analogy

Analogy
A comparison between one thing and another, typically for the purpose of explanation or clarification.
Example:- The analogy between the heart and the pump.

Learning by analogy
• It is a powerful inference tool.
• It generally involves abstracting details from a particular set of problems and resolving structural similarities between previously distinct problems.
• Analogical reasoning refers to this process of recognition and then applying the solution from the known problem to new problem.
• It involves developing a set of mappings between features of two instances.

Analogical Reasoning Steps

- Retrieve: - Retrieve cases from memory that are relevant to solving it.

- Reuse: - Map the solution from previous case to the target problem. This involves adapting the solution to fit new solution.

- Revise: - Test the new solution to real world and, if necessary, revise.

Retain: - After the solution has been successfully adapted to target problem, store the resulting experience as the new case in memory.

Transformational analogy

• Suppose you are asked to prove a theorem in plane geometry.
• You might look for a previous theorem that is very similar and copy its proof, making substitutions when necessary.
• The idea is to transform a solution to a previous problem in to solution for the current problem.

Derivational analogy

• It only looks at the final solution.
• Often the twists and turns involved in solving an old problem are relevant to solving a new problem.
• The detailed history of problem solving episode is called derivation.
• Analogical reasoning that takes these histories into account is called derivational analogy.