



# **SNS COLLEGE OF ENGINEERING**

**Kurumbapalayam(Po), Coimbatore – 641 107**

**Accredited by NAAC-UGC with 'A' Grade**

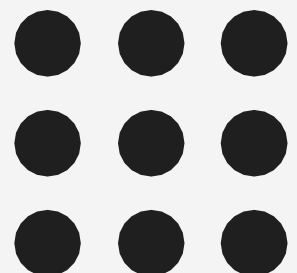
**Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai**

## **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 into a 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.