CS-E4740 - Federated Learning D, Lectures, 28.2.2024-29.5.2024

Course feedback

Mark 3.00 out of 3.00

Mark 3.00 out of 3.00

Correct

Correct

Correct

Quizzes

/ Quizzes

A?

Started on Thursday, 4 April 2024, 6:02 PM **State** Finished

Completed on Thursday, 4 April 2024, 8:00 PM **Time taken** 1 hour 57 mins

Grade 11.00 out of 11.00 (**100**%)

Question 1

Flag question Mark 2.00 out of 2.00

Flag question

How does the amount of computation required by one iteration ("per-iteration complexity") of Algorithm 5.2 (FedGD for Local Linear Models) from the lecture notes (found here) depend on the empirical graph?

- a. The per-iteration complexity does not depend at all on (the edges in) the empirical graph.
- b. The per-iteration complexity increases if we remove edges from the empirical graph.
- ☑ c. The per-iteration complexity increases with the increased node degrees.
 ✓

Your answer is correct.

See Section 7.2 of the lecture notes (found here).

The correct answer is: The per-iteration complexity increases with the increased node degrees.

Question 2 Flag question

Assume you have to place a fixed number of edges between nodes of an empirical graph. Regarding the statistical properties of GTVMin-based methods, where would you place those edges?

- It does not matter where (between which nodes) these edges are placed.
- ☑ b. We should place edges between two nodes if they carry local datasets with similar statistical properties.
- We should place an edge between two nodes who carry local datasets with significantly different statistical properties.

Your answer is correct.

See Section 7.4 in the Lecture Notes (found here).

The correct answer is:

Question 3

We should place edges between two nodes if they carry local datasets with similar statistical properties.

This question refers to **the student tasks #1-3** in the "Graph Learning" assignment.

For which node_degree values (node_degree parameter in the add_edges function) the graphs ($\mathcal{G}^{(I)}$, $\mathcal{G}^{(II)}$, and $\mathcal{G}^{(III)}$) are connected?

P.S. The empirical graph notation corresponds to the Section 7.5 in the Lecture Notes.

- lacksquare a. The connectivity of $\mathcal{G}^{(II)}$ depends on the random seed. lacksquare
- \square b. The connectivity of $\mathcal{G}^{(II)}$ does not depend on the random seed.
- \square c. $\mathcal{G}^{(III)}$ is connected for **some** $node_degree < 2$.
- \square d. $\mathcal{G}^{(I)}$ is connected for **all** node_degree ≥ 8 . \square e. $\mathcal{G}^{(I)}$ is connected for for **some** *node_degree* values < 8.
- lacksquare f. $\mathcal{G}^{(III)}$ is connected for **all** $node_degree \geq 2$.

Your answer is correct.

Unfortunately, the correctness of $\mathcal{G}^{(I)}$ and $\mathcal{G}^{(III)}$ connectivity cannot be checked due to the different environments. Meanwhile, $\mathcal{G}^{(II)}$ connectivity depends on the random seed - for different seeds the

Please, join Slack channel (link) if you have any questions regarding the coding assignment.

minimum node degree required for a graph to be connected is different (from 30 to 70).

The correct answer is:

The connectivity of $\mathcal{G}^{(II)}$ depends on the random seed.

Question 4 Flag question Mark 3.00 out of 3.00 Correct

This question refers to **the student tasks #1-3** in the "Graph Learning" assignment.

What interval contains training and validation errors of $\mathcal{G}^{(I)}$, $\mathcal{G}^{(II)}$, and $\mathcal{G}^{(III)}$ graphs (2*3=6 errors in total).

P.S. The empirical graph notation corresponds to the Section 7.5 in the Lecture Notes.

a. [51, 55]

o b. [27, 31]

o. [15, 19]

O d. [23, 27] ● e. [19, 23] **✓**

• f. [43, 47] g. [55, 59]

h. [35, 39]

i. [39, 43] o j. [59, 63]

o k. [31, 35]

O I. [47, 51]

Your answer is correct.

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The correct answer is:

Previous activity

■ "FL Flavors"

[19, 23]

Finish review

Next activity

"Trustworthy AI" ►

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