Community Detection and Verification in Large Scale Social Media

Purpose of Project

Online social networks such as Facebook and social media networks such as Twitter provide new channels for people to share and exchange information and generate immense data every day. Such networks often exhibit community structure with inherent clusters. Detecting clusters or communities is one of the critical tasks in social network analysis due to its broad applications such as friend recommendations, link predictions and collaborative filtering. We want to study the community detection and verification problem through user tweet interaction and since we have built a data collection, analysis, and modeling framework, we have complete control of our data and can collect any additional data, so we are able to verify our clustering approach with real data.

Framework

As illustrated in Figure 1, the raw data consists of Tweets posted by users of Twitter regarding the flu season of 2014 (Jan – Mar). We then strip down the raw tweets to the tweet ID number and the User ID number of the person that retweeted the tweet, or the original tweeter if the prior is not present; using the Dynamic Modeling Engine Jaime Chon developed. From there we develop a graph of users and tweets with connections between them called edges. The retrieving the neighbors of all the tweet nodes we can get users that have tweeted or retweeted the tweet and construct an edge list between users, which will be the raw data for our clustering algorithms in the iGraph library. We then will test our clusters against clusters generated from user profile data to measure the accuracy of our flu data based clusters.

Conclusion

The clusters that we produce and analyze add a new angle of cluster analysis that is not being utilized in the social media industry, clustering based on user behavior. Being able to analyze user behavior at this level, allows us to predict trends and possible undiscovered clusters that are not being caught with current industry standards of analysis.

User Interaction Weight Analysis

References

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Acknowledgements

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