

CSC 641 Network Science, Fall 2015

Instructor: Dr. Natarajan Meghanathan

Take Home Quiz 2

Due: Monday, Oct. 26, 2015: 6 PM

Late submission (Oct. 26, 2015-6:10 PM to Oct. 27, 2015-6 PM: -30 points, taken off from your score)

Late submission (Oct. 27, 2015-6:01 PM to Oct. 28, 2015-6 PM: -60 points, taken off from your score)

No late submission allowed after Oct. 28, 2015-6 PM.

Maximum Points: 75

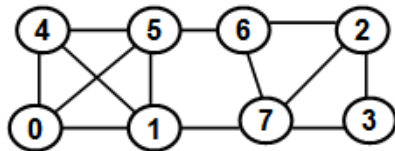
1) Consider the graphs assigned to you and do each of the following. Show all the work.

(a - 13 pts) Determine all possible cliques of size 3 or above using the Minimum Neighbors heuristic. Identify the cliques one after the other.

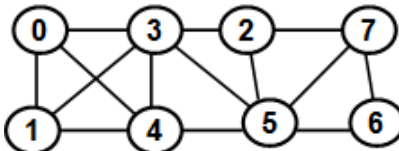
(b - 10 pts) Run the Clique Percolation method using clique of size 3 as the basis and determine the communities.

(c - 12 pts) Calculate the neighborhood overlap score for each of the edges. Remove them in the increasing order until the graph disintegrates into two or more communities. How many weak tie edges needed to be removed to identify the communities?

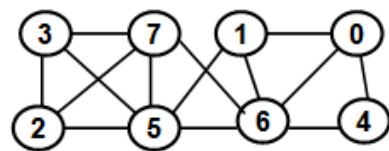
(d - 15 pts) Determine the modularity score, internal density and external density of each of the communities that you determined in (c)?



Karthik Reddy

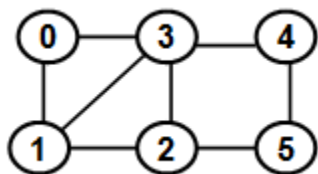


Anirudh Reddy

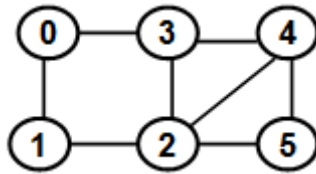


Yashvanth Divanji

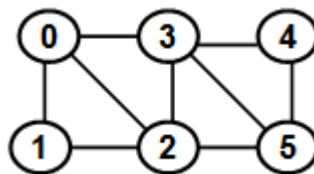
2) (25 pts) Run the Girvan Newman algorithm on the graphs assigned to you below and determine the betweenness for each of the edges. Show all the work in detail.



Karthik Reddy



Anirudh Reddy



Yashvanth Divanji