X

(https://swayam.gov.in) (https://swayam.gov.in/nc_details/NPTEL)

2111cs010033@mallareddyuniversity.ac.in

NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Deep Learning - IIT Ropar (course)

Course outline

About NPTEL ()

How does an NPTEL online course work? ()

Week 1 ()

Week 2 ()

Week 3 ()

week 4 ()

Week 5 ()

Week 6 ()

Week 7 ()

Week 8 ()

Week 9 ()

week 10 ()

# Week 11 : Assignment 11

**The due date for submitting this assignment has passed.**

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

## Assignment submitted on 2024-10-09, 21:04 IST

1) Select the correct statements about GRUs ***1 point***

- [x] GRUs have fewer parameters compared to LSTMs
- [x] GRUs use a single gate to control both input and forget mechanisms
- [ ] GRUs are less effective than LSTMs in handling long-term dependencies
- [ ] GRUs are a type of feedforward neural network

Yes, the answer is correct.
Score: 1

Accepted Answers:
*GRUs have fewer parameters compared to LSTMs*
*GRUs use a single gate to control both input and forget mechanisms*

2) The statement that LSTM and GRU solves both the problem of vanishing and exploding gradients in RNN is ***1 point***

- (•) True
- ( ) False

No, the answer is incorrect.
Score: 0

Accepted Answers:
*False*

3) How does LSTM prevent the problem of vanishing gradients? ***1 point***

- ( ) Different activation functions, such as ReLU, are used instead of sigmoid in LSTM
- ( ) Gradients are normalized during backpropagation

**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

- The learning rate is increased in LSTM
- Forget gates regulate the flow of gradients during backpropagation

Yes, the answer is correct.
Score: 1

Accepted Answers:
*Forget gates regulate the flow of gradients during backpropagation*

4) 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)

7600

Yes, the answer is correct.
Score: 1

Accepted Answers:
*(Type: Range) 7599.5,7601.5*

***1 point***

5) 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

Yes, the answer is correct.
Score: 1

Accepted Answers:
*All of the above*

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

- Value of $\nabla$ is close to 0.
- Value of $\nabla$ is very high.
- Value of $\nabla$ is 3.5.
- Insufficient information to say anything.

Yes, the answer is correct.
Score: 1

Accepted Answers:
*Value of $\nabla$ is close to 0.*

7) Which of the following is a limitation of traditional feedforward neural networks in handling sequential data? ***1 point***

- [x] They can only process fixed-length input sequences
- [ ] They are highly optimizable using the gradient descent methods

vanishing gradients (unit?unit=150&lesson=158)

How LSTMs avoid the problem of vanishing gradients (Contd.) (unit?unit=150&lesson=159)

Lecture Material for Week 11 (unit?unit=150&lesson=160)

Week 11 Feedback Form: Deep Learning - IIT Ropar (unit?unit=150&lesson=194)

**Quiz: Week 11 : Assignment 11 (assessment?name=299)**

**Week 12 ()**

**Download Videos ()**

**Books ()**

**Text Transcripts ()**

**Problem Solving Session - July 2024 ()**

- [x] They can't model temporal dependencies between sequential data
- [ ] All of These

Yes, the answer is correct.
Score: 1

Accepted Answers:
*They can only process fixed-length input sequences*
*They can't model temporal dependencies between sequential data*

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

- $o_t = \sigma(W_o[h_{t-1}, x_t] + b_o)$
- $f_t = \sigma(W_f[h_{t-1}, x_t] + b_f)$
- $c_t = f_t * c_{t-1} + i_t * g_t$
- $h_t = o_t * tanh(c_t)$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$h_t = o_t * tanh(c_t)$

9) Which type of neural network is best suited for processing sequential data? ***1 point***

- Convolutional Neural Networks (CNN)
- Recurrent Neural Networks (RNN)
- Fully Connected Neural Networks (FCN)
- Deep Belief Networks (DBN)

Yes, the answer is correct.
Score: 1

Accepted Answers:
*Recurrent Neural Networks (RNN)*

10) Which of the following is true about LSTM and GRU networks? ***1 point***

- LSTM networks have more gates than GRU networks
- GRU networks have more gates than LSTM networks
- LSTM and GRU networks have the same number of gates
- Both LSTM and GRU networks have no gates

Yes, the answer is correct.
Score: 1

Accepted Answers:
*LSTM networks have more gates than GRU networks*