Q1 Information and Honor Code
0 Points

In this assignment, you will work on the Colab 6 notebook and obtain results from it. You can submit as many times as you want, and the last submission will be graded. Only the fully correct answer will receive 1 point. No late day is allowed for any Colab assignment.

Please verify that you have read the above instructions and the Stanford Honor Code and that you have not given or received unpermitted aid while completing this assignment.

If you have any questions about how the Honor Code applies to Colab assignments or other parts of the course, please contact the teaching staff for clarification.

⊙ I have read and understood the above information

Q2 Barbell graph no path
2 Points

Generate a barbell graph with no path, where each complete graph has exactly 1000 nodes.

Q2.1 Number of nodes
1 Point

How many nodes are present in the generated graph? (Integer)

Q2.2 Number of edges
1 Point

How many edges are present in the generated graph? (Integer)

Q3 Barbell graph with path

2 Points

Generate a barbell graph with a path of length 51 between the two complete graphs, where each complete graph has exactly 1000 nodes.

Q3.1 Number of nodes

1 Point

How many nodes are present in the generated graph? (Integer)

Q3.2 Number of edges

1 Point

How many edges are present in the generated graph? (Integer)

Q4 Node2Vec embeddings

3 Points

Now you embed nodes with node2vec embeddings on each generated graph, setting p = 1, q = 1 and d = 10.

In each graph, you compare the cosine similarity of each nodes to all the nodes (including itself) in that graph. Moreover, we define two nodes are "neighbor", if their cosine_similarity > 0.8.

'[' and ']' indicate close interval, and '(' and ')' indicate open interval.

Q4.1

1 Point

How many nodes have exactly 1000 "neighbors" (including itself) in the "Barbell graph no path"?

Q4.2
1 Point

How many nodes have exactly 1000 "neighbors" (including itself) in the "Barbell graph with path"?

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Q4.3
1 Point

How many nodes have less than 100 "neighbors" (including itself) in the "Barbell graph with path"?

○ [1000, +Infinity)

○ [900, 1000)

○ [800, 900)

○ [700, 800)

○ [600, 700)

○ [500, 600)

○ [400, 500)

○ [300, 400)

○ [200, 300)

○ [100, 200)

○ [0, 100)