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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Deep Learning - IIT Ropar (course)

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Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

week 4

○ Recap:
   Learning
   Parameters:
   Guess Work,
   Gradient
   Descent (unit?
   unit=58&lesson=59)

○ Contours Maps
   (unit?
   unit=58&lesson=60)

○ Momentum
   based Gradient
   Descent (unit?
   unit=58&lesson=61)

Assignment 4

The due date for submitting this assignment has passed.

Due on 2021-02-17, 23:59 IST.

Assignment submitted on 2021-02-17, 11:54 IST

1) What happens to the derivative when you are at steep slopes?   *1 point*

○ Its Derivative is high, as the change in y is much faster than the change in x.

○ Its Derivative is low, as the change in y is much slower than the change in x.

○ Its Derivative is zero, as the change in y is much slower than the change in x.

○ None of these.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Its Derivative is high, as the change in y is much faster than the change in x.

2) S_1 and S_2 are two statements related to Contour Maps.   *1 point*

S_1: A Small distance between the contours indicates a steep slope along that direction.
S_2: A large distance between the contours indicates a gentle slope along that direction.
Choose the correct option:

○ S_1 is true and S_2 is false.

○ S_1 is false and S_2 is true.

◉ Both S_1 and S_2 are true.

○ Both S_1 and S_2 are false.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Both S_1 and S_2 are true.

3) S_1 and S_2 are two statements related to gradient descent, which of the below given options holds good?   **1 point**

S_1: After 100 iterations momentum-based method has reached an error of 0.00001.
S_2: A Vanilla gradient descent will still be stuck at an error of 0.36.

○ S_1 is true and S_2 is false.
○ S_1 is false and S_2 is true.
◉ Both S_1 and S_2 are true.
○ Both S_1 and S_2 are false.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Both S_1 and S_2 are true.

4) S_1 and S_2 are two statements related to gradient descent, select the correct option: **1 point**

S_1: The momentum based gradient descent is good at the gentle regions
S_2: it moves really fast, but it has the problem of oscillations

○ S_1 is true and S_2 is false.
○ S_1 is false and S_2 is true.
◉ Both S_1 and S_2 are true.
○ Both S_1 and S_2 are false.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Both S_1 and S_2 are true.

5) The oscillations are smaller in the case of Nesterov accelerated gradient descent compared to momentum-based gradient.   **1 point**

◉ True
○ False

Yes, the answer is correct.
Score: 1

Accepted Answers:
True

6) In Mini Batch gradient descent typical values of K are   **1 point**

○ 16
○ 32
○ 64
◉ All of these
○ None of these

Yes, the answer is correct.
Score: 1

Accepted Answers:
All of these

7) Consider the data given below: *1 point*

1 epoch= one pass over the entire data, 1 step = one update of parameter, N=number of data points, B=Mini Batch Size. Then what will be the number of steps in 1 epoch for Mini-Batch gradient descent?

- ○ 1
- ○ N
- ○ 2
- ◉ N/B

Yes, the answer is correct.
Score: 1

Accepted Answers:
N/B

8) Identify the concept/s required for annealing learning rate.   *1 point*

- ○ Step Decay
- ○ Exponential Decay
- ○ 1/t Decay
- ◉ All of these
- ○ None of these

Yes, the answer is correct.
Score: 1

Accepted Answers:
All of these

9) S_1 and S_2 are two statements related to Step Decay, Choose the correct options.   *1 point*

S_1: Half the learning rate after every 5 epochs.
S_2: Half the learning rate after an epoch, if the validation error is more than the previous epoch.

- ○ S_1 is true and S_2 is false.
- ○ S_1 is false and S_2 is true.
- ◉ Both S_1 and S_2 are true.
- ○ Both S_1 and S_2 are false.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Both S_1 and S_2 are true.

10) S_1 and S_2 are two statements related to gradient descent, Identify the correct options. *1 point*

S_1: During a momentum based gradient descent, it takes a lot of time to navigate regions having a gentle slope.

S_2: During a momentum based gradient descent, it takes a lesser time to navigate regions having a gentle slope.

- ○ S_1 is true and S_2 is false.
- ○ S_1 is false and S_2 is true.
- ○ Both S_1 and S_2 are true.
- ○ Both S_1 and S_2 are false.

Yes, the answer is correct.
Score: 1

Accepted Answers:
S_1 is true and S_2 is false.