

SCTG: Social Communications Temporal Graph –A novel approach to visualize temporal communication graphs from social data

Shubhanshu Mishra

iSchool, UIUC

Smishra8@illinois.edu

Communication on social channels such as social media websites, email, forums, and groups; follows an inherent temporal network structure. Herein, each communication e.g. a post, occurs at a specific point in time, which can be extracted from its metadata. Furthermore, each communication is also linked to a creator e.g. a user, organization, topic, or another communication—which created the communication. Finally, the communication items can be tagged with additional numeric metadata which can be used to score some attributes about the communication e.g. number of comments, retweets, or shares. SCTG is a web based visualization which builds on the visualization principles of –overview, zoom, filter, details-on-demand, relate, history, and extracts (Shneiderman 1996). An example of our visualization applied to a course Facebook group is shown in Figure 1. The tool allows users to highlight a timeline slice, highlight communications matching a specific creator, and identify the temporal connection between each communication and its creator. The visualization tool has also been successfully applied to visualize sentiment of tweets and it's users as part of the SAIL project (Mishra et al. 2015). The visualization tool is aimed at highlighting the temporal communication nature of social communication channels and is made available as an open source javascript API which can be used by developers and researchers alike.

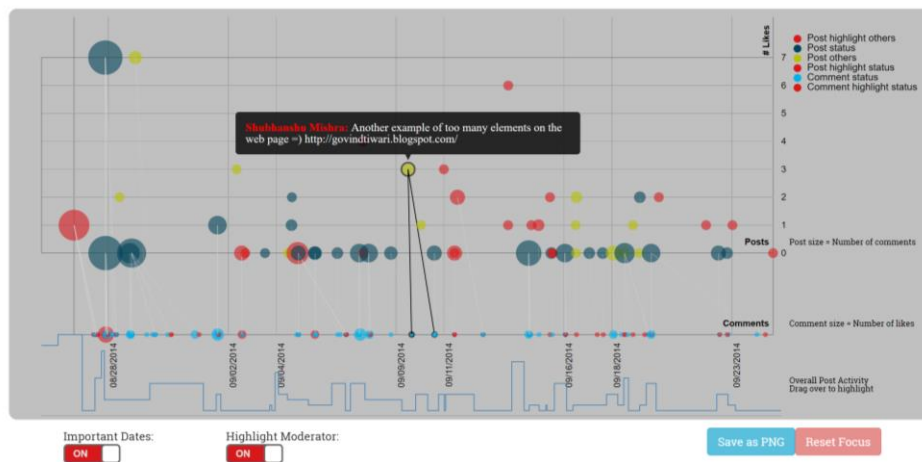


Figure 1 Example of the SCTG visualization applied to a course Facebook group. The course class meetings are highlighted on the x-axis. The creator is a single post made on the group (shown in the top circles), the communications are the comments made to the post (shown in bottom circles). A plot of communication frequencies is shown at the bottom. Key user's posts are highlighted in red. Creator posts are sized according to number of comments received, comments are sized according to number of liked received.

References

- Mishra, Shubhanshu, Jana Diesner, Jason Byrne, and Elizabeth Surbeck. 2015. "Sentiment Analysis with Incremental Human-in-the-Loop Learning and Lexical Resource Customization." In *Proceedings of the 26th ACM Conference on Hypertext & Social Media*, 323–25. doi:10.1145/2700171.2791022.
- Shneiderman, B. 1996. "The Eyes Have It: A Task by Data Type Taxonomy for Information Visualizations." *Proceedings 1996 IEEE Symposium on Visual Languages*. IEEE Comput. Soc. Press, 336–43. doi:10.1109/VL.1996.545307.