

Subject : Artificial Intelligence.

Q. 1 What do you understand by Artificial Intelligence?
⇒ Artificial intelligence is the ability of a computer or a robot controlled by a computer to do tasks that are usually done by humans because they require human intelligence and discernment.

- * Types of Artificial Intelligence
- ① Artificial Narrow Intelligence - The term artificial intelligence often evokes images from science fiction movies. However, AI technology isn't fiction; it's real, and gaining wider usage. Three types of AI are widely recognized in the technological community: narrow; general; and superintelligence plus two others in parenthesis.
 - Artificial narrow intelligence (ANI or Narrow AI) refers to a computer's ability to perform a single task extremely well, such as crawling a webpage or playing chess.
 - Artificial general intelligence (AGI) is when a computer program can perform any intellectual tasks that a human could.
 - Artificial superintelligence (ASI) is an AI that surpasses human intellect in every aspect.
 - ② Artificial General Intelligence - An Artificial General Intelligence (AGI) would be a machine capable of understanding the world as well as any human, and with the same capacity to learn how to carry out a huge range of tasks involving lots of biology and physics.

AGI doesn't exist, but has featured in science-fiction stories for more than a century, and been popularized in modern times by films such as 2001: A space odyssey.

③ Artificial superintelligence | Artificial intelligence has emerged out to be one of the most popular terms of computer science in recent times. This article discusses one of the classifications of Artificial superintelligence (ASI) so what is the Artificial Superintelligence (ASI) Artificial superintelligence (ASI) is the hypothetical AI, i.e. we have not been also able to achieve it but we know what will happen if we achieve it. so basically it is the imaginary AI which not only interprets or understands human behaviour and intelligence, but ASI is where machines will become self-aware / self-vigilant enough to surpass the capacity of human intelligence and behavioral ability.

* # Work of AI & Building an AI system: is a careful process of reverse-engineering human traits and capabilities in a machine, and using its computational powers to surpass what we are capable of.

To understand how Artificial intelligence actually works, one needs to deep dive into the various sub-domains of Artificial intelligence and understand how those domains could be applied to the various fields of industry.

A.2 What is the intelligent agent in AI, and where are they used ?

⇒ An intelligent agent is an entity that makes a decision, that enables artificial intelligence to be put into action. It can also be described as a software entity that conducts operations in the place of users or programs after sensing the environment. It uses actuators to initiate action in that environment.

* Uses of intelligent agent - AI assistants, like Alexa and Siri, are examples of intelligent agents as they use sensors to perceive a request made by the user and automatically collect data from the intelligent without the user's help. They can be used to gather information about its perceived environment such as weather and time.

Intelligent agents are applied as automated online assistants, where they function to perceive the needs of customers in order to perform individualized customer service. Such as agent may basically consist of a dialog system, an avatar, as well as an expert system to provide specific expertise to the user.

* Rules of AI agents:-

- An AI agent must have the ability to perceive the environment.
- The observation must be used to make decision.
- Decision should result in an action.
- The action taken by an AI agent must be a rational action.

Q.3 Give a brief introduction to the turing test in AI 2.

⇒ The turing Test is a deceptively simple method of determining whether a machine can demonstrate human intelligence; If a machine can engage in a conversation with a human without being detected as a machine, it has demonstrated human intelligence.

The turing test was proposed in a paper published in 1950 by mathematician and computing pioneer Alan Turing. It has become a fundamental motivator in the theory and development of artificial intelligence.

* Work of turing test :- Rapid advances in computing are now visible in many aspects of our lives. We have programs that translate one languages to another in the blink of an eye; robots that clean an entire home in minutes; finance robots that create personalized retirement portfolios, and wearable devices that track our health and fitness levels.

All of these have become relatively mundane. At the forefront of disruptive technology now are the pioneers in the development of artificial intelligence.

* Benefits of At turing test ;- The turing test judges the conversational skills of a bot. According to the test, a computer program can think if its responses can fool a human into believing it, too, is human. Not everyone the validity of the turing test, but passing it remains a major challenge to developers of AI.

Q.4 What are the different components of the Expert System ?

⇒ Expert systems in Artificial intelligence are a prominent domain for research in AI. It was initially introduced by researchers at Stanford University and were developed to solve complex problems in a particular domain. The following topics will be covered through this blog on Expert systems in Artificial intelligence.

* Components of Expert system.

- Knowledge base :- The knowledge base in an expert system represents facts and rules. It contains knowledge in specific domains along with rules in order to solve problems and form procedures that are relevant to the domain.
- Inference engine :- The most basic function of the inference engine is to acquire relevant data from the knowledge base, interpret it, and to find a solution as per the user's problem. Inference again also have explanatory and debugging abilities.
- Knowledge acquisition and learning module :- This component functions to allow the expert systems to acquire more data from various sources and store it in the knowledge base.
- User interface :- This component is essential for a non-expert user to interact with the

expert system and find solutions.

- Explanation module ; As the name suggests, this module helps in providing the user with an explanation of the achieved conclusion.

Q.5 What is the knowledge representation of AI ?

⇒ knowledge Representation in AI describes the representation of knowledge. Basically, it is a study of how the beliefs, intentions, and judgments of an intelligent agent can be expressed suitably for automated reasoning. One of the primary purposes of knowledge Representation includes modeling intelligent behaviour of an agent.

Knowledge Representation and Reasoning represents information from the real world for a computer to understand and then utilize this knowledge to solve complex real-life problems like communicating with human beings in natural language. Knowledge representation in AI is not just about storing data in database, it allows a machine to learn from that knowledge and behave intelligently like a human being.

* The different kinds of knowledge that need to be represented in AI include :

- objects
- events
- performance
- facts
- meta-knowledge
- knowledge-base

* Different types of knowledge :-

- Declarative knowledge :- It includes concepts, facts, and objects and expressed in a declarative sentence.

- structural knowledge :- It is a basic problem solving knowledge that describes the relationship between concepts and objects.
- Procedural knowledge :- This is responsible for knowing how to do something and includes rules, strategies, procedures etc.
- Meta knowledge :- Meta knowledge defines knowledge in the field or subject about other type of knowledge.
- Heuristic knowledge :- This represents some expert knowledge in the field or subject.