

TIC 434

Lecturer: Dr. Ahmed Magdy

Course: Voice recognition and NLP

Sheet 5: DL and applications

Q.1: Describe the following in detail: CNN.

Q.2: Choose the correct answer:

1. In a CNN, what does the term "stride" refer to?

- a) The size of the convolutional kernel.
- b) The number of convolutional layers.
- c) The number of training epochs.
- d) The step size for moving the kernel across input data.

2. Which type of pooling operation selects the maximum value from each region?

- a) Average Pooling
- b) Global Max Pooling
- c) Max Pooling
- d) Min Pooling

3. What is the purpose of the padding technique in CNNs?

- a) Increase model complexity.
- b) Improve computational efficiency.
- c) Preserve spatial dimensions.
- d) Enhance feature extraction.

4. What role do convolutional layers play in CNNs?

- a) Introduce non-linearity.
- b) Extract Feature.
- c) Aggregate predictions
- d) Reduce overfitting.

5. What is the primary purpose of pooling layers in CNNs?

- a) Increase model complexity
- b) Reduce spatial dimensions of feature maps
- c) Apply activation functions
- d) Perform convolution operations

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6- Which layer in a CNN is responsible for introducing non-linearity into the model?

- a) Convolution Layer.
- b) Pooling Layer.
- c) FC Layer.
- d) Activation Function Layer.

7. What is What role do fully connected layers play in a CNN?

- a) They extract features from the input data
- b) They reduce spatial dimensions of feature maps.
- c) They aggregate learned features and make predictions.
- d) They apply non-linear transformations to feature maps.

8- What is the primary advantage of using Convolutional Neural Networks (CNNs) over Artificial Neural Networks (ANNs) for computer vision tasks?

- a) CNNs require less training data.
- b) CNNs can automatically detect important features from data.
- c) CNNs are simpler to implement.
- d) CNNs are faster to train

Q3. Write and discuss the python program to extract six types of feature engineering for any long text then enter these features to DL.

Q4. Write and discuss the python program for the first and second mini project

Note: use all methods in our lectures.

with all my best wishes