

### Lesson 3: Robotics and Artificial Intelligence

Let us continue with the different types of robots.

**5. Entertainment Robots:** - As the name suggests, these are used for entertainment. This category starts with toy robots such as robosapien or the running alarm clock and ends with robot arms used as motion simulators. A motion simulator is a mechanism that creates the feeling of being in a real motion environment.



**6. Military Robots:** - This type of robots includes bomb disposal robots, different transportation robots, exploration drones etc. Often robots initially created for military purpose can be used in law enforcement, search and rescue and other related fields.

#### Artificial Intelligence

Artificial Intelligence (AI) is a way of making a computer, a computer controlled robot, or software think intelligently in the similar manner the humans think. Chess playing computers are one example where computer learns and improve games learning from previous games. Some of the activities computers with artificial intelligence are designed for include: Speech recognition, Learning, Planning and Problem solving.



Remember: - McCarthy was one of the founders of the discipline of artificial intelligence. He invented the term "Artificial Intelligence" (AI).

AI includes tools and techniques like Artificial Neural networks, machine Learning, Natural Language Processing and Deep Learning to work like the human mind.

#### Applications of AI

There are multiple applications of AI

**1. In class rooms:** - One of the most exciting innovations is the idea of a personal AI tutor or assistant for each individual student. When students sit at their desk, their devices will be able to create lessons, problems and games to tailor to the specific student's needs, particularly where a student may be struggling and give immediate feedback.

**2. Hospital and Medicine:** - AI helps in computer aided interpretation of medical images. Such systems help scan digital imaged, e.g. from computed tomography (CT scan), for typical appearances and to highlight obvious sections, such as possible diseases. A possible application is the detection of a tumour.

**3. Expert Systems:** - An expert system is computer software that attempts to mimic the decision-making expertise of an expert in a given field.

**4. Speech recognition:** - These intelligent systems are capable of hearing and understanding the language in terms of sentences and their meanings while a human talks to it. It can handle different accents, slang words, noise in the background, change in human's noise due to cold etc.

**5. Intelligent Robots:** - These robots are able to perform the tasks given by a human. They have sensors to detect physical data from the real world such as light, heat, temperature, movement, sound, bump and pressure. They are capable of learning from their previous mistakes and they can adapt to the new environment.

**6. Entertainment:-** A familiar application of AI in everyday life is seen with services like Netflix or Amazon, wherein an algorithm analyze the user's activity and compare it with that of other users to determine which shows or products to recommend.

**7. Smart Virtual Assistants:-** A virtual assistant is an application that can understand voice commands and complete tasks for a user. Virtual assistants are available on most smart phones and tablets, traditional computers and now even standalone devices like the Amazon Echo and Google Home.

Apple's Siri, Google Assistant, Amazon's Alexa and Microsoft's Cortana accept voice command to do many things are example of Smart Virtual Assistant.

They combine specialized computer chips, microphones and software that listens for specific spoken commands from you and usually answers back with a voice that you select.



**Now, answer the following questions based on the above notes and explanation:-**

**Q.1. Select the correct option:-**

1. These types of intelligent systems are capable of hearing and understanding the language in terms of sentences and their meanings while a human talks to it.

- a) Command Recognition
- b) Biometric
- c) Speech Recognition

2. These systems provide explanation and advice to the users.

- a) Common System
- b) Clever System
- c) Expert System

3. This is an application that can understand voice commands and complete tasks for a user.
  - a) Virtual Assistant
  - b) Personal assistant
  - c) Expert System
4. \_\_\_\_\_ invented the term Artificial Intelligence (AI).
  - a) Blaise Pascal
  - b) Charles Babbage
  - c) McCarthy

**Q.2. Write True or False**

1. Domestic robots are used at home.
2. Dumb robots are capable of learning from their mistakes and they can adapt to the new environment.
3. Artificial Intelligence cannot be used in schools.
4. AI helps in computer aided interpretation of medical images.
5. An expert system is a computer software that attempts to mimic the decision making expertise of an expert in a given field.
6. A virtual assistant is an application that can understand voice commands and complete tasks for a user.

**Q.3. Fill in the blanks:-**

1. \_\_\_\_\_ Robots includes bomb disposal robots, different transportation robots, exploration drones etc.
2. \_\_\_\_\_ is a way of making a computer, a computer-controlled robot, or a software think intelligently, in the similar manner the intelligent humans think.

**Homework**

**Go through all the given videos once again.**

**Answers**

**Worksheet -3 Subject: - Computer Class: - VI Teacher: - Mrs. Suudha Sharma**

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**Q.1. Select the correct option:-**

1. c) Speech Recognition
2. c) Expert System
3. a) Virtual Assistant
4. c) McCarthy

**Q.2. Write True or False**

1. True
2. False
3. False
4. True
5. True
6. True

**Q.3. Fill in the blanks:-**

1. Military
2. Artificial Intelligence