

Transfer Learning MCQ Quiz (Chapter 6)

Instructions: Select the best answer for each question.

1. What is transfer learning?

- a) Training a model from scratch
- b) Reusing a pre-trained model for a new task**
- c) Deleting a trained model
- d) Ignoring previous knowledge

2. Why is transfer learning useful?

- a) It increases training time
- b) It reduces the need for large datasets**
- c) It makes models less accurate
- d) It only works for text data

3. Which of these is a pre-trained model?

- a) Excel
- b) ResNet**
- c) JPEG
- d) MP3

4. What is the main advantage of using pre-trained weights?

- a) Slower training
- b) Faster training with less data**
- c) Requires more computational power
- d) Only works for one task

5. In transfer learning, what is "feature extraction"?

- a) Deleting features from a model
- b) Using pre-trained layers as fixed feature detectors**
- c) Training all layers from scratch
- d) Ignoring the input data

6. When should you use fine-tuning?

- a) When your dataset is very small
- b) When your new task differs significantly from the original task**
- c) When you want to freeze all layers
- d) When you don't have a GPU

7. Which layer is typically replaced in a pre-trained CNN for a new task?

- a) First convolutional layer
- b) Final classification layer**
- c) All pooling layers
- d) The input layer

8. What does "freezing layers" mean in transfer learning?

- a) Deleting layers
- b) Keeping layer weights unchanged during training**
- c) Adding new layers
- d) Speeding up training

9. Which dataset is commonly used to pre-train image models?

- a) MNIST
- b) ImageNet**
- c) Titanic
- d) IMDb

10. What is the main benefit of ResNet?

- a) Uses very few layers
- b) Solves vanishing gradients in deep networks**
- c) Only works for NLP
- d) Can't be used for transfer learning

11. Which pre-trained model is designed for mobile devices?

- a) VGG
- b) MobileNet**
- c) ResNet
- d) EfficientNet

12. What does VGG stand for?

- a) Very Good Gradient
- b) Visual Geometry Group**
- c) Virtual Graphics Generator
- d) Video Game Graphics

13. Which technique balances depth, width, and resolution efficiently?

- a) ResNet
- b) VGG
- c) EfficientNet**
- d) MobileNet

14. Why is fine-tuning resource-intensive?

- a) It uses less data
- b) It retrain some/all pre-trained layers**
- c) It freezes all layers
- d) It ignores the original model

15. What is the first step in using a pre-trained model?

- a) Delete half the layers
- b) Load the model with pre-trained weights**
- c) Train from scratch
- d) Only use the output layer

16. Which framework is commonly used to load pre-trained models?

- a) Microsoft Word
- b) TensorFlow/Keras**
- c) Photoshop
- d) Excel

17. What does Global Average Pooling do?

- a) Adds more parameters
- b) Reduces spatial dimensions before the final layer**
- c) Deletes the model
- d) Freezes all layers

18. When might feature extraction be better than fine-tuning?

- a) When you have unlimited data
- b) When your dataset is small and similar to the original task**
- c) When you want to train all layers
- d) When using a model for the first time

19. Which pre-trained model is known for its simplicity and uniform layers?

- a) MobileNet
- b) VGG**
- c) EfficientNet
- d) ResNet

20. What is the key innovation in EfficientNet?

- a) Random scaling
- b) Compound scaling of depth/width/resolution**
- c) Using only 5 layers
- d) Ignoring pre-training

21. Why might you unfreeze layers during fine-tuning?

- a) To stop training
- b) To adapt deeper features to the new task**
- c) To reduce model accuracy
- d) To delete learned features

22. Which task is transfer learning NOT commonly used for?

- a) Image classification
- b) Medical diagnosis
- c) Sorting files alphabetically**
- d) Sentiment analysis

23. What does "include_top=False" do when loading a pre-trained model?

- a) Adds extra layers
- b) Excludes the final classification layers**
- c) Freezes all layers
- d) Deletes the model

24. Which optimizer is commonly used for fine-tuning?

- a) SGD with high learning rate
- b) Adam with low learning rate**
- c) No optimizer
- d) Random optimizer

25. What is the main goal of transfer learning?

- a) To make models slower
- b) To leverage existing knowledge for new tasks**
- c) To ignore pre-trained models
- d) To only work with large datasets