Reg. No. : | E | N | G | G | T | R | E | E | . | C | O | M |

Question Paper Code : 20015

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth Semester

Artificial Intelligence and Data Science

AD 3501 – DEEP LEARNING

(Regulations 2021)

Time : Three hours
Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate supervised and unsupervised learning.

2. What is stochastic gradient descent?

3. What are sparse interactions in a convolutional neural network?

4. Present an outline of pooling layer in convolutional neural network.

5. Define a recurrent neural network.

6. What is LSTM? How it differs from RNN?

7. What is a baseline model in deep learning?

8. Define random search.

9. What is a regularized autoencoder?

10. Define a stochastic encoder.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Discuss the Bias - Variance trade off. (7)

    (ii) Discuss overfitting and underfitting with an example. (6)

    Or

    (b) Explain the operations of deep feed forward network with a diagram. (13)

12. (a) What is a convolutional neural network? Outline transposed and dilated convolutions with an example. (13)

Or

(b) How to introduce non-linearity in a convolutional neural network? Explain with an example. (13)

13. (a) What is a bi-directional recurrent neural network? Explain the architecture of a bi-directional recurrent neural network with a diagram. (13)

Or

(b) What is long short term memory? Compare and contrast LSTM and gated recurred units. (13)

14. (a) Discuss the various performance metrics to evaluate a deep learning model with an example. (13)

Or

(b) Why are hyperparameters? Discuss the steps to perform hyperparameter tuning. (13)

15. (a) Justify your answer, that how autoencoders are suitable compared to Principal Compact Analysis (PCA) for dimensionality reduction. (13)

Or

(b) What is a generative adversarial network? Explain the architecture of a generative adversarial network with a diagram. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Discuss the various loss functions in neural networks. (15)

Or

(b) Discuss the steps involved in grid search with an example. (15)

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