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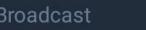


















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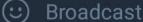
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# ☐ Approaches to AI

# Content:

- 1. introduction of AI
- 2. Application of AI
- 3. Turing test
- 4. Agent Approaches
- 6. Heuristic Search
- 7. Game Playing

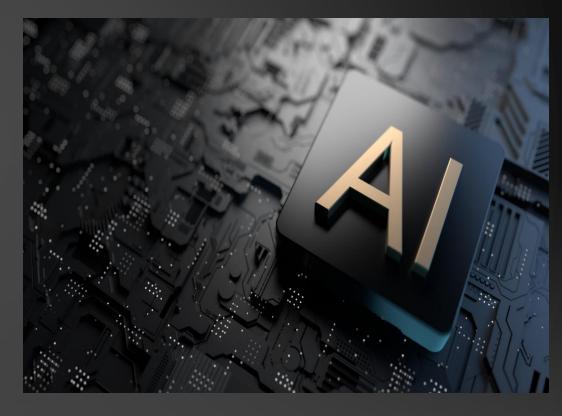


# Topic

# (Artificial intelligence)

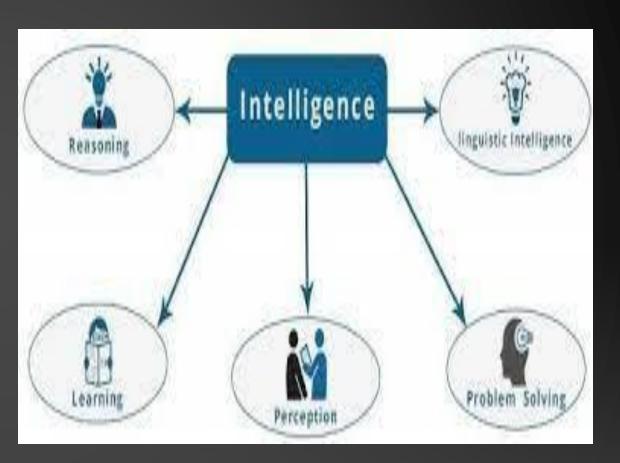
# >An Introduction

- Before leading to the meaning of artificial intelligence let understand what is the meaning of Intelligence –
- Intelligence: The ability to learn and solve problems.
- □AI > making computer intelligent, they can act intellgently as like human, in real world problems.



# > Intelligence is composed of:

- 1. Learning
- 2. Reasoning
- 3. Perception
- 4. Problem Solving
- 5. Linguistic Intelligence
- 6. Learn from experience

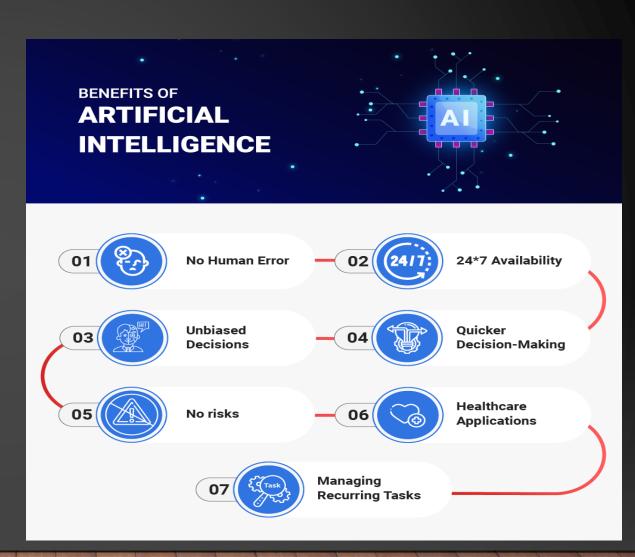




# **❖ Need for Artificial Intelligence:**

1. To create expert systems that exhibit intelligent behavior with the capability to learn, demonstrate, explain, and advise its users.

2. Helping machines find solutions to complex problems like humans do and applying them as algorithms in a computer-friendly manner.



### FIELD WHILE ARE USING AI

- Many tools are used in AI,
- > including versions of search and mathematical optimization,
- > The AI field draws upon computer science,
- > Logic,
- > mathematics,
- > psychology,
- > linguistics,
- > philosophy,
- > neuroscience,
- > artificial psychology,
- > and many others.



# \* Applications of AI include:

> Natural Language Processing,

> Gaming,

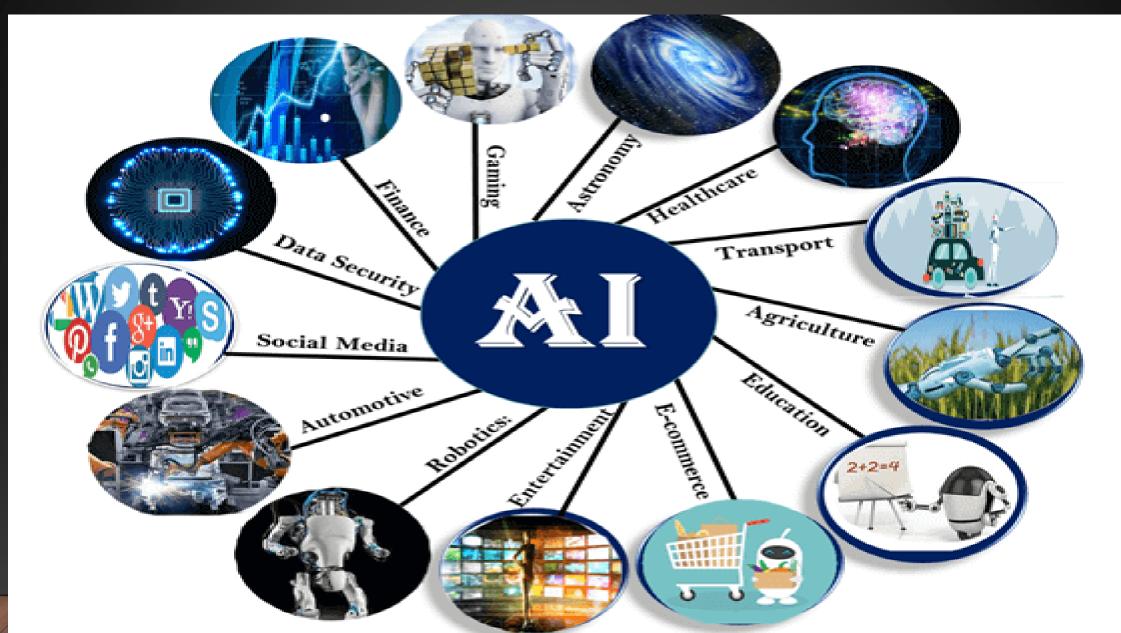
> Speech Recognition,

> Healthcare,

> Vision Systems,

> Automotive, etc.

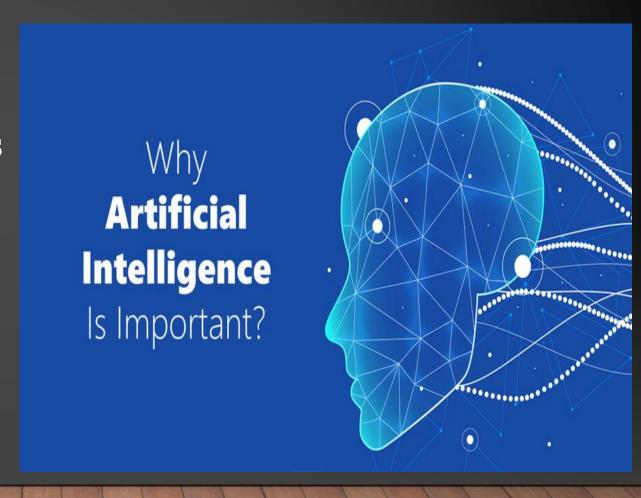






# Why Artificial Intelligence?

☐ With the help of AI, you can create such software or devices which can solve real-world problems very easily and with accuracy such as health issues, marketing, traffic issues, etc.



- With the help of AI,
- you can create your personal virtual Assistant, such as Cortana, Google Assistant, Siri, etc.



□With the help of AI, you can build such Robots which can work in an environment where survival of humans can be at risk.

☐AI opens a path for other new technologies, new devices, and new Opportunities.





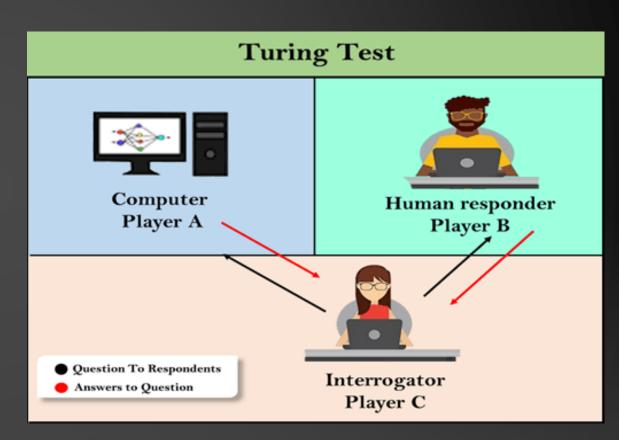


# **Turing Test in AI**

❖ In 1950, Alan Turing introduced a test to check whether a machine can think like a human or not, this test

Is known as the Turing Test. In this test, Turing proposed that the computer can be said to be an intelligent if it can mimic human response under specific conditions.

Turing Test was introduced by Turing in his 1950 paper, "Computing Machinery and Intelligence," which considered the question, "Can Machine think?"



# > Features required for a machine to pass the Turing test:

- •Natural language processing: NLP is required to communicate with Interrogator in general human language like English.
- Knowledge representation: To store and retrieve information during the test.
- •Automated reasoning: To use the previously stored information for answering the questions.
- Machine learning: To adapt new changes and can detect generalized patterns.
- •Vision (For total Turing test): To recognize the interrogator actions and other objects during a test.
- Motor Control (For total Turing test): To act upon objects if requested.

# Agents in Artificial Intelligence

← Prev

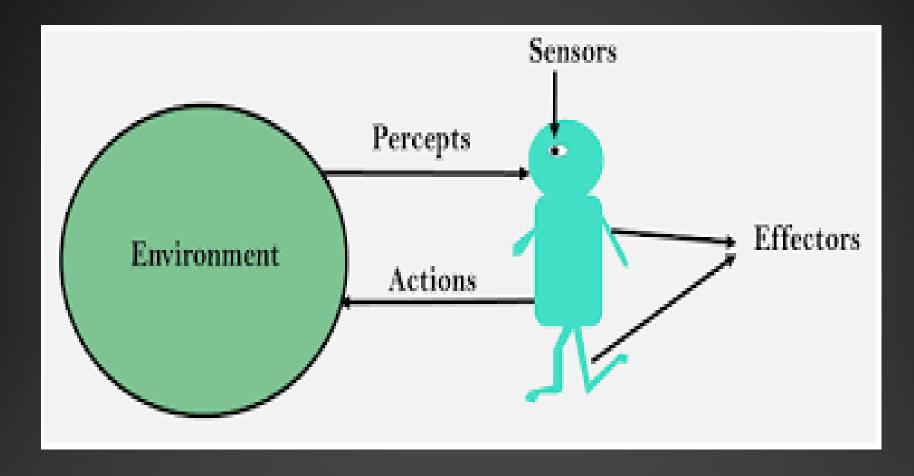
 $Next \rightarrow$ 

An AI system can be defined as the study of the rational agent and its environment. The agents sense the environment through sensors and act on their environment through actuators. An AI agent can have mental properties such as knowledge, belief, intention, etc.

#### What is an Agent?

An agent can be anything that perceiveits environment through sensors and act upon that environment through actuators. An Agent runs in the cycle of **perceiving**, **thinking**, and **acting**. An agent can be:

- Human-Agent: A human agent has eyes, ears, and other organs which work for sensors and hand, legs, vocal tract
  work for actuators.
- Robotic Agent: A robotic agent can have cameras, infrared range finder, NLP for sensors and various motors for actuators.
- Software Agent: Software agent can have keystrokes, file contents as sensory input and act on those inputs and display output on the screen.



AGENT – PERCEPT – DECISION - ACTION

# Rational Agent:

A rational agent is an agent which has clear preference, models uncertainty, and acts in a way to maximize its performance measure with all possible actions.

A rational agent is said to perform the right things. AI is about creating rational agents to use for game theory and decision theory for various real-world scenarios.

For an AI agent, the rational action is most important because in AI reinforcement learning algorithm, for each best possible action, agent gets the positive reward and for each wrong action, an agent gets a negative reward.

# Rationality:

The rationality of an agent is measured by its performance measure. Rationality can be judged on the basis of following points:

- Performance measure which defines the success criterion.
- Agent prior knowledge of its environment.
- Best possible actions that an agent can perform.
- o The sequence of percepts.



#### For More Information

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