Shivaji University , Kolhapur
Question Bank For Mar 2022 (Summer) Examination

Subject Code : 84720 **Subject Name** : B.Tech.CBCS Part 4 Semester 8 - Deep Learning

Common subject Code (if any) _____

Unit 1: Neural Network and Deep Learning

Descriptive Questions

1.Explain in short the terms AI , ML, and DL and also explain the History of Deep Learning in short.(7marks)

2.What is the need of DL and what are the benefits of it.(7marks)

3.What is the neural network and how to representation of the data for neural network.(7marks)

4.What is tensorflow? How many types of tensors are there? (7Marks)

5.Why tensors are used in deep learning?(7 marks)

6.Explain the working of neural network in deep learning?(7marks)

7.What is a tensor and how does it represent data?(7 marks)

8.What are the limitations of deep learning? (7 marks)

9.Explain anatomy of neural network? (7 marks)

10.Describe gradient based optimization. (7 marks)

Multiple Choice Questions

1.Which neural network has only one hidden layer between the input and output?

   A.Shallow neural network

   B.Deep neural network

   C.feed- forward neural network

   D.Recurrent neural network

2.Which of the following is /Are limitations of Deep learning?

A.Data labeling

B.Obtain huge training datasets

C.both 1 and 2

D.none of the above

3 Which of the following would have a constant input in each epoch of training a deep learning model

A.Weight between input and hidden layer

B.Weight between hidden and output layer

C.Biases of all hidden layer neurons

D.Activation function of output layer

4 . Applying the chain rule to the computation of the gradient values of a neural network gives rise to an algorithm is called----

a) Feed forward

b) Back Propagation

c) Gradient-based optimization

d) Tensor Flow

5.The two key ideas of deep learning for computer vision are-

a) **Convolutional neural networks and backpropagation**

b) Recurrent neural network and backpropagation

c) Convolutional neural networks and feed forword

d) None of these

6.Deep learning works well despite of ___ problems

A.High capacity (susceptible to overfitting)

B.Numerical instability

C.Sharp minima

D.all of the above

7.A tensor that contains only one number is called____.

a) Scalar   b).Numpy   c).Matrics   d).None

8._____ is a general field that encompasses machine learning and deep learning, but that also includes many more approaches that don't involve any learning.

   1.ML   **2.AI**   3.DL   4.None

9. The number of axes of a tensor is also called its

   a) Attribute

   b) Shape

   c) Rank

   d) ndim

10. 1D tensor is said to have exactly _____axis.

   1.Two   2.Three   3. **One**   4.Four

11. ------------------------ is the study of computer algorithms that allow computer programs to automatically improve through experience.

   a) Deep Learning

   b) Machine Learning

   c) Reinforcement Learning

   d) None of these

12. A_____ is a data-processing module that takes as input one or

more tensors and that outputs one or more tensors.

1. Layer   2.function   3.Vector   4.None

13. The quantity that will be minimized during training called as__

   a) Loss function   b) Optimizer   c)All of the above   d)None

Unit 2: Introduction to Tensorflow, Keras and hyperparameters Tensorflow

Descriptive Questions

1.what are Hyperparameters? Explain them?(7marks)

2.What is overfitting and underfitting and how to combat them?(7marks)

3.What is the difference between units , input shape and output shape in Keras layer class?(7marks)

4.What is Keras? Define flatten layer in Keras.(7marks)

5.What is a computation graph in deep learning? State the use of it in deep learning. (7marks)

6.Define Tensor, Rank of Tensor and shape of tensor?(7 marks)

7.Explain computing graph and distribution.

8.What is tensor Math and numpy.

MCQ

1 .Keras is a deep learning framework on which tool

  A.R

  B.Tensorflow

  C.SAS

  D.Azure

2.How can we improve the calculation speed in Tensorsflow without losing accuracy?

  A.Using GPU

  B.By doing random sampling on Tensors

  C.By removing few nodes from computational graphs

  D.By Removing the hidden layers

3.Which tool is a deep learning wrapper on Tensorsflow?

  A.python

  B.keras

  C.pyTouch

  D.Azure

4. Can we have multidimentional tensors

        a) No tensor can have maximum two dimentions

        b) Possible only in image data

c) Yes possible

d) Possible only in geo tagged data

5. Determines how the network will be updated based on the loss function called_

1.Loss function   **2. Optimizer   3.Disribution   4.** None

6. Why Tensorflow uses computational graphs?

a) Tensors are nothing but computational graphs

b) Gaphs are easy to plot

c) There is no such concept of computational graphs in TensorFlow

d) Calculations can be done in parallel

7.How do we perform caculations in TensorFlow?

a) We launch the computational graph in a session

b) We launch the session inside a computational graph

c) By creating multiple tensors

d) By creating data frames

8. Keras is used at___working on a wide range of problem.

1.Google   2.Netflix   3. Uber   **4. All of the above**

9._____ are some of the primary platforms for deep learning today.

1.TensorFlow   2.CNTK   3.Theano   **4.All of the above**

10. Overfitting is a type of modelling error which results in the failure to predict future observations effectively or fit additional data in the existing model.

a) Yes

b) No

c) May be

d) None of the above

Unit 3: Convolutional Neural Networks

Descriptive Questions

1. What do you mean by Convolutional Neural Network? Explain CNN with example.
2. Explain the Convolution Operation?
3. Explain Max Pooling Operation?
4. Briefly explain the two major steps of CNN i.e., Feature Learning and Classification.
5. What are different steps for training ConvNet from starch for small dataset?
6. What is the difference between CNN and RNN?
7. Write note on border effects and padding.
8. Explain data pre processing and Data augmentation term in detail.
9. Describe Pretrained convnet and its use.
10. Explain Feature extraction & fine tuning.
11. Describe the concept 'Visualization what convnet learn'.

MCQ

1. There are _____ common types of pooling layers.
   A. 2
   B. 3
   C. 4
   D. 5

   Ans: A

2. _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.
   A. Average Pooling
   B. Max Pooling
   C. Global Pooling
   D. None of these

   Ans: B

3. Which layer will apply element wise activation function to the output of convolution layer?
   A. Input Layer
   B. Convolutional Layer
   C. Activation Function Layer
   D. Pool Layer

   Ans: C

4. In which layer we provide input to our model?
   A. Input Layer
   B. Output Layer
   C. Hidden Layer
   D. None of these

   Ans: A

5. The input from Input layer is then feed into the _____
   A. Input Layer

B. Output Layer
C. Hidden Layer
D. None of these

Ans: C

6. What computes the output volume by computing dot product between all filters and image patch?
   A. Input Layer
   B. Convolutional Layer
   C. Average Function Layer
   D. Pool Layer

   Ans: B

7. Convolutional Neural Network is used in _____
   A. Image classification
   B. Text classification
   C. Computer Vision
   D. All of the above

   Ans: D

8. _____ reduces each channel in the feature map to a single value.
   A. Max Pooling
   B. Average Pooling
   C. Global Pooling
   D. None of these

   Ans: C

9. What holds the raw input of image used to build ConvNets?
   A. Input Layer
   B. Convolutional Layer
   C. Activation Function Layer
   D. Pool Layer

   Ans: A

10. Why do we need biological neural networks?
    A. to solve tasks like machine vision & natural language processing
    B. to apply heuristic search methods to find solutions of problem
    C. to make smart human interactive & user-friendly system
    D. all of the mentioned

    Ans: D

11. What is the trend in software nowadays?
    A. to bring computer more & more closer to user
    B. to solve complex problems
    C. to be task specific

D. to be versatile

Ans: A

12. What's the main point of difference between human & machine intelligence?
    A. human perceive everything as a pattern while machine perceive it merely as data
    B. human have emotions
    C. human have more IQ & intellect
    D. human have sense organs

    Ans: A

13. What is auto-association task in neural networks?
    A. find relation between 2 consecutive inputs
    B. related to storage & recall task
    C. predicting the future inputs
    D. none of the mentioned

    Ans: B

Unit 4: Sequence Models

Descriptive Questions

1. What is advanced use of recurrent neural network?
2. Explain one hot encoding with one example ?
3. Explain recurrent layer in keras and list down recurrent layers in detail.
4. Describe the LSTM and GRU layers in keras and write an example of LSTM.
5. What are the types of RNN?
6. Explain LSTM with diagram?
7. Write a short note on LSTM layer.
8. How we use word embedding?
9. Difference between LSTM and GRU.

MCQ

1. Suppose your training examples are sentences (sequences of words). Which of the following refers to the jth word in the ith training example?
    A. x(i) <j>
    B. x<i> (j)
    C. x(j) <i>
    D. x<j> (i)

    Ans: A

2. Consider this RNN:
    This specific type of architecture is appropriate when ,
    A. Tx<Ty
    B. Tx=Ty
    C. Tx>Ty

D. Tx=1

Ans: B

3. In the equation of GRU and LSTM, we can see that update Gate and forget Gate in LSTM play a role similar to .... and ..... in the GRU.
   A. 1- [u and [u
   B. [u and [r
   C. [r and [u
   D. [u and 1-[u

   Ans: D

4. RNN Stands for ___.
   A. Recursive Neural Network
   B. Recurrent Neural Network
   C. Recurring Neural Network
   D. Removable Neural Network

   Ans: B

5. The main and most important feature of RNN is ___.
   A. Visible State
   B. Hidden state
   C. Present State
   D. None of these

   Ans: B

6. Which of the following is/are Common uses of RNNs?
   A. Businesses Help securities traders to generate analytic reports
   B. Detect fraudulent credit-card transaction
   C. Provide a caption for images
   D. All of the above

   Ans: D

7. RNN remembers each and every information through____.
   A. Work
   B. Time
   C. Hours
   D. Memory

   Ans: B

Unit: 5. Advanced Deep Learning Best Practices

Descriptive Questions

1. What is Sequential model and explain it briefly?
2. Write short note on Keras functional API.
3. Explain Keras callbacks with suitable example.
4. Explain inspecting and monitoring in Deep Learning models.
5. Briefly explain multi-input models and multi-output models.
6. Explain the Directed acyclic graphs of layers with neat diagram.
7. Write a note on
   - Layer-weight sharing.
   - Models as a layers.
   - Wrapping up.
8. Explain the TensorFlow visualization Framework.
9. Write short note on Batch Normalization.
10. What is Hyperparameter Optimization? Explain in brief.

Multiple-choice questions

1._____ is a high level API built on TensorFlow.
   A. PyBrain
   B. Keras
   C. PyTorch
   D. Theano

ANS :B

2.What is true about Keras?

   A. Keras is an API designed for human beings, not machines.
   B. Keras follows best practices for reducing cognitive load
   C. it provides clear and actionable feedback upon user error
   D. All of the above

Ans: D

3.Using the _____ you can build graph like models.

   A. TensorFlow API

   B. Keras callbacks

   C. Keras functional API

   D. TensorBoard

Ans: C

4. Best practices including _____

    A. Batch normalization
    B. Residual connection
    C. Hyper parameter optimization
    D. All of the above

    Ans: D

5. which is not input branches consist in model?

    A. Number
    B. Text description
    C. Picture
    D. Metadata

    Ans: A

6.Many recently developed neural architectures require _____ topology.

    A. Linear topology
    B. Non-linear network topology
    C. Directed topology
    D. Undirected topology

    Ans: B

7.Where we can directly manipulate data?

    A. TensorFlow
    B. TensorBoard
    C. Functional API
    D. None of the above.
       Ans: C

8. Which is used to built models that have multiple inputs?

    A. Keras callbacks
    B. Functional API
    C. TensorBoard
    D. None of the above.

    Ans: B

9. How many inputs in Question-answering model ?

    A. 3
    B. 4

C. 2

D. 1

Ans: C

10. Which is used to implement networks with complex internal topology.

A. TensorFlow
B. Functional API
C. TensorBoard
D. None of the above.

Ans: B

Unit: 6. Generative Deep Learning
Descriptive Questions

1. What is Deep Generative Learning? How to generate images just based on the text using Generative Deep Learning?
2. What are the Trade-Offs between GANs and other Generative Models?
3. Explain briefly about Deep Dream with example.
4. Briefly explain generative adversarial network.
5. What is Variational autoencoders?
6. Explain the concept of image editing.
7. How do you use LSTM for text generation?
8. How do neural networks generate text? What is the use of neural style transfer?
9. **Explain neural style transfer in briefly What is the style loss in neural style transfer?**
10. **What is the difference between autoencoder and variational autoencoder?**

Multiple-choice questions

1.GNN Stands for _____.

1. Generative Advertising Network
2. Generative Adversarial Network
3. Generate Adversarial Network
4. Generation adversarial Network

Ans 2

2. Generative Adversarial Networks was developed and introduced in _____.

1. 2015
2. 2014
3. 2013
4. 2012

Ans: 2

3. _____ is used to learn a generative model, which describes how data is generated in terms of a probabilistic model.

1. Adversarial
2. Generative
3. Networks
4. Discriminator

Ans: 2

4. _____is the simplest type GAN.

1. Conditional GAN
2. Vanilla GAN
3. Deep Convolutional GAN
4. Laplacian Pyramid GAN

Ans :2

5.What is used to generate sequence data?

1. Convolutional network
2. Neural network
3. Sequential network
4. None of above

Ans: 2

6._____ has been successfully applied to speech synthesis and to dialogue generation for chatbots.

1. Sequence data generation
2. Generative data generation
3. Both 1 and 2
4. None of the above

Ans :1

7. The smart reply feature that Google released in _____.

1. 2013
2. 2015
3. 2016
4. 2011
   Ans : 3

8.Whom started a new research group called Magenta.

1. Eck

2. Alex Graves
3. Lannis Xenakis
4. None of above
   Ans : 1

9. _____ is an artistic image modification technique that uses representation learn by convolutional neural networks.

   1. Wrapping up
   2. Deep Dream
   3. Neural style transfer
   4. All of the above.
      Ans: 2

10. Which technique is introduce by Leon Gatys et al?

    1. Wrapping up
    2. Neural style transfer
    3. Deep Dream
    4. Style loss
       Ans: 2