
Due Date and Time: 24 hrs from the time assigned.

Instructions

1. Please email your solutions/answers to the instructor as a zip folder containing the following two files: (i) a Python notebook (.ipynb) file and (ii) a PDF (or HTML) version of your Python notebook.
2. This exam is **not** collaborative. You cannot receive (or provide) help from (to) any human or non-human sources. Using snippets of code downloaded from the internet is not allowed. Any violation will be considered a breach of RIT's honor principle.
3. You are not allowed to use any Python package other than the following: **matplotlib, numpy, networkx, requests, and scipy.**

Data

URL: `https://people.rit.edu/nxmsma/courses/data/<filename>`
Filenames: `CElegansFrontal.txt` and `CElegans2.csv`.
Downloading Method: Use Python's `requests` package to download the data.
Description: `CElegansFrontal.txt` has the neural network of neurons and synapses in *C. elegans*—a worm of about 1 mm in length. `CElegans2.csv` also includes two-dimensional spatial positions of the rostral ganglia neurons.

Question **[Points: 10]**

Generate **visualization** of the network from the data described above with the following features.

(i) Node size should be proportional to the degree. Node color should represent the local clustering coefficient of the node, use one of the standard colormaps. Nodes' spatial positions should be read from the file `CElegans2.csv`, in case it leads to a compact/small plot, rescale the positions. Nodes (neurons) should be labeled; these labels (names) can be read from the file `CElegans2.csv`.

(ii) Edges should be directed, i.e., arrows pointing from the source to the incident node. Edges should have the same color as their source node.

(iii) The final visualization should include a labeled colorbar.