1. What factors would you consider when choosing between different CNN architectures (e.g., VGG, ResNet, Inception)? (16 Marks)
2. What is ImageNet and why is it crucial for the development of computer vision?
3. Compare and contrast the architectures of LeNet, AlexNet, and VGGNet. (16 Marks)
4. Explain the basic structure of a VGG16 model in code (16 Marks)
5. How do you load a pre-trained VGG16 model and fine-tune it for a new classification task?
6. Describe the Inception module and its benefits.
7. How does GoogLeNet address the challenge of computational cost while maintaining accuracy?
8. Discuss the role of normalization techniques (batch normalization, etc.) in CNN training.
9. What is the core idea behind residual connections in ResNet?
10. What is the difference between cross-entropy loss and multi-class cross-entropy loss?
11. How does cross-entropy loss measure the performance of a CNN model for classification tasks?
12. Why is splitting the data into training and testing sets crucial for CNN training?
13. What are some popular benchmark datasets used for training and evaluating CNN models (e.g., ImageNet, CIFAR)?
14. How does the tf.data API simplify data loading and preprocessing for CNN training?
15. How do techniques like Xavier-Bengio initialization improve the training process of CNNs?
16. Explain how L1 and L2 regularization can help prevent overfitting in CNN models.