

Feedback — HW 4 community structure

You submitted this homework on **Fri 16 Nov 2012 8:09 AM PST**. You got a score of **10.00** out of **10.00**.

Question 1

Run modularity (with edge weights ignored) on the [network of recipe ingredient complements](#). Load it into Gephi, don't do any edge thresholding (yet). You may find it help to apply a layout algorithm such as Force Atlas 2. The nodes are ingredients, and the edges are a variant on [pointwise mutual information](#) based on the co-occurrence of ingredients. Color the nodes according to their assigned community. Pickles (i.e. "pickle") are the in same community as.

Your Answer	Score	Explanation
<input checked="" type="radio"/> yellow mustard	✓ 2.00	
Total	2.00 / 2.00	

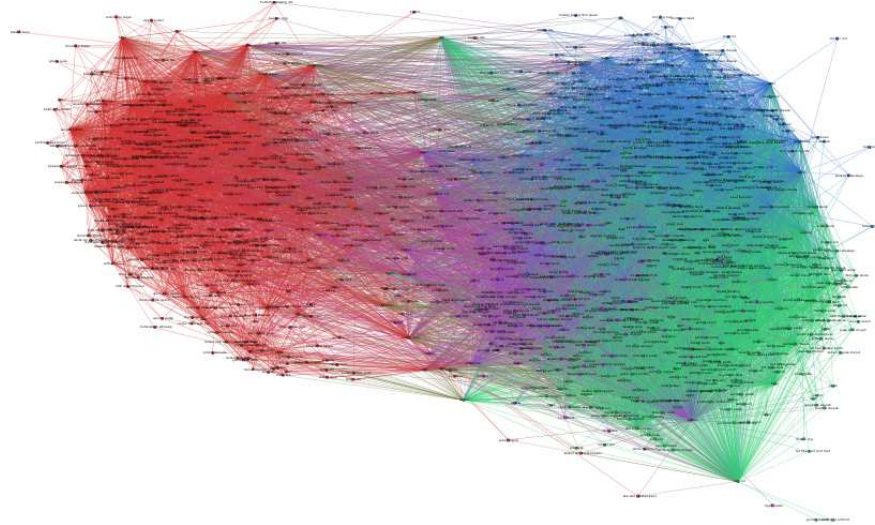
Question 2

How many communities are there when all edges are included, and you run modularity (unweighted option, resolution = 1.0). Exclude communities consisting of only 1 node

Your Answer	Score	Explanation
<input checked="" type="radio"/> 3	✓ 2.00	
Total	2.00 / 2.00	

Question Explanation

There are 5 modularity partitions, labeled as partitions 0 - 4, however, one of them consists of just a single node. Your network should look like this:



Question 3

Next threshold edges such that you only keep ones with weight exceeding 0.20. Again apply the modularity-based community finding algorithm. Also, run a layout algorithm such as Force Atlas 2 to see what is going on more clearly. Relative to the unthresholded network, this network has:

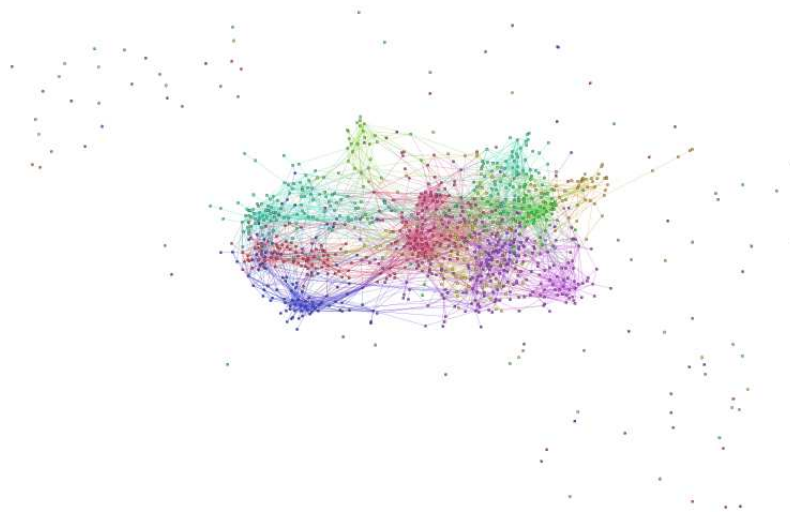
Your Answer	Score	Explanation
<input checked="" type="radio"/> a higher number of communities	2.00	

Total

2.00 / 2.00

Question Explanation

After thresholding, many edges that represent infrequent ingredient pairings will be dropped. This leaves smaller, more distinct communities. Your network should look like

**Question 4**

In an Erdos-Renyi random graph, you are more likely to observe a:

Your Answer	Score	Explanation
<input checked="" type="radio"/> k-core	✓ 2.00	
Total	2.00 / 2.00	

Question Explanation

A clique is only a clique if all edges are present. A k-core requires only that each node within the k-core have edges to at least k other members of the core.

Question 5

Load the file [words.net](#) into Gephi. You may find it helpful to do both a layout and color by community (after you run Modularity) in order to answer the following question. Based on the network of word-translation pairs, which German word (prefaced with "g_") is most likely to be a translation of the word "coil"?

Your Answer	Score	Explanation
<input checked="" type="radio"/> Feder	✓ 2.00	
Total	2.00 / 2.00	

Question Explanation

Even if two words are not directly adjacent in the graph, having many short indirect paths is a clue that one may share a meaning with another. This is what the network looks like

