



中國海洋大學

Examination of Master Students in the Spring Semester 2020

Class: Fundamentals of Deep Learning

Time: 100 Minutes

| Problems | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total Scores |
|----------|---|---|---|---|---|---|---|---|---|----|--------------|
| Scores | | | | | | | | | | | |

Name: _____ Number: _____ Major: _____

Answer the following questions, each of which is for 10 scores.

1. What's the relationship among artificial intelligence, machine learning and deep learning?
2. What is regularization? Is there a best regularizer?
3. In linear regression models, why can MAP Bayesian inference with a Gaussian prior on the weights be considered as weight decay?
4. Design a neural network with one hidden layer and specify the parameters in this network to approximate the XOR function.
5. What's the meaning of the universal approximation theorem?
6. What differences does early stopping have from other regularization methods, such as weight decay?
7. How does dropout work?
8. How to apply the batch normalization method for the optimization of deep networks?
9. How to do parameter sharing in CNNs?
10. How to perform efficient convolution algorithms?

★ **考试要求:** 开卷考试, 独立完成试卷, 不能借助于网络或他人, 否则视为作弊。自备答题纸, 考试结束拍摄答卷的清晰照片, 按照题目顺序压缩后以“姓名+学号”命名, 发送到课程邮箱: DL2020spring@163.com, 提交截止时间: 北京时间 2020 年 6 月 17 日 19:20:59。