

## Artificial Intelligence

Artificial Intelligence refers to the intelligence displayed by computers. In today's world, Artificial Intelligence has become highly popular. It is the replication of human intelligence in computers that have been programmed to learn and replicate human activities. These computers can learn from their mistakes and do human-like jobs. Artificial intelligence (AI) will have a significant influence on our quality of life as it develops. It's only natural that everyone nowadays wants to engage with AI technology in some way, whether as a consumer or as a professional in the field.

### What is Intelligence?

Calculation, reasoning, perceiving relationships and analogies, learning from experience, storing and retrieving information from memory, solving problems, comprehending complex ideas, fluently using natural language, classifying, generalising, and adapting to new situations are all capabilities of a system.

### Types

Intelligence occurs in many forms, according to Howard Gardner, an American developmental psychologist:

Sr.No	Intelligence & Description	Example
1	<b>Linguistic</b> The capacity to communicate, identify, and employ phonology (speech sounds), syntax (grammar), and semantics systems (meaning).	Orators and Narrators
2	<b>Musical</b> The ability to create, communicate with, and understand meanings made of sound, understanding of pitch, rhythm.	Composers, singers, and musicians
3	<b>Logical</b> The ability to use and understand relationships in the absence of action or objects. It is also the ability to understand complex and abstract ideas.	Mathematicians, Scientists
4	<b>Spatial</b> The ability to perceive visual or spatial information, change it, and re-create visual images without reference to the objects, construct 3D images, and to move and rotate them.	Map readers, Astronauts, Physicists

5	<b>Bodily-Kinaesthetic</b>  The ability to use complete or part of the body to solve problems or fashion products, control over fine and coarse motor skills, and manipulate the objects.	Players, Dancers
6	<b>Intra-personal</b>  The ability to distinguish among one's own feelings, intentions, and motivations.	Gautam Buddhha
7	<b>Interpersonal</b>  The ability to recognize and make distinctions among other people's feelings, beliefs, and intentions.	Mass Communicators, Interviewers

You can say a machine or a system is artificially intelligent when it is equipped with at least one or all intelligences in it.

### Composition of Intelligence

1. Perception  
Sight, hearing, touch, taste, and smell are the five senses we all have. The world around us is perceived via our senses. Perception is the collection, interpretation, selection, and organisation of sensory data.
2. Learning  
Humans, some types of animals, and AI-enabled systems all have the potential to learn.
3. Reasoning  
Reasoning can be inductive or deductive. Inductive is based on assumption and deductive is drawing conclusion.
4. Linguistic intelligence  
It refers to a person's capacity to utilise, comprehend, communicate, and write in both oral and written form. In interpersonal communication, it is critical.
5. Problem solving  
It is the act of seeing and attempting to reach a desired solution from a current circumstance by following a path that is hindered by known or unknown obstacles.  
  
Problem solving also involves decision making, which is the act of picking the most suited alternative from a variety of options to achieve the intended result.

$$y = f(x)$$

### How to measure that an AI machine is behaving like a human

# TEST THE HUMAN-LIKENESS OF AI WITH THESE TESTS

1

Turing  
Test

2

The Rational  
Agent Approach

3

The Cognitive  
Modelling  
Approach

4

The Law of  
Thought  
Approach

## Turning

The basis of the Turing Test is that the Artificial Intelligence entity should be able to hold a conversation with a human agent. The human agent ideally should not be able to conclude that they are talking to an Artificial Intelligence.

## Rational Agent Approach

In its current situation, a rational agent acts to attain the best possible outcome. The Laws of Thought method states that an entity must act in accordance with logical assertions. However, there are also situations in which there is no logical correct thing to do, such as when numerous outcomes are involved, each with its own set of tradeoffs. In the rational agent method, the goal is to make the best decision feasible given the present situation. It means it's a far more adaptive and dynamic agent.

## Cognitive

As the name suggests, this approach tries to build an Artificial Intelligence model based on Human Cognition. To distil the essence of the human mind, there are 3 approaches:

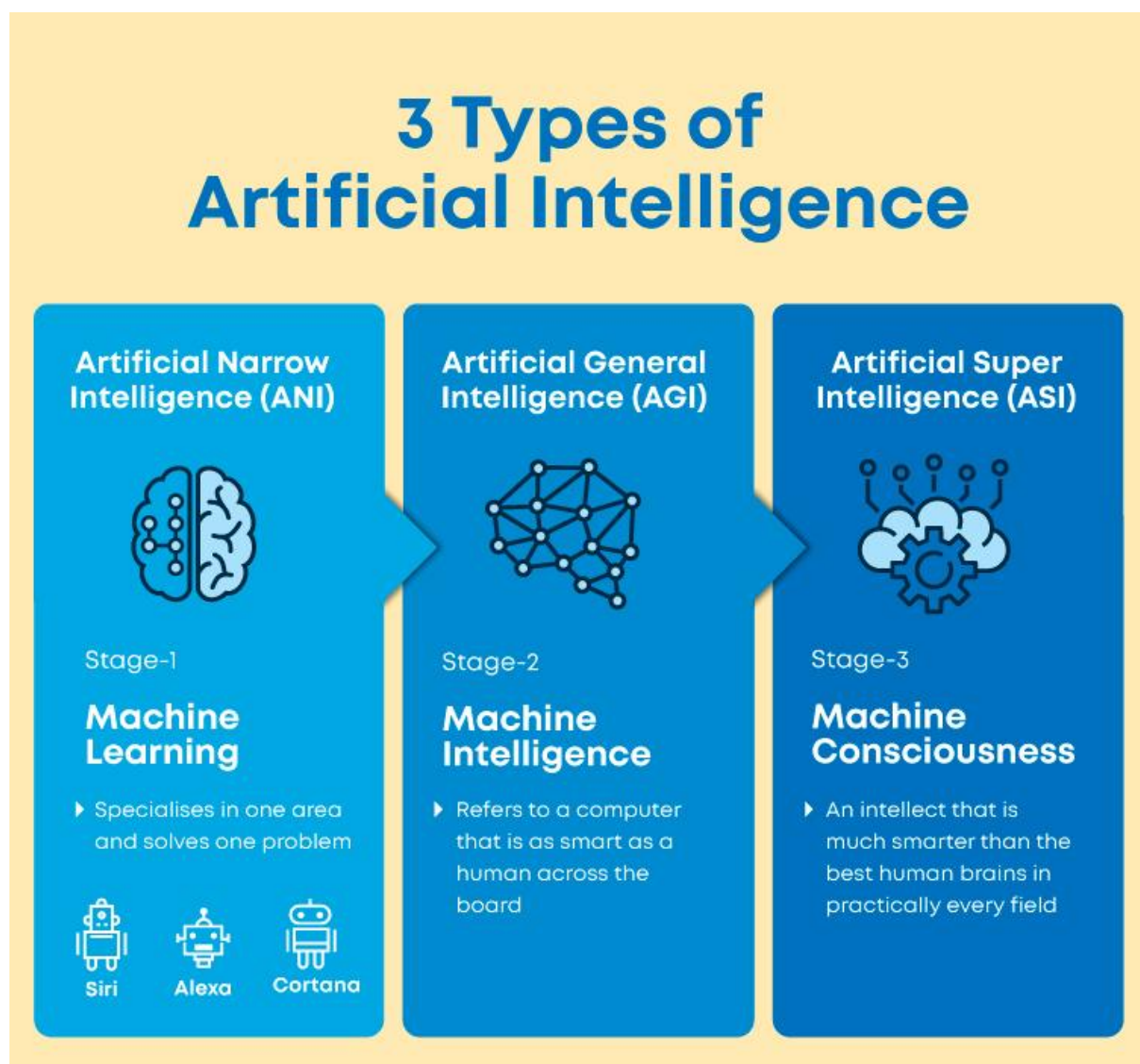
1. Introspection: observing our thoughts, and building a model based on that
2. Psychological Experiments: conducting experiments on humans and observing their behaviour

3. Brain Imaging: Using MRI to observe how the brain functions in different scenarios and replicating that through code.

## Law of Thought

The Laws of Thought are a set of logical assertions that regulate how our minds work. Artificial intelligence algorithms may be codified and implemented using the same laws. The problems with this technique arise from the fact that addressing a problem in theory (strictly according to the rules of thinking) and solving it in practise might be extremely different, necessitating the application of contextual subtleties. Also, if there are too many parameters, an algorithm might not be able to reproduce some activities that we conduct without being 100 percent confident of the outcome.

## Types of AI



## **Artificial Narrow Intelligence (ANI)**

This is the most popular type of AI on the market right now. These Artificial Intelligence systems are intended to address a specific problem and can do a single task very effectively. They have limited capabilities, such as recommending a product to an e-commerce consumer or forecasting the weather. This is the only type of artificial intelligence currently available. They can mimic, and in some cases even outperform, human performance in very narrow situations, but only in tightly controlled circumstances with a limited range of parameters.

## **Artificial General Intelligence (AGI)**

AGI is still an idea under development. It's characterised as AI with a human-level of cognitive function in a range of disciplines, including language processing, picture processing, computational reasoning, and so on.

We're still a long way from developing an artificial intelligence system. To emulate human reasoning, an AGI system would need to be made up of thousands of Artificial Narrow Intelligence systems functioning in unison and interacting with one another. It took them 40 minutes to mimic a single second of neural activity using the most modern computing systems and infrastructures, such as Fujitsu's K or IBM's Watson.

## **ASI**

Although we're approaching science fiction territory, ASI is viewed as the natural next step after AGI. A system of Artificial Super Intelligence (ASI) would be able to outperform humans in every way. This would involve things like generating better art and developing emotional relationships, as well as decision-making and rational decision-making.