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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Deep Learning - IIT Ropar (course)Course
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Week 11 : Assignment 11

The due date for submitting this assignment has passed.

Due on 2024-10-09, 23:59 IST.

As per our records you have not submitted this assignment.

1) For which of the following problems are RNNs suitable?

1 point

- ☐ Generating a description from a given image
- ☐ Forecasting the weather for the next N days based on historical weather data
- ☐ Converting a speech waveform into text
- ☐ Identifying all objects in a given image

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Generating a description from a given image**Forecasting the weather for the next N days based on historical weather data**Converting a speech waveform into text*

2) Suppose that we need to develop an RNN model for sentiment classification. The input to the model is a sentence composed of five words and the output is the sentiments (positive or negative). Assume that each word is represented as a vector of length 70×1 and the output labels are one-hot encoded. Further, the state vector s_t is initialized with all zeros of size 50×1 . How many parameters (including bias) are there in the network?

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 6152

3) What is the main advantage of using GRUs over traditional RNNs?



Week 11 ()

- ☐ Sequence Learning Problems (unit? unit=150&lesson=151)
- ☐ Recurrent Neural Networks (unit? unit=150&lesson=152)
- ☐ Backpropagation through time (unit? unit=150&lesson=153)
- ☐ The problem of Exploding and Vanishing Gradients (unit? unit=150&lesson=154)
- ☐ Some Gory Details (unit? unit=150&lesson=155)
- ☐ Selective Read, Selective Write, Selective Forget - The Whiteboard Analogy (unit? unit=150&lesson=156)
- ☐ Long Short Term Memory(LSTM) and Gated Recurrent Units(GRUs) (unit? unit=150&lesson=157)
- ☐ How LSTMs avoid the problem of

- ☐ They are simpler to implement
- ☐ They solve the vanishing gradient problem
- ☐ They require less computational power
- ☐ They can handle non-sequential data

No, the answer is incorrect.

Score: 0

Accepted Answers:

They solve the vanishing gradient problem

4) What is the vanishing gradient problem in training RNNs?

1 point

- ☐ The weights of the network converge to zero during training
- ☐ The gradients used for weight updates become too large
- ☐ The network becomes overfit to the training data
- ☐ The gradients used for weight updates become too small

No, the answer is incorrect.

Score: 0

Accepted Answers:

The gradients used for weight updates become too small

5) What is the role of the forget gate in an LSTM network?

1 point

- ☐ To determine how much of the current input should be added to the cell state
- ☐ To determine how much of the previous time step's cell state should be retained
- ☐ To determine how much of the current cell state should be output
- ☐ To determine how much of the current input should be output

No, the answer is incorrect.

Score: 0

Accepted Answers:

To determine how much of the previous time step's cell state should be retained

6) We construct an RNN for the sentiment classification of text where a text can have positive sentiment or negative sentiment. Suppose the dimension of one-hot encoded-words is $R^{100 \times 1}$, dimension of state vector s_i is $R^{50 \times 1}$. What is the total number of parameters in the network? (Don't include biases also in the network)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 7599.5,7601.5

1 point

7) What are the problems in the RNN architecture?

1 point

- ☐ Morphing of information stored at each time step.
- ☐ Exploding and Vanishing gradient problem.
- ☐ Errors caused at time step t_n can't be related to previous time steps faraway
- ☐ All of the above



vanishing
gradients
(unit?
unit=150&less
on=158)

- ☐ How LSTMs avoid the problem of vanishing gradients (Contd.) (unit? unit=150&less on=159)
- ☐ Lecture Material for Week 11 (unit? unit=150&less on=160)
- ☐ Week 11 Feedback Form: Deep Learning - IIT Ropar (unit? unit=150&less on=194)
- ☐ Quiz: Week 11 : Assignment 11 (assessment? name=299)

Week 12 ()

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Problem
Solving
Session -
July 2024 ()

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

8) We are given an RNN where max eigenvalue λ of Weight matrix is 0.9. The activation function used in the RNN is logistic/sigmoid. What can we say about $\nabla = \left\| \frac{\partial s_{20}}{\partial s_1} \right\|$? **1 point**

☐

Value of ∇ is close to 0.

☐

Value of ∇ is very high.

☐

Value of ∇ is 3.5.

☐

Insufficient information to say anything.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Value of ∇ is close to 0.

9) What is the objective(loss) function in the RNN? **1 point**

☐

Cross Entropy

☐

Sum of cross-entropy

☐

Squared error

☐

Accuracy

No, the answer is incorrect.

Score: 0

Accepted Answers:

Sum of cross-entropy

10) Which of the following is a formula for computing the output of an LSTM cell? **1 point**

☐

$o_t = \sigma(W_o[h_{t-1}, x_t] + b_o)$

☐

$f_t = \sigma(W_f[h_{t-1}, x_t] + b_f)$

☐

$c_t = f_t * c_{t-1} + i_t * g_t$

☐

$h_t = o_t * \tanh(c_t)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

*$h_t = o_t * \tanh(c_t)$*



