Group Behavior in MR Data

This drive provides graphs of group behavior interactions stored in JSON format, visualized using NetworkX and Matplotlib. Each JSON file contains graph data with nodes, edges, and edge weights, which the Python script reads and displays in a grid of subplots.

Project Structure

The project consists of the following files:

Overview

Each graph represents a group, with nodes representing members of each group. Two types of relationships are visualized:

- **Shared Attention Graphs:** Indicate instances when two people are looking at the same object.
- **Proximity Graphs:** Indicate instances when two people are in close physical proximity.
- **Conversation Graphs:** Indicates when a person is talking to another person.

Files

1. **shared_attention_graphs.json**
    - Contains a list of shared attention graphs.
    - Each graph is undirected with edges representing the count of instances when the two people looked at the same virtual object.
2. **proximity_graphs.json**
    - Contains a list of proximity graphs.
    - Each graph is undirected and with edges representing proximity counts.
    - Edge weights correspond to the frequency of two people being within close proximity.
3. **conversation_graphs.json**
    - Contains a list of conversation graphs.
    - Each graph is directed and represents the time in seconds that the person spoke to the other person.
    - *The generated graphs assume that when a person speaks, they speak to everyone in the group.*
4. **plot-sociogram.py**
    - This Python script reads the JSON files and visualizes an undirected graph using NetworkX and Matplotlib.

    - The script sorts the graphs based on group number (extracted from the `id` field) and displays them in a grid.
    - Edge thickness is scaled according to weight, providing a visual indication of relationship strength.
    - Nodes are arranged in a consistent layout across graphs for easy comparison.
5. **plot-directed-sociogram.py**
    - This script is similar to plot-sociogram.py but works on directed grapes instead.
6. **completion_time_and_accuracy.csv**
    - This csv file contains the time each group took to complete the task and the accuracy of the

Usage

To visualize the graphs, run the `plot-sociogram.py` and `plot-directed-sociogram.py` script with a JSON file as an argument. For example:

```
python plot-sociogram.py shared_attention_graphs.json
```

```
python plot-sociogram.py proximity_graphs.json
```

```
python plot-directed-sociogram.py conversation_graphs.json
```

These will display each graph in a grid layout, with nodes consistently positioned and edge thickness representing relationship strength.

Appendix

Some visualizations have also been included under the visualizations folder. It includes location heatmaps of each group, as well as the proximity, shared attention, and conversation graphs.