1. **There are different interpretations of artificial intelligence in different contexts. Please elaborate on the artificial intelligence in your eyes**

In my oppinion, artificial intelligence - the ability of a digital computer or robot to make decisions on its own and perform tasks commonly associated with intelligent beings.

1. **Artifical intelligence, Machine Learning and Deep Learning are three concepts often mentioned together. What is the relationship between them? What are similarities and differences between the three terms?**

Artifical intelligence – ability of a machine to imitate intelligent human behavior.

Machine Learning is a subset of artificial intelligence that helps you build AI-driven applications.

Deep Learning is a subset of machine learning that uses vast volumes of data and complex algorithms to train a model.

|  |  |  |
| --- | --- | --- |
| **AI** | **ML** | **DL** |
| AI is basically the study/process which enables machines to mimic human behaviour through particular algorithm. | Machine Learning is the study that uses statistical methods enabling machines to improve with experience. | Deep Learning is the study that makes use of Neural Networks (similar to neurons present in human brain) to imitate functionality just like a human brain. |
| AI is the broader family consisting of ML and DL as it’s components. | ML is the subset of AI. | DL is the subset of ML. |
| AI is a computer algorithm which exhibits intelligence through decision making. | ML is an AI algorithm which allows system to learn from data. | DL is a ML algorithm that uses deep(more than one layer) neural networks to analyze data and provide output accordingly. |
| The aim is to basically increase chances of success and not accuracy. | The aim is to increase accuracy not caring much about the success ratio. | It attains the highest rank in terms of accuracy when it is trained with large amount of data. |
| Three broad categories/types Of AI are: Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI) and Artificial Super Intelligence (ASI) | Three broad categories/types Of ML are: Supervised Learning, Unsupervised Learning and Reinforcement Learning | DL can be considered as neural networks with a large number of parameters layers lying in one of the four fundamental network architectures: Unsupervised Pre-trained Networks, Convolutional Neural Networks, Recurrent Neural Networks and Recursive Neural Networks |

1. **After reading the artificial intelligence application scenarios in this chapter, please describe in detail a field of AI application and its scenarios in real life based on your own life experience.**

Using Modern Day AI to Solve Traditional Farming Problems

Nowadays, technology is more and more advanced and the industry is turning to Artificial Intelligence technologies to help yield healthier crops, control pests, monitor soil, and growing conditions, help with the workload.

**Use of weather forecasting** - farmers can analyze weather conditions by using weather forecasting which helps they plan the type of crop can be grown and when should seeds be sown.

**Precision Farming and Predictive Analytics** - providing them proper guidance to farmers about water management, crop rotation, timely harvesting, type of crop to be grown, optimum planting, pest attacks, nutrition management.

**System to detect pests** - AI systems use satellite images and compare them with historical data using AI algorithms and detect pests in time

1. **Which chip is for deep neural networks and Ascend AI processors. Please brief the four major modules.**

**Central processing unit (CPU)** is the electronic circuitry that executes instructions comprising a computer program. The CPU performs basic arithmetic, logic, controlling, and input/output (I/O) operations specified by the instructions in the program.

**Graphics processing unit (GPU)** to manipulate and alter [memory](https://en.wikipedia.org/wiki/Memory_(computing)) to accelerate the creation of [images](https://en.wikipedia.org/wiki/Digital_image) in a [frame buffer](https://en.wikipedia.org/wiki/Frame_buffer) intended for output to a [display device](https://en.wikipedia.org/wiki/Display_device).

**Application specific integrated circuit (ASIC)** is an IC designed for a specific application. ASICs are used almost everywhere today, mobile phone processors, automated machines, media, vehicles, spacecraft, systems processing, industrial chains.

**Field programmable gate array (FPGA)** is an integrated circuit designed to be configured by a customer or a designer after manufacturing – hence the term field-programmable. The FPGA configuration is generally specified using a hardware description language (HDL), similar to that used for an application-specific integrated circuit (ASIC).

1. **Based on your current knowledge and understanding, please elaborated on the development trends of artificial intelligence in the future in your view.**

**Edge AI and the Internet of Things (IoT)**

The integration of AI with IoT devices will continue to increase, with AI being used to process data at the edge of networks, where it can analyze and act on information in real-time without having to rely on a cloud or central server.

IoT devices can collect large amounts of data from their surroundings, but without AI, it is often difficult to make sense of this data and extract valuable insights. By integrating AI technologies, such as machine learning and deep learning into IoT devices, this data can be analyzed in real-time to make predictions, automate processes, and improve decision making**.**

For example, AI algorithms can analyze data collected from IoT devices such as sensors and cameras to detect anomalies, prevent equipment failures, and optimize energy usage. In the healthcare industry, AI and IoT can be integrated to monitor patients’ health and predict potential issues before they become serious.