

# QF624-2025-W1

Number of participants: 37

In the context of supervised learning, consider a scenario where you are developing a model to predict the price of houses in a city based on features such as square footage, number of bedrooms, proximity to city center, and age of the property. After training your model on a dataset comprising these features and the corresponding house prices, you intend to evaluate its performance. Which of the following evaluation metrics would be most appropriate for assessing the performance of your model, considering the task is a regression problem?



1.

17 correct answers

out of 21 respondents

Accuracy

0%

0 votes

F1 Score

10%

2 votes



Mean Squared Error (MSE)

81%

17 votes

Precision

10%

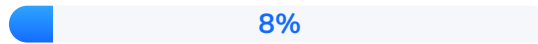
2 votes



2. Which of the following best describes the primary goal of unsupervised learning in the context of machine learning?

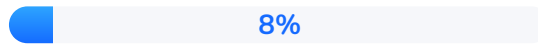
21 correct answers  
out of 25 respondents

To predict the outcome variable based on input features



2 votes

To classify data into predefined categories



2 votes



To discover the underlying structure of the data without predefined labels



21 votes

To reinforce the learning model based on the reward received for each prediction



0 votes



### 3. **Optimization algorithms in machine learning are crucial for improving model performance by:**

**28 correct answers**  
out of 31 respondents

Decreasing the complexity of the model to ensure it can be understood and interpreted by humans.



1 vote

Increasing the size of the dataset automatically to enhance the model's accuracy.



2 votes

Finding the best parameters that minimize or maximize an objective function, often related to loss or cost, respectively.



28 votes

Ensuring the model's decisions are ethical and aligned with human values.



0 votes



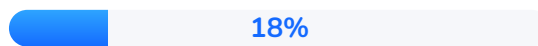
4.

**Compared to 10-fold cross validation, what is the typical effect of using leave-one-out cross validation (LOOCV) in terms of the bias and variance of the error estimate?**

**20 correct answers**

out of 34 respondents

LOOCV has higher bias and lower variance



6 votes



LOOCV has lower bias and higher variance



20 votes

LOOCV has lower bias and lower variance



5 votes

LOOCV has higher bias and higher variance



3 votes



5.

**Which learning paradigm is most closely associated with dealing with the exploration versus exploitation dilemma and the credit assignment problem?**

**24 correct answers**

out of 33 respondents

Supervised learning



12%

4 votes

Unsupervised learning



9%

3 votes



Reinforcement learning



73%

24 votes

All of the above



6%

2 votes