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18AI81

Eighth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Neural Networks and Deep Learning

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain the hyper-parameters required to tweak in a multi-layer perception and justify the condition if MLP over fits the training data", how could you tweak these hyper-parameters to try to solve this problem. **(10 Marks)**

   b. Explain the steps involved in fire-Tuning neural networks hyper parameters. **(10 Marks)**

OR

2 a. Explain how modularity and sharing variables works in tensor flow. **(10 Marks)**

   b. Compare and contrast back propagation and reverse mode atuodiff. **(10 Marks)**

Module-2

3 a. Compare and contrast the implementation features of Ado Grad optimizer versus ADAM optimizer. **(10 Marks)**

   b. List and explain different methods for avoiding over fitting through regularization in DNN. **(10 Marks)**

OR

4 a. Write a note on :
   i) Momentum Optimization
   ii) Nesterov Accelerated Gradient. **(10 Marks)**

   b. Justify with valid inferences. :Does dropout slows down training in DNN", if it does, then provide the slow down inference for new instances. **(10 Marks)**

Module-3

5 a. Explain the following with code snippet and diagram :
   i) Managing the GPU RAM
   ii) Placing operations and variables on devices. **(10 Marks)**

   b. With code snippet explain the steps required for loading data directly from graph. **(10 Marks)**

OR

6 a. Illustrate Google Net architecture with a neat diagram and explain its features. **(10 Marks)**

   b. Consider the situation where "If GPU runs out of memory while training a CNN". Propose at least five methods that you would try to solve the problem. **(10 Marks)**

Module-4

7 a. With a code snippet and different discuss training RNN's for a sequence classifier. **(10 Marks)**

   b. With code snippet, explain the required for distributing a deep RNN across multiple GPUs. **(10 Marks)**

OR

8 a. With a diagram of simple machine translation model, explain encoder-decoder network.
(10 Marks)

b. Write a note on :
i) Applying dropout between, RNNs
ii) Difficulty of tainting RNNs over many times. (10 Marks)

Module-5

9 a. Describe the stages required for implementing a stocked auto encode using Keras. (10 Marks)
b. Contrast the fearers of variational autoencoders and sparse autoencoders. (10 Marks)

OR

10 a. Apply, task learning methods to optimize rewards for 2 different set of examples. (04 Marks)
b. With an example, explain the methods required to measure the performance of a reinforcement learning agent. (08 Marks)
c. Explain with a diagram neural network policy using tensorflow. (08 Marks)

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