README: AI-Mediated Organizational Work

Overview

This repository supports the article *AI-Mediated Organizational Work: A Synthetic Framework for Mapping Influence through Narratives and Networks in Human Social Systems*, providing a GPT-generated synthetic dataset (~100 employees, ~300 narrative fragments, ~900 trust/advice ties) to demonstrate a privacy-preserving framework for mapping influence via narratives and networks. This dataset serves as a proof-of-concept testbed to demonstrate how AI can bridge qualitative and quantitative approaches while preserving privacy.

Methods

Data Generation

- **Synthetic dataset**: Generated with a GPT-based approach simulating organizational narratives and trust/advice ties.
- **Size**: ~100 employees, ~300 narrative fragments, ~900 ties.
- **Purpose**: Privacy-preserving testbed for proof-of-concept.

Narrative Mapping

- **Analysis tools**:
    - spaCy for entity recognition.
    - pandas for counting and aggregating narrative mentions.
    - matplotlib for bar chart visualization.
- **Output**:
    - Top 10 employees by narrative mentions.
    - Figure 1: Narrative prominence distribution.

Network Analysis

- **Tools**:
    - NetworkX to construct directed graphs from trust/advice ties.
    - Metrics: degree, betweenness, and eigenvector centrality.
- **Visualization**:
    - Force-directed layouts with matplotlib and NetworkX styling.
    - Figure 2: Top 10 eigenvector centrality leaders.

Iterative Synthesis

- **Comparisons**: Narrative vs. structural leaders.

- **Tools**:
    - matplotlib-venn for Venn diagrams.
    - matplotlib for side-by-side bar charts.
    - NetworkX (with curved edges and custom node coloring) for integrated influence maps.
- **Outputs**:
    - Figure 5: Venn diagram (narrative vs. structural).
    - Figure 3: Network of Employees (Structural View).
    - Figure 4: Integrated influence map.

Reproducibility

All analyses were conducted in Python using the following libraries:

- pandas (data handling).
- matplotlib (visualization).
- matplotlib-venn (Venn diagrams).
- networkx (graph analysis and visualization).
- spaCy (entity recognition).

The synthetic framework is fully reproducible with the provided synthetic dataset, and the code can be adapted to real-world organizational data with proper ethical and privacy safeguards.

Citation

If you use this dataset, please cite:

Haidemariam T. (2025), "AI-Mediated Organizational Work: A Synthetic Framework for Mapping Influence through Narratives and Networks in Human Social Systems," [Journal name].

Contact

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