Social Network and Analysis

Project Proposal

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Project Topic: Analysing the importance of Knowledge Graphs of Natural Disasters

A knowledge graph is a visual representation of information as a network of interconnected nodes and edges. Nodes represent entities, while edges represent relationships between them. They are useful because:

- They provide a structured way to organize and understand information.
- They can be used to make predictions and recommendations.
- They can be used to visualize information in a way that is easy to understand.

Need and Relevance:

A knowledge graph in the context of natural disasters can provide a structured representation of various entities and their relationships, aiding in disaster response, analysis, and reporting. It can help journalists and researchers understand the dependency of factors involved in disasters.

Research Questions:

1. What are the key entities and relationships that should be included in a comprehensive knowledge graph for natural disaster representation?

2. What are the key communities or clusters within disaster response networks, and how do they collaborate and coordinate?
3. What regional patterns emerge in the co-occurrence of natural disasters, and how can centrality measures help identify regions most at risk?
4. How can predictive models based on centrality and network structure be used to anticipate the likelihood of disaster events within interconnected regions?

Graph Components:

1. **Entities/Nodes:**
    - Countries
2. **Relationships/Edges:**
    - **Location relationships:** A specific type of disaster occurring between countries of the same region within a particular time frame.
3. **Properties and Depictions:**
    - **Entity properties:** Name, location, type.
    - **Depicted by:** Node color, node label, and node size.

Data Sources:

- EM-DAT - International Disaster Database

Literature Review:

For ease and convenience, the literature review has been done on a separate document, and submitted along with the proposal.

Potential Applications:

- **Disaster response:** Rapidly identify affected areas, allocate resources, and coordinate relief efforts.
- **Policy development:** Inform decision-making on disaster preparedness and response.

Work Remaining:

1. Write a draft paper summarizing project objectives, methodology, findings, and implications.
2. Create a poster summarizing project objectives, methodology, key findings, and implications.

Conclusion:

By constructing a comprehensive knowledge graph for natural disasters, journalists and researchers can gain a deeper understanding of these complex events and develop more effective strategies for response, mitigation, and adaptation.