Reinforcement Learning

### Reinforcement Learning (RL) is the science of decision making. It is about learning the optimal behavior in an environment to obtain maximum reward. In RL, the data is accumulated from machine learning systems that use a trial-and-error method. Data is not part of the input that we would find in supervised or unsupervised machine learning.

# Use Cases

**Marketing personalization**

In applications like recommendation systems, RL can customize suggestions to individual users based on their interactions.

**Optimization challenges**

Traditional optimization methods solve problems by evaluating and comparing possible solutions based on certain criteria.

# Main points in Reinforcement learning

**Input:** The input should be an initial state from which the model will start

**Output:** There are many possible outputs as there are a variety of solutions to a particular problem

**Training:** The training is based upon the input, The model will return a state and the user will decide to reward or punish the model based on its output.

The best solution is decided based on the maximum reward.

# Elements of Reinforcement Learning

**Reinforcement learning elements are as follows:**

* Policy
* Reward function
* Value function
* Model of the environment