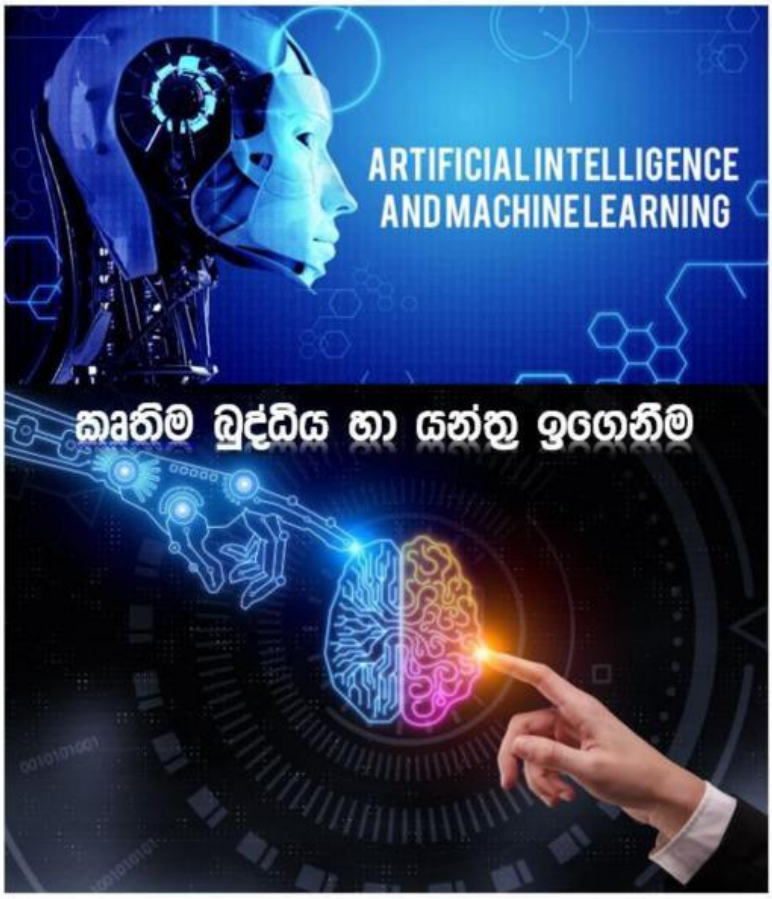
Project 157

DP EDUCATION

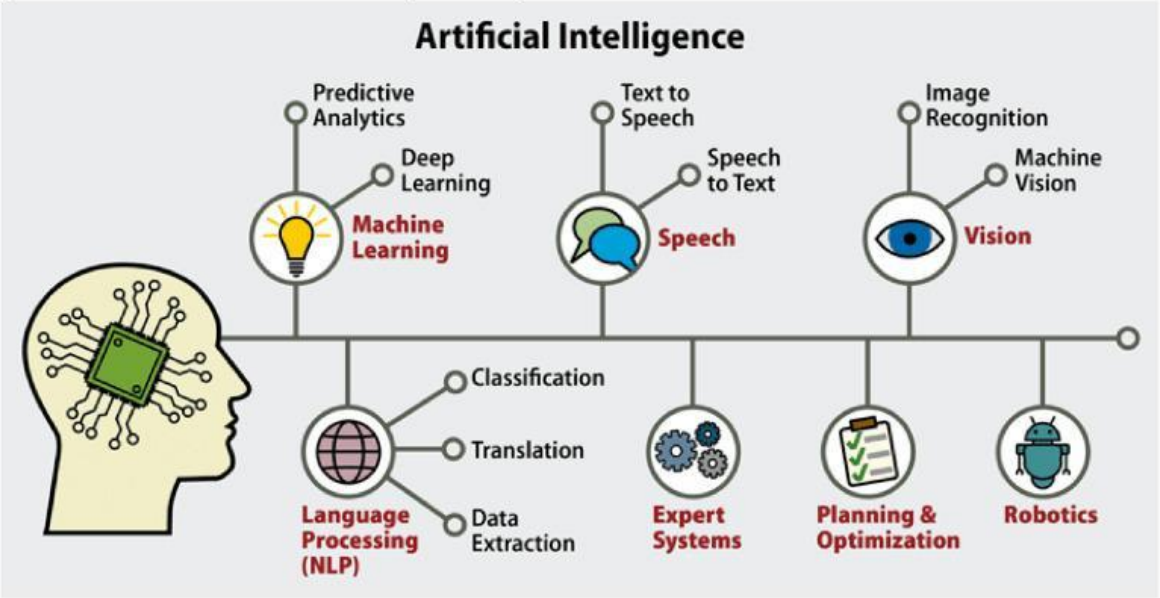
Coding School

AI and Machine Learning



Artificial Intelligence Artificial Intelligence (AI) is the imitation of human intelligence in machines designed to think and act like humans. These machines can perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision making, and language translation. AI systems often operate on algorithms and vast amounts of data, enabling them to learn from experience and improve their performance over time.

Machine learning is a subfield of artificial intelligence (AI) that focuses on developing algorithms that allow computers to learn and make decisions based on data. Unlike traditional programming, where clear instructions are encoded for specific tasks, machine learning is about creating models that can improve their performance over time as they are exposed to more data.



Artificial intelligence is at the heart of many of the technologies we use. Technologies such as natural language processing and computer vision are used to automate tasks, speed up decision making, and enable customer conversations with chatbots.

Artificial Intelligence can be classified into two main types. If they are

- ✓ **Narrow AI (Weak AI)**

This type of AI is trained to perform specific tasks, such as virtual assistants like Siri and Alexa, or recommendation systems used by streaming services

✓ **General AI (Strong AI)**

This type of AI aims to have the normal cognitive abilities of humans. A typical AI system can understand, learn and apply its intelligence to solve any problem just like a human. However, this level of AI is still theoretical and has yet to be achieved.

AI can be further classified into four main categories.

- Reactive machines
- Limited memory
- Theory of mind
- Self-awareness

Reactive machines perceive and react to the world in front of them. They can carry out specific commands and requests, but cannot store memory or rely on past experiences to inform their decision-making in real time. This makes reactive machines useful for completing a limited number of specialized tasks. Examples include Netflix's recommendation engine and IBM's Deep Blue (used to play chess).

Limited memory AI has the ability to store previous data and predictions while gathering information and making decisions. Essentially, it looks to the past for clues to predict what might happen next. Limited memory AI is created when a team continuously trains a model on how to analyze and use new data, or models can be trained and updated automatically as an AI environment is built. Examples include ChatGPT and self-driving cars.

Theory of mind is a type of AI that doesn't actually exist yet, but it describes the idea of an AI system that can perceive and understand human emotions, then use that information to predict future actions and make decisions on its own.

Self-awareness AI refers to artificial intelligence that has self-awareness or self-sense. This type of AI does not currently exist. In theory, however, self-aware AI would have human-like consciousness and understand its own presence in the world as well as the emotional state of others.

In today's world, Artificial Intelligence technology is used in many situations for the daily activities of humans. Siri, which you use in iPhone, and Google Assistant, which you use in Android phone use, are also examples of the use of Artificial Intelligence technology. Important news related to you in the news feed of Facebook. It is provided by artificial intelligence. And nowadays self-driving car is used. Here this vehicle moves on the road without a driver according to the rules of the road.

Artificial Intelligence is evolving rapidly and has the potential to revolutionize many aspects of human life. Let's see what kind of Artificial Intelligence is being used nowadays.

- Siri is a virtual assistant used in Apple devices.

- Alexa is a virtual assistant used in Amazon devices.

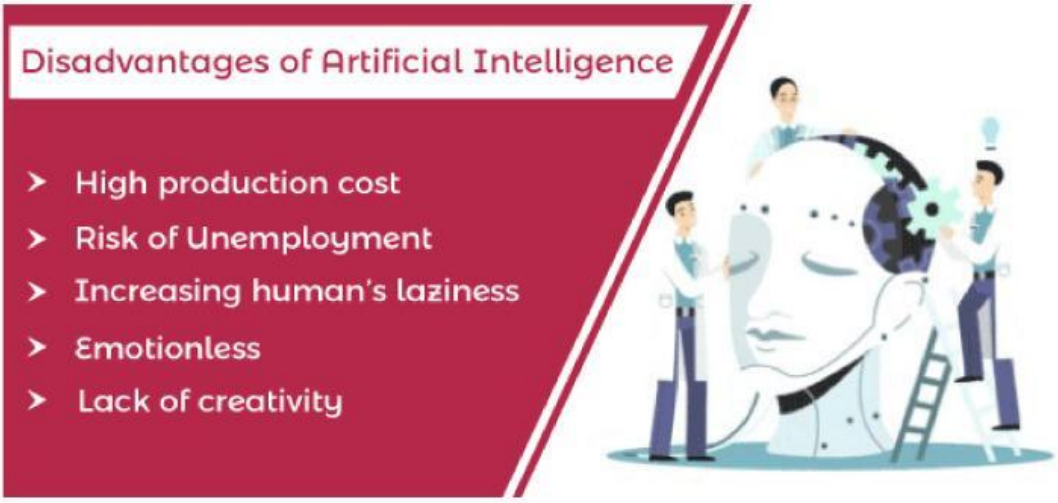
- Google Assistant is a virtual assistant used on Android devices and Google Home smart speakers. Google Assistant can be used to access Google services like Google search, Google Map.

- IBM Watson is a cognitive computing platform that can be used to develop AI applications. It is used in various industries including healthcare, finance and retail.

- OpenAI GPT-3 is a large language model capable of generating human-quality text. It has been used to develop various applications such as chatbots and text summarization tools.

There are always pros and cons to any technological advancement. We can debate the benefits and risks of AI at every level. Advantages of Artificial Intelligence range from simplifying certain tasks, saving time, eliminating biases and automating repetitive tasks.

Disadvantages include high cost, loss of potential human employment, and lack of emotion and creativity.



Machien learning

The primary approach to building AI systems is through machine learning (ML), where computers learn by identifying patterns and relationships in data from large data sets. A machine learning algorithm uses statistical techniques to help it "learn" how to get progressively better at a task, without having to be programmed for it. It uses historical data as input to predict new output values. Machine learning consists of both supervised learning (where the expected output is known for the input thanks to labeled datasets) and unsupervised learning (where the expected output is unknown due to the use of unlabeled datasets).

Deep learning

Deep learning is an important subset of machine learning. It uses artificial neural networks called deep neural networks, which contain many hidden layers of data processing, allowing a machine to go “deeper” in its learning and recognize increasingly complex patterns. Best results. Deep learning is particularly effective for tasks such as image and speech recognition and natural language processing, making it a critical component in the development and advancement of AI systems.

Please answer the questions below.

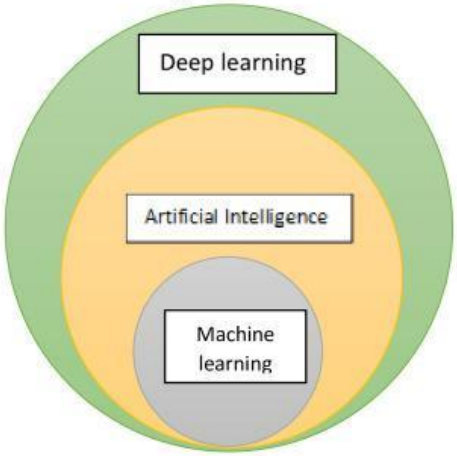
1. What is the name given to the technique of simulating human intelligence for machines?
    A. Machine learning
    B. Artificial Intelligence
    C. Deep learning

2. Which of the following is not a virtual assistant?

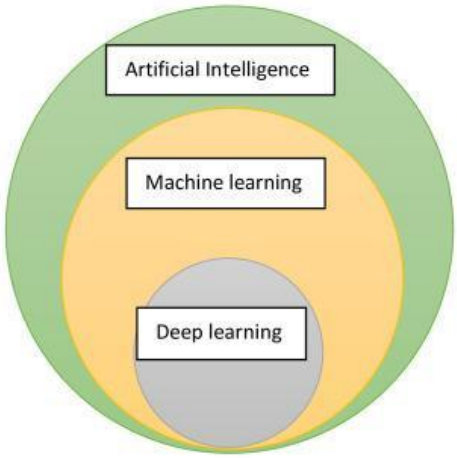
    A. Google Assistant
    B. Siri
    C. IBM Watson

3. Select the correct diagram from the following diagrams.

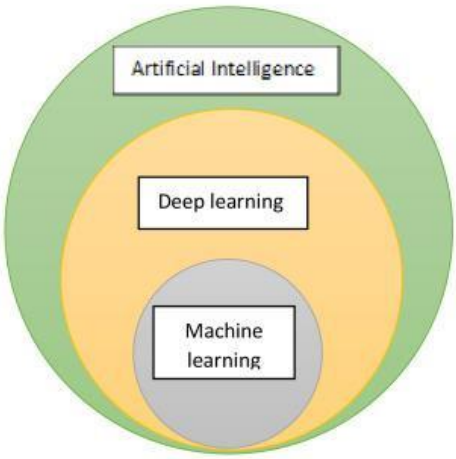
A.



B.



C.



4. How many main parts of machine learning can be classified? what is that

   A. 2 is Strong AI and weak AI
   B. 4 is Reactive machines, Limited memory, Theory of mind, Self-awareness
   C. 2 is Supervised learning and unsupervised learning

5. What is Deep learning?
   A. a subset of machine learning.
   B. a subset of AI.
   C. a combination of machine learning and AI.