

# CS595 Intro to Web Science, Assignment #6

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## Question 1

We know the result of the Karate Club (Zachary, 1977) split. Prove or disprove that the result of split could have been predicted by the weighted graph of social interactions. How well does the mathematical model represent reality?

Generously support your answer with all supporting equations, code, graphs, arguments, etc.

Useful sources include:

- Original paper
  - <http://aris.ss.uci.edu/~lin/76.pdf>
- Slides
  - <http://www-personal.umich.edu/~ladamic/courses/networks/si614w06/ppt/lecture18.ppt>
  - <http://clair.si.umich.edu/si767/papers/Week03/Community/CommunityDetection.pptx>
- Code and data
  - [http://networkx.github.io/documentation/latest/examples/graph/karate\\_club.html](http://networkx.github.io/documentation/latest/examples/graph/karate_club.html)
  - <http://nbviewer.ipython.org/url/courses.cit.cornell.edu/info6010/resources/11notes.ipynb>
  - <http://stackoverflow.com/questions/9471906/what-are-the-differences-between-community-detection-algorithms-in-igraph/9478989#9478989>
  - <http://stackoverflow.com/questions/5822265/are-there-implementations-of-algorithms-for-community-detection-in-graphs>
  - <http://konect.uni-koblenz.de/networks/ucidata-zachary>
  - <http://vlado.fmf.uni-lj.si/pub/networks/data/ucinet/ucidata.htm#zachary>

## Answer to Question 1

## **Extra Credit, 3 Points**

We know the group split into two different groups. Suppose the disagreements in the group were more nuanced – what would the clubs look like if they split into groups of 3, 4, and 5?

**Answer to Extra Credit**

## 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>
- Twitter Developers Documentation. Using cursors to navigate collections. <https://dev.twitter.com/docs/misc/cursoring>