1) You are an OSINT analyst with the CIA, and you have been assigned a Russian bot network to analyze. You want to develop an algorithm for bot community detection based on ego graph similarity. *You hypothesize that bots will follow similar people, and thus will have similar ego networks.*

Answer the following:

a. What metric will allow you to quantify the similarity between graphs?

Resonance.

b. Using the Python notebook provided, calculate the network centralities, clustering coefficients, and resonance; and enumerate the communities within the ego graphs provided.

Answers in the notebook.

c. One of the ego networks is from a known bot, and the other is unknown. Based on your analysis, do you think the unknown network is from a bot?

Accepting the premise that graph similarity is indicative of bot status, then yes. Notably, I constructed a … community resonance matrix? I don't know if that's actually a thing … and 3 of the communities for each of the accounts had a resonance of 1, i.e. exactly identical, and the 4th was 0.9979.

d. Ego graphs are constructed from social connections, in this case, Twitter followers. Do you think your hypothesis is a reasonable one, i.e., is Twitter follower status a sufficient indicator of a true connection? Why or why not, or does it depend on other factors? Are there other methods of generating graph edges that might better represent a possible relationship? Explain your reasoning.

If it is, this would be too easy to frustrate. The underlying premise would be that the followers are also within the network/operation in some fashion, since following is a bottom-up process. All they would have to do is have coordinated networks not follow each other, and seed messages through an artificially randomized complex network. They could train the network constructor against resonance minimization until they have a seemingly random network, and then implement it.