CS595 Intro to Web Science, Assignment #5

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The "friendship paradox" (`http://en.wikipedia.org/wiki/Friendship_paradox`) says that your friends have more friends than you do.

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.

You can download your network in an XML file by using the NameGenWeb Facebook app:

`https://apps.facebook.com/namegenweb`

You will need to give this app permission to access your Facebook data. Make sure you select "Friend Count" as an Extended Attribute. When you download the data, download it in the GraphML format.

If you do not have a Facebook account, email me and I will send you my GraphML file.

Answer to Question 1

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.

For the Twitter 1.1 API to help gather this data, see:

`https://dev.twitter.com/docs/api/1.1/get/followers/list`

If you do not have followers on Twitter (or don't have more than 20), then use my Twitter account "phonedude_mln".

Answer to Question 2

Extra Credit - LinkedIn (2 points)

Repeat question #1, but with your LinkedIn profile.

Answer to Extra Credit - LinkedIn

Extra Credit - Twitter (1 point)

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

Answer to Extra Credit - Twitter

Resources

- Grosfield, Troy. Parsing XML with Python using ElementTree. http://blog.troygrosfield.com/2010/12/18/parsing-xml-with-python-using-elementtree/
- McCown, Frank. Producing Simple Graphs with R. http://www.harding.edu/fmccown/r/
- Poulson, Barton. R Statistics Essential Training. http://www.lynda.com/course20/R-tutorials/R-Statistics-Essential-Training/142447-2.html
- Python.org. The ElementTree XML API. http://docs.python.org/3.3/library/xml.etree.elementtree.html
- Seminar for Statistics. R Documentation: Arithmetic Mean. http://stat.ethz.ch/R-manual/R-devel/library/base/html/mean.html
- Seminar for Statistics. R Documentation: Concatenate Strings. http://stat.ethz.ch/R-manual/R-devel/library/base/html/paste.html
- Seminar for Statistics. R Documentation: Median Value. http://stat.ethz.ch/R-manual/R-patched/library/stats/html/median.html
- Seminar for Statistics. R Documentation: Standard Deviation. http://stat.ethz.ch/R-manual/R-patched/library/stats/html/sd.html
- Stack Overflow. Change colors or particular bars in a bar chart. http://stackoverflow.com/questions/13112974/change-colours-of-particular-bars-in-a-bar-chart
- Stack Overflow. How do you print to stderr in R? http://stackoverflow.com/questions/1109017/how-do-you-print-to-stderr-in-r
- Stack Overflow. Understanding the Order() function in R. http://stackoverflow.com/questions/2315601/understanding-the-order-function-in-r
- Twitter Developers Documentation. GET followers/list. https://dev.twitter.com/docs/api/1.1/get/followers/list