Validation set is used to

- ○ Test ML model
- ○ Train ML model
- ◉ Hyperparameter tuning
- ○ None of the above

Clear selection

Data Augmentation leads to _____ .

- ○ Increase in training datapoints
- ○ Decreased overfitting
- ○ Increased test set performance
- ◉ All of the above

Clear selection

Which of the following Data Augmentation methods is not suitable for image classification on MNIST dataset?

- (●) Lateral inversion (mirror images)
- ( ) Random Rotates
- ( ) Translation of number pixels in a direction
- ( ) Random Shear

Clear selection

In computer graphics and image processing, affine transformations involve the use of a 3x3 matrix to perform various geometric operations on 2D images. Which matrix operation represents a combination of translation, rotation, and scaling transformations, but not shear transformations?

- ( ) Identity matrix
- ( ) Orthogonal matrix
- (●) Diagonal matrix
- ( ) Homogeneous transformation matrix

Clear selection

MNIST dataset is about

- ○ California housing
- ◉ Handwritten digits
- ○ Animal species
- ○ All of the above

Clear selection

In k-NN, the choice of distance metric (e.g., Euclidean distance) can significantly impact the algorithm's performance. (TRUE / FALSE)

- ◉ TRUE
- ○ FALSE

Clear selection

What is the expected accuracy of a random classifier on MNIST dataset?

- ○ 16%
- ○ 25%
- ○ 20%
- ◉ 10%

Clear selection

What is the purpose of feature extraction using n-grams in text data?

- ○ To reduce the dimensionality of text data
- ○ To identify frequent words in the text
- ◉ To convert text into numerical features
- ○ To remove stopwords from text

Clear selection

The k-NN algorithm can handle categorical features without any additional preprocessing, as it uses a modified distance metric for categorical data. (TRUE / FALSE)

- ○ TRUE
- ◉ FALSE

Clear selection

What does the 'n' in n-gram represent?

- ○ The number of sentences in a text
- ○ The number of documents in a corpus
- ◉ The number of characters in the n-gram
- ○ The number of topics in a text

Clear selection

Which of the following image features we used for classifying between images of 0 and 1 from MNIST Dataset?

- ○ Hole Pixels
- ○ Hull Pixels
- ○ Boundary Pixels
- ◉ All of the above.

Clear selection

What does the 'K' in KNN represent?

- ○ The number of features in the dataset
- ○ The distance metric used for classification
- ◉ The number of nearest neighbors to consider
- ○ The number of classes in the dataset

Clear selection

Increasing value of K in KNN will _____ .

- ○ Increase test accuracy
- ◉ Decrease test accuracy
- ○ Increase train accuracy
- ○ None of the above

Clear selection

What is the primary purpose of the KNN algorithm?

- ◉ Classification
- ○ Regression
- ○ Clustering
- ○ Feature Extraction

Clear selection

What is machine learning?

- ○ A type of computer hardware
- ○ A programming language
- ◉ A technique for teaching computers to learn from data
- ○ A form of data visualization

Clear selection

Which of the following is not an accuracy metric commonly used in machine learning?

- ○ Mean Absolute Error (MAE)
- ○ Root Mean Squared Error (RMSE)
- ○ F1 Score
- ◉ Precision

Clear selection

KNN with K=1 will always give training accuracy as 100%. (TRUE / FALSE)

- (●) TRUE
- ( ) FALSE

Clear selection

In a tetragram (4-gram), how many words are considered at a time?

- ( ) Two but each is counted twice
- (●) Four
- ( ) Eight
- ( ) It varies depending on text

Clear selection

KNN with K>1 will always give training accuracy as 100% (TRUE / FALSE)

- ○ TRUE
- ◉ FALSE

Clear selection

In KNN what happens when K is too small, and when K is too large?

- ◉ When K is too small, the model becomes more sensitive to outliers, and when K is too large, the model loses discriminative power
- ○ When K is too small, the model tends to have lower bias and higher variance, and when K is too large, the model tends to have higher bias and lower variance
- ○ When K is too small, the model experiences higher bias and lower variance, and when K is too large, the model has lower bias and higher variance
- ○ When K is too small, the model becomes more complex, and when K is too large, the model becomes simpler

Clear selection

When performing min-max scaling (also known as feature scaling) on a dataset, what is the range of values that the transformed data will have for each feature?

- ○ The range is [-1, 1].
- ◉ The range is [0, 1].
- ○ The range is [mean - 1, mean + 1].
- ○ The range depends on the original feature values and cannot be determined in advance.

Clear selection

You are given an unknown language that consists of only 7 unique characters. Now you are trying to build a N-gram frequency distribution for N=3. What could be the maximum number of keys / unique tuples / grams in the 3-gram distribution for this given language?

- ◉ 343
- ○ 1029
- ○ 421
- ○ 729

Clear selection

What is the primary purpose of the validation set in machine learning?

- (●) To evaluate the model's performance on unseen data
- ( ) To train the model and update its parameters
- ( ) To test the model's generalization to the training data
- ( ) To reduce the model's bias

Clear selection

In machine learning, what is the primary purpose of data splitting techniques like train-test split?

- ( ) To increase model complexity
- (●) To reduce overfitting
- ( ) To perform feature selection
- ( ) To improve data visualization

Clear selection

What is the primary purpose of data augmentation in machine learning, particularly for image datasets?

- ○ To reduce the size of the training dataset
- ○ To increase the model's complexity
- ◉ To improve model generalization and robustness
- ○ To eliminate noise in the data

Clear selection

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