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Unit 16 - Week 12

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Tutorial Videos

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Assignment 12

The due date for submitting this assignment has passed. **Due on 2020-04-22, 23:59 IST.**
As per our records you have not submitted this assignment.

COMMON DATA FOR QUESTIONS 1 TO 5

Lecture Materials

Week 12

- Lecture 59 :
Efficient Neural Network
Training/Inferencing (Contd.) (unit? unit=38&lesson=161)
- Lecture 60 :
Efficient Neural Network
Training/Inferencing (Contd.) (unit? unit=38&lesson=162)
- Lecture 61 :
Efficient Neural Network
Training/Inferencing (Contd.) (unit? unit=38&lesson=163)
- Lecture 62 :
Efficient Neural Network
Training/Inferencing (Contd.) (unit? unit=38&lesson=164)
- Lecture 63 :
Efficient Neural Network
Training/Inferencing (Contd.) (unit? unit=38&lesson=165)
- Quiz :
Assignment 12 (assessment? name=160)**
- Week 12
Feedback Form (unit? unit=38&lesson=79)

Details Solution

Download Videos

Text Transcripts

Live Interactive Session

Consider a neural network with the following layer configurations for a 1000 class classification problem. We train using stochastic gradient descent, i.e. instead of passing the entire input dataset at one go, we iterate over the dataset and for each individual input example, we perform the forward pass, calculate the loss and then perform the backward pass to update the training parameters. The dimensions of the input image is $[3 \times 227 \times 227]$. The layer specification is as follows.

CONV1: Convolution Layer with 96 11×11 filters at stride 4, pad 0
 MAX POOL1: Max Pooling Layer with 3×3 filters at stride 2
 CONV2: Convolution Layer with 256 5×5 filters at stride 1, pad 2
 MAX POOL2: Max Pooling Layer with 3×3 filters at stride 2
 CONV3: Convolution Layer with 384 3×3 filters at stride 1, pad 1
 CONV4: Convolution Layer with 384 3×3 filters at stride 1, pad 1
 CONV5: Convolution Layer with 256 3×3 filters at stride 1, pad 1
 MAX POOL3: Max Pooling Layer with 3×3 filters at stride 2

After the last layer, the image volume is linearized and fed to a Fully Connected Layer that would yield a vector of 1000 class scores.

The possible intermediate dimensions of the outputs of each layer are as follows.

i) $[96 \times 27 \times 27]$

ii) $[96 \times 55 \times 55]$

iii) $[256 \times 27 \times 27]$

iv) $[256 \times 13 \times 13]$

v) $[384 \times 13 \times 13]$

vi) $[256 \times 6 \times 6]$

1) What are the dimensions for the output of layer CONV1?

20 points

- A. i)
- B. ii)
- C. iv)
- D. v)

- A.
- B.
- C.
- D.

No, the answer is incorrect.
Score: 0

Accepted Answers:
B.

2) What are the dimensions for the output of layer CONV2?

20 points

- A. i)
- B. ii)
- C. iii)
- D. iv)

- A.
- B.
- C.
- D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

C.

3) What are the dimensions for the output of layer MAXPOOL2?

20 points

- A. ii)
- B. iii)
- C. iv)
- D. v)

- A.
- B.
- C.
- D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

C.

4) What are the dimensions for the output of layer MAXPOOL3?

20 points

- A. iii)
- B. iv)
- C. v)
- D. vi)

- A.
- B.
- C.
- D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

D.

5)

20 points

What are the dimensions for the weight matrix in the last fully connected layer?

- A. 9216 x 1000
- B. 384x1000
- C. 256 x 1000
- D. 96 x 1000

- A.
- B.
- C.
- D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

A.