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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Introduction To Machine Learning (course)

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## Course outline

How does an  
NPTEL  
online  
course  
work? ()

Week 0 ()

Week 1 ()

Week 2 ()

Week 3 ()

Week 4 ()

Week 5 ()

Week 6 ()

# Week 7: Assignment 7

The due date for submitting this assignment has passed.

Due on 2023-09-13, 23:59 IST.

Assignment submitted on 2023-09-13, 09:17 IST

1) What is bootstrapping in the context of machine learning?

1 point

- ☐ A technique to improve model training speed.
- ☐ A method to reduce the size of the dataset.
- ☒ Creating multiple datasets by randomly sampling with replacement.
- ☐ A preprocessing step to normalize data.

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Creating multiple datasets by randomly sampling with replacement.*

2) Which of the following is NOT a benefit of cross-validation?

1 point

- ☐ Reduces the risk of overfitting.
- ☐ Provides a more accurate estimate of model performance.
- ☐ Allows for better understanding of model bias.
- ☒ Increases the size of the training dataset.

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Increases the size of the training dataset.*

3) Bagging is an ensemble method that:

1 point

- ☐ Focuses on boosting the performance of a single weak learner.

**Week 7 ()**

- ☐ Evaluation and Evaluation Measures I (unit? unit=84&lesson=85)
- ☐ Evaluation and Evaluation Measures II - Bootstrapping and Cross Validation (unit? unit=84&lesson=86)
- ☐ 2 Class Evaluation Measures (unit? unit=84&lesson=87)
- ☐ The ROC Curve (unit? unit=84&lesson=88)
- ☐ Minimum Description Length and Exploratory Analysis (unit? unit=84&lesson=89)
- ☐ Ensemble Methods - Bagging, Committee Machines and Stacking (unit? unit=84&lesson=90)
- ☐ Ensemble Methods - Boosting (unit? unit=84&lesson=91)
- ☐ Practice: Week 7:

- ☐ Trains multiple models sequentially, each learning from the mistakes of the previous one.
- ☒ Combines predictions of multiple models to improve overall accuracy.
- ☐ Utilizes a committee of diverse models for prediction.

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Combines predictions of multiple models to improve overall accuracy.*

4) Which evaluation measure is more suitable for imbalanced classification problems? **1 point**

- ☐ Accuracy
- ☐ Precision
- ☒ F1-score
- ☐ Mean Squared Error

Yes, the answer is correct.

Score: 1

Accepted Answers:

*F1-score*

5) What does the ROC curve represent? **1 point**

- ☐ The trade-off between precision and recall.
- ☐ The relationship between accuracy and F1-score.
- ☒ The performance of a model across various thresholds.
- ☐ The distribution of classes in a dataset.

Yes, the answer is correct.

Score: 1

Accepted Answers:

*The performance of a model across various thresholds.*

6) Which ensemble method involves training multiple models in such a way that each model corrects the errors of the previous model? **1 point**

- ☐ Bagging
- ☐ Stacking
- ☒ Boosting
- ☐ Committee Machines

Yes, the answer is correct.

Score: 1


Accepted Answers:

*Boosting*

7) In a ROC curve, what does the diagonal line represent? **1 point**

- ☒ The perfect classifier
- ☐ Random guessing
- ☐ Trade-off between sensitivity and specificity
- ☐ The ideal threshold for classification

Assignment 7  
(Non Graded)  
(assessment?  
name=182)

 **Quiz: Week 7:  
Assignment 7**  
(assessment?  
name=219)

- ☐ Week 7  
Feedback  
Form :  
Introduction  
To Machine  
Learning  
(unit?  
unit=84&lesso  
n=195)

**Week 8 ()**

**Week 9 ()**

**Text  
Transcripts ()**

**Download  
Videos ()**

**Books ()**

**Problem  
Solving  
Session -  
July 2023 ()**

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Random guessing*

8) In k-fold cross-validation, how is the dataset divided for training and testing? **1 point**

- ☐ The dataset is randomly shuffled and divided into k equal parts. One part is used for testing and the remaining k-1 parts are used for training.
- ☐ The dataset is split into two equal parts: one for training and the other for testing.
- ☒ The dataset is divided into k equal parts. One part is used for testing and the remaining k-1 parts are used for training in each iteration.
- ☐ The dataset is divided into k unequal parts based on data distribution.

Yes, the answer is correct.

Score: 1

Accepted Answers:

*The dataset is divided into k equal parts. One part is used for testing and the remaining k-1 parts are used for training in each iteration.*

9) What is the primary advantage of ensemble methods over individual models? **1 point**

- ☐ Simplicity of implementation
- ☐ Lower computational complexity
- ☒ Increased Robustness
- ☐ Faster training time

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Increased Robustness*