

open.michigan

Unless otherwise noted, the content of this course material is licensed under a Creative Commons Attribution 3.0 License.

<http://creativecommons.org/licenses/by/3.0/>

Copyright 2008, Lada Adamic

You assume all responsibility for use and potential liability associated with any use of the material. Material contains copyrighted content, used in accordance with U.S. law. Copyright holders of content included in this material should contact open.michigan@umich.edu with any questions, corrections, or clarifications regarding the use of content. The Regents of the University of Michigan do not license the use of third party content posted to this site unless such a license is specifically granted in connection with particular content objects. Users of content are responsible for their compliance with applicable law. Mention of specific products in this recording solely represents the opinion of the speaker and does not represent an endorsement by the University of Michigan. For more information about how to cite these materials visit <http://michigan.educommons.net/about/terms-of-use>.

 UNIVERSITY OF MICHIGAN



PROBLEM SET 3 – Week 3

1. Your network vs. random (50pts)

Retrieve the facebook social network from last week.

a) Compute the average clustering coefficient (Net>Vector>Clustering Coefficients>CC1) and average shortest path (Net>Paths between two vertices > Distribution of distances > From all vertices and look in the report window).

b) Select two of your buddies. Look up the value of their individual clustering coefficient in your network. Highlight their ego-networks (just them and their friends) and explain the clustering coefficient in terms of their number of friends (well, their number of their friends who are also your friends) and the number of edges they have between them.

c) Construct a random network with the same number of nodes and average degree (Net>Random Network>Erdos-Renyi>undirected). Visualize it (*I*). Compute the average clustering coefficient and average shortest path for the corresponding random graph.

d) Describe how the clustering coefficient and average shortest path of your (my) social network compare to its random counterpart. From this conclude whether or not it exhibits small world properties (we'll talk about small worlds on Monday, so you may have to wait a bit before you can answer this question).

2. Prestige and influence in a physician network (50pts)

Complete exercise 9.9 in Chapter 9 of the Pajek book.