考試科目	資料科學	系所別	人工智慧博士學位學程	命題教師	

1. What is the relationship between machine learning and deep learning? What is the difference between them?

2. Please briefly introduce CNN, RNN and LSTM, and then describe when they are suitable for use and what are the similarities and differences between them?

3. What do you think about the Data Science?

4. Suppose that the instance space $\mathcal{X} = \{0,1\}^d$ and consider the target function c^* that labels an instance $\mathbf{x} = (x_1, x_2,\ldots, x_d) \in \mathcal{X}$ as "positive" if the least index i for which $x_i = 1$ is odd, and otherwise, labels $\mathbf{x}$ as "negative". Prove or disprove that the decision rule of c^* can be represented by a linear threshold function.

5. Suppose that you have three variants of classification algorithm C and two variants of feature extraction algorithm E. Please discuss in details how you can compare the overall accuracies of C and E taking all their variants into account.

6. Give examples to illustrate how the retail industry analyze customer consumer behavior by using Big Data.

7. Give examples to illustrate the analysis process of Data Science.