**AI week 1 exercise**

**Instructor: Ph.D. Nguyễn Trường Thịnh**

**I. Student’s information**

Full name: Trần Lê Nhật Huy

MSSV: 20146494

Faculty of mechanical engineering, Major: Mechatronics, Class: 20146B

**II. Exercises**

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

Answer:

=> Artificial intelligence is a branch of science and IT that focuses on creating machine that can think and make decision on its own.

**2. Artificial intelligence, machine learning and deep learning are three concepts often mentioned together. What is the relationship between them? What are the similarities and differences between the three terms?**

Answer:

=> The relationship between artificial intelligence, machine learning, and deep learning is that they are all components of a larger field of study known as AI engineering. Artificial intelligence is the broad term used to refer to any machine or software that can simulate human intelligence and behavior. Machine learning is a subset of artificial intelligence that focuses on the development of computer programs that can learn from and make decisions based on data. Finally, deep learning is a more advanced type of machine learning that uses deep neural networks, which are highly complex models based on artificial neural networks.

The similarities between these three terms is that they are all related to AI engineering and they all involve the development of computer systems that are able to learn from and make decisions based on data. The differences lie in the complexity of the algorithms used. Artificial intelligence is the most general term and involves the development of systems that can simulate human intelligence. Machine learning focuses on creating computer programs that can learn from data. Finally, deep learning is a more advanced type of machine learning that uses deep neural networks to create highly complex models.

**3. 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.**

Answer:

=> AI applications are becoming more popular and prominent in various aspects of our daily lives. One field in which AI has made a major impact is the film industry. AI has been used in the film industry in a variety of ways, from automatic editing to special effects and facial recognition. For instance, AI can help filmmakers to detect patterns in the footage, find interesting moments to include in their films, and make the editing process quicker and more efficient. AI can also be used to create stunning visuals through special effects, particularly for large-scale movies with huge budgets. Additionally, AI can be used in facial recognition, allowing filmmakers to follow characters and create scenes that are more natural and realistic. In real life, AI is used in films to improve the quality of the product, reduce costs for production and post-production, and add a more natural and realistic touch to films.

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

Answer:

=> The Ascend AI processor is a custom-designed chip specifically for deep neural networks. It is supported by four major modules: the Tensor Virtual Machine (TVM), the Tensorflow Engine (TBE), the Graph Engine (GE) and the Fusion Engine (FE). [1] TVM is an open deep learning compiler stack that compiles various deep learning models from different frameworks to the CPU, GPU or specialized accelerators through unified intermediate representation (IR) and structure scheduling. [2] TBE enables custom operator development based on TVM, allowing developers to develop neural network operators leveraging the optimization and code generation capabilities of TBE. [3] The Graph Engine (GE) transfers the subgraph to the Fusion Engine (FE), which prebuilds the subgraph based on the operator information library and FE fusion optimization. Finally, the Loihi research test chip provides digital circuits that mimic the brain's basic mechanics, making machine learning faster and more efficient. [3]

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

Answer:

=> The development of Artificial Intelligence (AI) is accelerating and is expected to bring about drastic changes to our lives in the near future. AI technologies have already been adopted in many different industries, including healthcare, finance, transportation, and manufacturing. As AI technology continues to evolve and become more complex, its applications are expected to expand at an ever-increasing rate.

One of the biggest trends in AI development is the increasing use of machine learning algorithms. These algorithms are used to teach computers to “learn” from their experiences and interactions with their environment. This allows AI to become increasingly better at problem-solving and other tasks that require higher-level cognitive functions.

AI is also being used to automate tasks that were once too complex or tedious for humans to handle. AI-driven automation is being used for a variety of tasks, from driving cars to analyzing medical images to helping manage financial investments.

As AI continues to develop and become more powerful, it is expected to become more ubiquitous in our lives. Intelligent robots are being developed to interact with humans and help with everyday tasks, such as cleaning, cooking, and providing medical assistance. AI is also being used to help with security and surveillance systems, allowing for better detection and response to danger.

The development of AI is sure to bring about drastic changes to our lives in the near future. With its ability to automate tasks, develop better solutions to problems, and interact with humans, AI is sure to have a significant impact on our society in the coming years.