CS 495: Introduction to Web Science

Fall 2013

Assignment 5

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**Question 1**: Determine if the friendship paradox holds for your Facebook account. Create a graph of the number of friends (y-axis) and the friends sorted by number of friends (x-axis). (The friends don't need to be labeled on the x-axis.) Do include yourself in the graph and label yourself accordingly.

Compute the mean, standard deviation, and median of the number of friends that your friends have.

Friendship paradox is an observation that the friends of observer tend to have greater number of friends. In this assignment, the usage of NameGenWeb application on Facebook proved to be extremely useful in exporting the data without having to deal with Facebook API itself. The exported XML file (typed graphml) is parsed through parseString in this script and the result is recorded in the file ‘paradox\_facebook\_FC.txt’ in the same directory.

Total number of friends I have is 116. However of the total friends I have, 17 of them hid their friends count. The total number I will be using is 99. The mean of the number of friends came out as 637.72 while the median and standard deviation are 524 and 582.8 respectively.

The result proves that the Friendship paradox can be applied for my facebook profile, since the number of friends I have is only 116 where the data shown to be much greater in number. Graph 1 illustrates the relationship between my friends’s total friends and my profile labeled as ‘Me’.

**Question 2**: Determine if the friendship paradox holds for your Twitter account. Since Twitter is a directed graph, use "followers" as value you measure (i.e., "do your followers have more followers than you?").

Generate the same graph as in question #1, and calculate the same mean, standard deviation, and median values.

Majority of the script written for this question was copied over from assignment 2, where we have previously explored how to authenticate the Twitter API.

The total number of followers I, screen-name cosmic\_meow, have is 41. The average number of followers my followers have is 2887.8. The median and standard deviation are 204.5 and 15023.58.

Just as observed from question one, Friendship paradox can be apply to my twitter account as well. Graph 2 illustrates the relationship of my followers’ followers.

**Question 4**: Repeat question #2, but change "followers" to "following"? In other words, are the people I am following following more people?

The script used to answer this problem is identical to script from question 2. The API’s documentation showed that the number of people the user is following can be accessed via the variable friends. The same logic can be used to generate the list of ‘friends’ my friends have.

Total number of people I am following is 117. The average number of people my friends follow, median, and standard deviation are 7,783.95, 169, and 61,087.98 respectively. The three observations of my social network experience showed that the case of Friendship Paradox can be applied to me. While this may be the result of me not being very active in online community, the result also reflects a trend I see from the data. The more close related friends tend to have less number of online friends while the people I don’t know as well tend to have a higher number of interactions. The study by Hodas et al. mentions that it’s typical for a person to have less friends (in the case of their study, followers) since we tend to follow some one more popular. This case is proven true in most of my online network observed in this assignment.

**Graph 1**: Number of friends my friends have.

**Graph 2**: Number of user cosmic\_meow’s followers’ followers

**Graph 3**: Number of user cosmic\_meow’s friends’ friends

Sources:

<http://stackoverflow.com/questions/1912434/how-do-i-parse-xml-in-python/1912445#1912445>

<http://docs.python.org/2/library/xml.etree.elementtree.html#module-xml.etree.ElementTree>

<https://dev.twitter.com/docs/api/1.1/get/friends/list>

Hodas, N.; Kooti, F. and Lerman. L. (2013). ["Friendship Paradox Reduce: Your Friends Are More Interesting Than You"](http://arxiv.org/abs/1304.3480). *The 7th International AAAI Conference on Weblogs and Social Media*.