ECS763U/ECS763P - Natural Language Processing - 2022/23 - Semester 1

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Time taken	40 mins 56 secs
Grade	**10.00** out of 10.00 (**100**%)

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Question **1**
Correct
Mark 1.00 out of 1.00
Flag question

One of the early applications of neural nets was on a feedforward net to learn to distinguish between irregular and regular verb forms of the past tense of English, given the stem form. The English verb 'be' has which kind of past tense form?

a. regular past tense form
b. irregular past tense form ✔

The correct answer is: irregular past tense form

Question **2**
Correct
Mark 1.00 out of 1.00
Flag question

What is the type of neural net architecture which deals with sequence classification or sequence modelling tasks most commonly? _____.

a. feedforward neural net
b. recurrent neural nets ✔

The correct answer is: recurrent neural nets

Question **3**
Correct
Mark 1.00 out of 1.00
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A logistic regression classifier trained using gradient descent and cross-entropy loss is guaranteed to find a global minimum for its loss function.

Select one:
True ✔
False

The correct answer is 'True'.

Question **4**
Correct
Mark 1.00 out of 1.00
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A simple 3-node net with no bias nodes has two input nodes x1 and x2, which in practice receive either 0s or 1s for possible inputs, and two weights going to an output node Z with the ReLU activation: one weight w1 from node x1 to node Z with a weight of 2, and one weight w2 from node x2 to node Z with a weight of -1. The input to the net on a given example pair of inputs is x1=1 and x2=0 to the two input nodes. What is the activation value of node Z with these two inputs?

a. 1
b. 2 ✔

The correct answer is: 2

Question **5**
Correct
Mark 1.00 out of 1.00
Flag question

A simple 3-node net with no bias nodes has two input nodes x1 and x2, which in practice receive either 0s or 1s for possible inputs, and two weights going to an output node Z with the ReLU activation: one weight w1 from node x1 to node Z with a weight of 1, and one weight w2 from node x2 to node Z with a weight of 2. The input to the net on a given example pair of inputs is x1=0 and x2=1 to the two input nodes. What is the activation value of node Z with these two inputs?

a. 1
b. 2 ✔

The correct answer is: 2

Question **6**
Correct
Mark 1.00 out of 1.00
Flag question

Select from the below considerations a designer of a neural net model typically has to take into account in terms of designing and training the net on a language problem.

a. The stopping criteria required to stop the training process ✔
b. The use of a parser
c. Detailed feature extraction engineering with linguistic knowledge
d. Using well-annotated datasets
e. The number of hidden neural units and layers ✔
f. The use and/or choice of regularisation function ✔

The correct answers are: The stopping criteria required to stop the training process, The number of hidden neural units and layers, The use and/or choice of regularisation function

Question **7**
Correct
Mark 1.00 out of 1.00
Flag question

Select which of the below are true of recurrent neural nets .

a. RNNs can only deal with a fixed length input
b. RNNs cannot use embeddings as input
c. RNNs use a copy of the previous time-step's hidden layer activations as input to the current time-step's hidden layer ✔
d. RNNs for language models use softmax cross-entropy as their loss function in training ✔
e. RNNs cannot be analysed in terms of their hidden layer's activations
f. RNNs can suffer from the vanishing gradient problem ✔

The correct answers are: RNNs can suffer from the vanishing gradient problem, RNNs use a copy of the previous time-step's hidden layer activations as input to the current time-step's hidden layer, RNNs for language models use softmax cross-entropy as their loss function in training

Question **8**
Correct
Mark 1.00 out of 1.00
Flag question

Which of the following is NOT true of neural nets?

a. They can deal with heterogeneous data which mixes boolean, real-valued and integer inputs
b. They generalise very well with big data
c. They can make use of linear algebra processing capabilities effectively in big computations
d. They are often termed deep neural nets because they can learn a deeper understanding of language ✔
e. They are data-hungry for high performance

The correct answer is: They are often termed deep neural nets because they can learn a deeper understanding of language

Question **9**
Correct
Mark 1.00 out of 1.00
Flag question

Which of the following is not a natural application of deep learning?

a. POS-tagging
b. First Order Logic inference ✔
c. Named Entity Recognition
d. Language modelling
e. Automatic Speech Recognition

The correct answer is: First Order Logic inference

Question **10**
Correct
Mark 1.00 out of 1.00
Flag question

Which of the following is true of deep neural nets (DNNs) but not of classical machine learning?

a. DNNs can be used for fake review detection
b. DNNs require evaluation on a test set for performance checks
c. DNNs can be used for sentiment analysis
d. DNNs require manual or experimental hyperparamter selection and optimziation
e. DNNs do not require lots of manually defined feature interactions ✔

The correct answer is: DNNs do not require lots of manually defined feature interactions

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