Status	Beendet
Begonnen	Sonntag, 15. Dezember 2024, 19:10
Abgeschlossen	Mittwoch, 12. Februar 2025, 14:24
Dauer	58 Tage 19 Stunden
Punkte	0,00/9,00
Bewertung	**0,00** von 10,00 (**0**%)

Frage 1

Nicht beantwortet

Erreichbare Punkte: 1,00

Given an image classification task, we want the receptive field of the outputs of the final layer of a convolutional neural network to be as big as possible.

big | small

Die Antwort ist falsch.

Die richtige Antwort lautet:
Given an image classification task, we want the receptive field of the outputs of the final layer of a convolutional neural network to be as [big] as possible.

Frage 2

Nicht beantwortet

Erreichbare Punkte: 1,00

Select the numbers such that the different steps required to implement the attention mechanism for textual data are in the correct order.

Calculate the attention weights by measuring the similarity between the keys and queries.	Auswählen ... 3
Apply softplus to the attention weights in order to ensure that the weights sum up to one.	Auswählen ... 4
Incorporate the attended context vector into further neural networks layers that will be used for the downstream task.	Auswählen ... 6
Use the attention weights to compute a weighted sum of the values to form the context wector	Auswählen ... 5
Transform the input in order to obtain the corresponding key, value and query embeddings.	Auswählen ... 2
Tokenize the input sequence and embed the tokens into a feature space.	Auswählen ... 1

Die Antwort ist falsch.

Die richtige Antwort ist: Calculate the attention weights by measuring the similarity between the keys and queries. → 3,
Apply softplus to the attention weights in order to ensure that the weights sum up to one. → 4,

Incorporate the attended context vector into further neural networks layers that will be used for the downstream task. → 6,

Use the attention weights to compute a weighted sum of the values to form the context wector → 5, Transform the input in order to obtain the corresponding key, value and query embeddings. → 2, Tokenize the input sequence and embed the tokens into a feature space. → 1

Frage 3

Nicht beantwortet

Erreichbare Punkte: 1,00

$\frac{63-7}{2} + 1 = 29$

You have an input image that is 63x63x16, and convolve it with 32 filters that are each 7x7, using a stride of 2 and no padding. What is the output dimensionality?

$\frac{63-7}{2} + 1 = 28 + 1 = 29$

- a. 29x29x32
- b. 28x28x32
- c. 16x16x16
- d. 57x57x32

Die Antwort ist falsch.

Die richtige Antwort ist:
29x29x32

卷积计算公式

对于**输入尺寸** $H \times W$，使用尺寸为 $F \times F$ 的卷积核，步幅（stride）为 S，无填充（padding=0），输出的尺寸 $H_{out} \times W_{out}$ 由以下公式计算：

$$H_{out} = \frac{H - F}{S} + 1$$

$$W_{out} = \frac{W - F}{S} + 1$$

深度（通道数）会被卷积核的数量决定，**输出通道数 = 过滤器的数量**。

当使用 **填充（Padding）** 时，输出尺寸计算公式变为：

$$H_{\text{out}} = \frac{H + 2P - F}{S} + 1$$

$$W_{\text{out}} = \frac{W + 2P - F}{S} + 1$$

其中：

- H, W 是输入的高度和宽度
- F 是卷积核（滤波器）的尺寸
- P 是填充（padding）的大小
- S 是步幅（stride）

Frage 4

Nicht beantwortet

Erreichbare Punkte: 1,00

What is the relationship between the stride, kernel size, output size and input size of a convolutional layer?

- ✗ a. Output size = (Input size - Kernel size) / Stride +1
- b. Output size = (Input size - Stride) / Kernel size + 1
- c. Output size = (Input size - Kernel size) - Stride + 1
- d. Output size = (Input size + Stride) / Kernel size

Die Antwort ist falsch.

Die richtige Antwort ist:
Output size = (Input size - Kernel size) / Stride +1

Frage 5

Nicht beantwortet

Erreichbare Punkte: 1,00

You have an input image that is 40x40, and apply max pooling with a stride of 2 and a filter size of 2. What is the output dimensionality?

$\frac{40-2}{2} + 1 = 20$

- a. 10x10
- b. 19x19
- c. 9x9
- d. 20x20

Die Antwort ist falsch.

Die richtige Antwort ist: 20x20

Frage 6

Nicht beantwortet

Erreichbare Punkte: 1,00

Which of the following statements are good reasons why max pooling is more commonly used than average pooling in convolutional neural networks?

- a. Max pooling is easier to implement and significantly more computationally efficient than average pooling.
- b. Max pooling is less sensitive to noise and distortions in the input.
- c. Max pooling provides a larger reduction in the dimensionality of the data.
- d. Max pooling leads to a denser representation of the data, allowing for more complex features to be learned.

Die Antwort ist falsch.

Die richtige Antwort ist:
Max pooling is less sensitive to noise and distortions in the input.

Frage 7

Nicht beantwortet

Erreichbare Punkte: 1,00

Suppose your input is a 50x50 image, and you use a convolutional layer with 100 filters that are each 3x3. How many parameters does this hidden layer have (including the bias parameters)?

- ✗ a. 1000
- b. 2250000
- c. 900
- d. 2500

3 x 3 ×100 + 100 = 1000
每个 Filter 的 Para　Filter 的 Bias

Die Antwort ist falsch.

Die richtige Antwort ist: 1000

Frage 8

Nicht beantwortet

Erreichbare Punkte: 1,00

Which of the following statements about parameter sharing in convolutional neural nets are TRUE?

- ✗ a. It reduces the total number of parameters, thus reducing overfitting.
- ✗ b. It allows parameters trained for one task to be shared even for a different image-related tasks.
- ✗ c. It enables for convolutional layers to be translation invariant.
- ☐ d. It allows gradient descent to set many of the parameters to zero, thus making the connections sparse.

参数共享**不会让梯度下降将部分参数置零**，也不会让连接变得稀疏。

- 使参数变为零通常发生在**L1 正则化（Lasso）**或剪枝（Pruning）**中，而非参数共享。
- CNN 仍然**使用相同的卷积核**计算所有位置上的特征，而不是主动将某些权重置零。

Die Antwort ist falsch.

Die richtigen Antworten sind: It allows parameters trained for one task to be shared even for a different image-related tasks.,
It reduces the total number of parameters, thus reducing overfitting., It enables for convolutional layers to be translation invariant.

Frage 9

Nicht beantwortet

Erreichbare Punkte: 1,00

Which of the following statements about ResNets are TRUE?

- [x] a. ResNets help reduce the vanishing gradient problem when performing backpropagation.
- [ ] b. They are only applicable to convolutional neural networks and not other types of deep learning models.
- [ ] c. ResNets are more computationally efficient because they are able to skip past layers.
- [x] d. They enable the construction of extremely deep convolutional networks.

Die Antwort ist falsch.

Die richtigen Antworten sind: They enable the construction of extremely deep convolutional networks., ResNets help reduce the vanishing gradient problem when performing backpropagation.