Your grade: 96%

Your latest: **96%** • Your highest: **96%** • To pass you need at least 80%. We keep your highest score.

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1. Which of the following metrics is used to evaluate the performance of a recommender system by considering the fraction of relevant items among the top K recommended items?

1 / 1 point

- ◉ Precision at K
- ◯ Recall at K
- ◯ Root Mean Squared Error (RMSE)
- ◯ Mean Absolute Error (MAE)

> ⊘ **Correct**
> Correct! Precision at K measures the fraction of relevant items among the top K recommendations. Great job!

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2. What are some important preprocessing steps for building a movie recommendation system?

0.8 / 1 point

- ☑ Encoding categorical features

> ⊘ **Correct**
> Correct! Encoding categorical features is an essential preprocessing step.

- ☑ Normalizing numerical features

> ⊘ **Correct**
> Correct! Normalizing numerical features ensures that they are on a similar scale, which helps the model perform better.

- ☑ Removing outliers from the dataset

> ⊗ **This should not be selected**
> Incorrect. While removing outliers can be important, it is not always a necessary preprocessing step for recommendation systems.

- ☑ Splitting the dataset into training and test sets

> ⊘ **Correct**
> Correct! Splitting the dataset into training and test sets is crucial for evaluating the model's performance.

- ☐ Adding Gaussian noise to the data

---

3. Which of the following is a primary application of autoencoders in data processing?

1 / 1 point

- ◉ Dimensionality reduction
- ◯ Data encryption
- ◯ Data replication
- ◯ Data sorting

> ⊘ **Correct**
> Correct! Autoencoders are widely used for dimensionality reduction.

---

4. Which of the following are applications of Generative Adversarial Networks (GANs)?

1 / 1 point

- ☑ Creating realistic images from textual descriptions

> ⊘ **Correct**
> Correct! GANs can be used to generate realistic images from textual descriptions.

- ☐ Improving the speed of traditional convolutional neural networks
- ☑ Generating deep fake videos

> ⊘ **Correct**
> Correct! GANs are often used to create deep fake videos, which can be both innovative and controversial.

- ☐ Reinforcing learning in autonomous agents

---

5. Which of the following steps is essential when setting up the training loop for a GAN?

1 / 1 point

- ◉ Simultaneously training the generator and the discriminator
- ◯ Only training the discriminator until it achieves 100% accuracy
- ◯ Using ReLU activation functions for both generator and discriminator
- ◯ Ignoring the loss function of the generator

6. Which of the following steps are involved in setting up a Graph Convolutional Network (GCN) model class?

1 / 1 point

☑ Defining the model parameters and layers.

☐ Creating a dense adjacency matrix from the graph.

☑ Implementing the forward pass function.

☐ Visualizing the graph using dimensionality reduction techniques.

☑ Setting up the loss function and optimizer.

7. When visualizing a graph using dimensionality reduction techniques, which of the following methods can be used to reduce the dimensionality of graph node features?

1 / 1 point

◉ t-SNE (t-distributed Stochastic Neighbor Embedding)

◯ Linear Regression

◯ Random Forest

◯ K-Means Clustering

8. What is the primary role of multihead self-attention in Vision Transformers?

1 / 1 point

◉ To allow the model to focus on different parts of the image simultaneously

◯ To reduce the computational complexity of the model

◯ To enhance the resolution of input images

◯ To segment the image into smaller patches

9. Which of the following best describes a Vision Transformer?

1 / 1 point

◯ A model that uses convolutional layers to process image data

◉ A model that utilizes transformer architecture to process image patches

◯ A model that uses recurrent neural networks for image classification

◯ A model that enhances image resolution through upscaling

10. Why is early stopping important in training machine learning models?

0.8 / 1 point

☑ It prevents overfitting by stopping the training when the performance on a validation set starts to degrade.

☑ It saves computational resources by halting training once further improvements are minimal.

☐ It ensures the model reaches the absolute best performance.

☐ It simplifies the training loop by reducing the number of required epochs.

☐ It helps in hyperparameter tuning by stopping trials that are not promising.

11. Which parameter is essential for setting up early stopping in PyTorch Lightning?

`1 / 1 point`

- ⦿ monitor
- ○ frequency
- ○ patience
- ○ optimizer

> ⊘ **Correct**
> Correct! The 'monitor' parameter specifies the metric to be monitored for early stopping.

12. In the context of self-supervised learning, what is the primary challenge when dealing with a dataset containing both labeled and unlabeled data?

`1 / 1 point`

- ⦿ Balancing the contributions of labeled and unlabeled data during training.
- ○ Ensuring that the labeled data is completely accurate.
- ○ Generating high-quality labels for the labeled data.
- ○ Removing noise from the labeled dataset.

> ⊘ **Correct**
> Correct! One of the main challenges is to effectively balance the contributions from both labeled and unlabeled data.

13. What are the common issues you might encounter when running the training loop for SesemiNet and how can they be troubleshooted?

`1 / 1 point`

- ☑ Model overfitting can be mitigated by using dropout.

> ⊘ **Correct**
> Correct! Dropout is a common technique to prevent overfitting in neural networks.

- ☑ Code bugs can be resolved by thorough debugging and testing.

> ⊘ **Correct**
> Correct! Debugging and thorough testing are key to resolving code issues.

- ☑ Data loader performance issues can be addressed by using parallel data loading.

> ⊘ **Correct**
> Correct! Parallel data loading can enhance the performance of data loaders.

- ☐ Training accuracy can be ignored as long as validation accuracy is high.
- ☐ Loss function divergence can be fixed by increasing the learning rate.

14. Which of the following techniques are used to reduce the dimensionality of word embeddings for visualization?

`0.8 / 1 point`

- ☑ TSNE

> ⊘ **Correct**
> Correct! TSNE is commonly used for reducing the dimensionality of word embeddings for visualization purposes.

- ☑ Principal Component Analysis (PCA)

> ⊘ **Correct**
> Correct! PCA is another technique used to reduce dimensionality of word embeddings.

- ☐ Fourier Transform
- ☐ Linear Discriminant Analysis (LDA)
- ☐ Histogram Equalization

15. What is the main purpose of using GloVe word embeddings in Natural Language Processing?

`1 / 1 point`

- ⦿ To convert words into numerical representations based on their co-occurrence statistics
- ○ To sort words alphabetically in a corpus
- ○ To translate words from one language to another
- ○ To perform spell check on a document

> ⊘ **Correct**
> Correct! GloVe embeddings convert words into numerical representations based on their co-occurrence statistics, which helps in capturing the meaning of words.

16. What is a key benefit of using pretrained models from Hugging Face?

1 / 1 point

- ◉ They reduce the time and resources needed to train models from scratch
- ○ They are specifically designed for image processing
- ○ They automatically correct grammatical errors in text
- ○ They provide a graphical user interface for model training

> ⊘ **Correct**
> Correct! Pretrained models save significant time and resources compared to training models from scratch.

17. Which of the following is a key reason for the drastic reduction in training time when using Extreme Learning Machines (ELMs)?

1 / 1 point

- ◉ ELMs eliminate the need for iterative tuning of weights.
- ○ ELMs use a complex backpropagation algorithm.
- ○ ELMs have fewer parameters to train compared to traditional networks.
- ○ ELMs benefit from parallel processing in GPUs.

> ⊘ **Correct**
> Correct! Extreme Learning Machines (ELMs) randomly assign weights and biases initially and do not require iterative tuning, which significantly reduces training time.

18. When using hooks for debugging purposes in a CNN, which of the following practices are effective?

0.8 / 1 point

- ☑ Visualizing intermediate layer outputs

> ⊘ **Correct**
> Correct! Visualizing intermediate layer outputs can help you understand what each layer is learning and identify potential issues.

- ☐ Monitoring the training loss only
- ☑ Analyzing gradients to detect vanishing or exploding gradients

> ⊘ **Correct**
> Correct! Analyzing gradients can help you detect issues like vanishing or exploding gradients, which are critical for debugging.

- ☐ Altering the architecture to include more layers
- ☐ Checking for data leakage

> You didn't select all the correct answers

19. Which of the following are steps involved in setting up a model instance and creating a REST endpoint for predicting iris flowers?

1 / 1 point

- ☑ Load model parameters

> ⊘ **Correct**
> Correct! Loading model parameters is a crucial step in setting up a model instance.

- ☑ Create a REST endpoint

> ⊘ **Correct**
> Correct! Creating a REST endpoint is necessary for making the model accessible for predictions.

- ☐ Define database schema
- ☐ Set up cloud storage
- ☑ Run the server

> ⊘ **Correct**
> Correct! Running the server is necessary to make the REST endpoint active and accessible.

20. What is the primary purpose of a REST API?

1 / 1 point

- ◉ To allow communication between client and server applications over HTTP
- ○ To create a user interface for web applications
- ○ To store data in a database
- ○ To deploy applications to the cloud

> ⊘ **Correct**
> Correct! REST APIs enable different applications to communicate via HTTP requests.