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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Introduction to Large Language Models (LLMs) (course)

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Course outline

About NPTEL ()

How does an NPTEL online course work? ()

Week 1 ()

Week 2 ()

Week 3 ()

Week 3 : Assignment 3

The due date for submitting this assignment has passed.

Due on 2025-02-12, 23:59 IST.

Assignment submitted on 2025-02-04, 20:15 IST

1) State whether the following statement is True/False. ***1 point***

The Perceptron learning algorithm can solve problems with non-linearly separable data.

- True
- False

Yes, the answer is correct.
Score: 1

Accepted Answers:
False

2) In backpropagation, which method is used to compute the gradients? ***1 point***

- Gradient descent
- Chain rule of derivatives
- Matrix factorization
- Linear regression

Yes, the answer is correct.
Score: 1

Accepted Answers:
Chain rule of derivatives

3) Which activation function outputs values in the range [−1,1]? ***1 point***

- ReLU
- Tanh
- Sigmoid
- Linear

Yes, the answer is correct.
Score: 1
Accepted Answers:
Tanh

4) What is the primary goal of regularization in machine learning? ***1 point***

- To improve the computational efficiency of the model
- To reduce overfitting
- To increase the number of layers in a network
- To minimize the loss function directly

Yes, the answer is correct.
Score: 1
Accepted Answers:
To reduce overfitting

5) Which of the following is a regularization technique where we randomly deactivate neurons during training? ***1 point***

- Early stopping
- L1 regularization
- Dropout
- Weight decay

Yes, the answer is correct.
Score: 1
Accepted Answers:
Dropout

6) Which activation function has the vanishing gradient problem for large positive or negative inputs? ***1 point***

- ReLU
- Sigmoid
- GELU
- Swish

Yes, the answer is correct.
Score: 1
Accepted Answers:
Sigmoid

7) Which activation function is defined as: $f(x)=x\cdot\sigma(x)$, where $\sigma(x)$ is the sigmoid function? ***1 point***

- (●) Swish
- ( ) ReLU
- ( ) GELU
- ( ) SwiGLU

Yes, the answer is correct.
Score: 1

Accepted Answers:
Swish

8) What does the backpropagation algorithm compute in a neural network? ***1 point***

- ( ) Loss function value at each epoch
- (●) Gradients of the loss function with respect to weights of the network
- ( ) Activation values of the output layer
- ( ) Output of each neuron

Yes, the answer is correct.
Score: 1

Accepted Answers:
Gradients of the loss function with respect to weights of the network

9) Which type of regularization encourages sparsity in the weights? ***1 point***

- (●) L1 regularization
- ( ) L2 regularization
- ( ) Dropout
- ( ) Early stopping

Yes, the answer is correct.
Score: 1

Accepted Answers:
L1 regularization

10) What is the main purpose of using hidden layers in an MLP? ***1 point***

- ( ) Helps to the network bigger
- ( ) Enables us to handle linearly separable data
- (●) Learn complex and nonlinear relationships in the data
- ( ) Minimize the computational complexity

Yes, the answer is correct.
Score: 1

Accepted Answers:
Learn complex and nonlinear relationships in the data