a. **Define ML in your own words.**

ML refers to the process of using certain algorithms to instruct computers to use known data to derive a model, and then use this model to make judgments about new situation.

b. **In a paragraph, summarize the importance of data, pattern recognition, and accuracy in machine learning.**

Data is the most important thing in machine learning, and it is also the cornerstone of machine learning. Machine needs to learn from large amounts of data and generalize cognition. Machine learning cannot start without data. More data, more intelligence.

Pattern recognition is the result of what machine learning from the data. Through a large number of data samples, machine discovers the pattern recognition by itself through the samples and finally judges some unknown things. Pattern recognition is the thing we hope machine can learn from the data. That's why it's important.

Accuracy is important because without this, the result machine learning predict is a random guess. Only when the accuracy is high enough can prove the laws learned by the machine from the data be correct, rather than random guesses. Only when the accuracy is high enough, then machine learning can achieve AI and make AI work.

c. **describe the relationship between AI and ML**

AI let the computer simulate human thinking and let it solve some problems that cannot be described by code. Human thinking is not based on certain algorithm but reasoned according to previous cognition or experience. ML is one of the most common ways to achieve AI. The process of ML is like the way human study. Computer use amounts of data to accumulate experience and gradually form cognition.

d. **list at least 2 examples of modern machine learning applications, and explain why these application could not be built with traditional programming.**

Product recommendations and spam filtering are examples of modern machine learning applications. Because in traditional algorithms, all conditions, parameters and results need to be set and written by the programmer. But in these application examples, each individual recommendation and filtering is different. It is very difficult for humans to process such a large amount of data.

e. **In a paragraph, define the terms observation, feature, quantitative data, and qualitative data and discuss their importance in machine learning.**

In ML, observation is the complete data, feature is characteristics of each item in the data. Qualitative data is data related to description, which can be observed but cannot be calculated. Quantitative data is a focus on numbers and mathematical calculations that can be calculated and calculated. These terms constitute a complete data. Excellent data can make it easier for machinery to draw rules from it and reduce errors.

f. **write a paragraph describing your personal interest in ML and whether/how you would like to learn more about ML for personal projects and/or professional application.**

I think machine learning is a trend of the future. Now electronic products have entered all aspects of our lives, and making the application more comfortable and more user-friendly will be a very important point in future applications. And I think machine learning can make our life more interesting, more convenient, very cool. I would like to learn more about the professional application of ML.