Towards an Exploratory Visual Analytics System for Multivariate Subnetworks in Social Media Analysis

Identifying sociolinguistic attributes of inter-community interactions is essential for understanding the polarization of social network communities. A wide range of computational text and network analysis methods may be applicable for this task, however, interpretation of the respective results and investigation of particularly interesting cases and subnetworks are difficult due to the scale and complexity of the data, e.g., for the Reddit platform. In this poster paper, we present an interactive visual analysis interface that facilitates network exploration and comparison at different topological and multivariate attribute scales. Users are able to investigate text- and network-based properties of social network community interactions, identify anomalies of conflict starters, or gain insight into multivariate anomalies behind groups of negative social media posts.

We propose a visual analytics tool that provides:
- Overview of community polarization (panel B & C)
- Displaying multivariate attributes (panel A)
- Subnetwork comparisons and customization (panel D & E)

Our approach is not designed to represent the complete data set. Instead, we try to tackle the issue of scalability for a full-size large-scale network, by zooming into areas of interest from multivariate, topological, and temporal aspects. We aim to provide users with an exploratory visual journey in a large-scale social network data set like this, and facilitate comparisons and selections of multiple subnetworks from different perspectives.

Ongoing and Future Work
- Add interactive self-defined subnetwork selection queries with the help of subgraph selection techniques and NLP tools
- Incorporate more interactions for temporal aspects and visualize network evolution features
- Optimize performance
- Add original text data for details on demand
- Perform user studies to evaluate our system with domain experts, including scenarios with other data sets.