Network Analysis Project Proposal

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0.0.1 Context

The general field I proposed is cinematography and particularly the sub-field of sitcoms. Precisely analyze the relationship between the characters and the networks of "Friends" and "The Big Bang Theory" which are among the most famous sitcoms.

0.0.2 Problem and Motivation

The motivation behind this analysis is common opinion, and as a result several resources and websites suggest that the two sitcoms have many similarities in terms of structure and roles related to some main characters. The question is whether the social networks underlying these sitcoms are similar to each other and how they have common strengths. Finding these characteristics that unite the two networks could be important in writing future sitcoms, evaluating new ones, evaluating scripts, identifying a sort of basic network to follow for a successful sitcom.

0.0.3 Datasets

The datasets are online and publicly available at these two links: Friends, The Big Bang Theory. The data was manually collected. This was done by the author of this paper [1]. Each episode was watched and notes were taken, regarding how many times who interacts with whom, i.e., based on the actual interactions of characters in each scene of each episode. An interaction happens when two characters talk (even if one talks and the other just listens) or touch or have eye contact. This means that, since not necessarily every character does interact with all others in a scene, each scene is not a complete graph. The two datasets contain essentially all interactions or dialogues present between characters in all episodes of all seasons. To handle and compute measures on the data I plan to use Python using the NetworkX library.

0.0.4 Measures

The measures will focus on two key points: comparison between the two networks, comparison between individual characters. So as to identify similarities, strengths, main features and differences between the two networks in general, but also carping on a possible similarity between the characters and their roles, stereotypes, characterizations.
To compare the two networks we will use their propieties: number of nodes and edges, density, diameter, average shorter path length. These will help us to understand e.g. relationship between number of nodes and edges, how far apart the characters are from each other, how related the characters generally are to each other so whether they all know each other, whether they have common knowledge etc.. You will also analyze the distributions of centrality measures to understand, for example, whether the networks are scale-free. And finally we will go on to analyze groups of nodes: cliques, cores, clustering coefficient, communities. The latter measures

will allow us to highlight the relationships between main and secondary characters for example by understanding which of them are part of the maximal clique or main cores, and how these are divided into communities. In terms of comparing individual characters we will mainly use measures of centrality such as: degree, eigenvector, betweenness, closeness. These will allow us to better compare characters, understand which ones are the most important and what role they play. Obviously the analysis of centrality measures alone is not enough but they will be supported by regular equivalence which is a similarity measure.

Bibliography

References

[1] Ana Lúcia Cetertich Bazzan. Similar yet different: the structure of social networks of characters in seinfeld, friends, how i met your mother, and the big bang theory. *Revista de Informática Teórica e Aplicada*, 27(2):66–80, Apr. 2020.