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Math381 Homework2

Reading reflection of Small World Problem

The small world problem written by Jeffrey Travers and Stanley Milgram describe the research on exploring small world problem. Small world problem is a problem given a set of people chosen randomly are find out their connection to a target person which that set of people may not know originally.

This paper mainly describes an experiment in order to expose features of social structure. This experiment tries to set "starting population" as variation in the experiment and chooses a random person as target, and then it attempts to find out the acquaintance chain from each starter to the target. By choosing 296 volunteers as starting population and one target person randomly, Milgram would explore some elementary features in real social nets. He chose the target person who is a stockholder lived in Boston and made some of the starting population have some common with him. Here is an interesting part, he did not chose people worldwide like different country which takes too much time in transportation and transfer document in that period. Instead, he chose 196 people in Nebraska, and make 100 of them has a same habit with target person which is stockholder, and rest is random. What make me impressed is the way he selected, because Nebraska has a long distance with Boston, so this is not 100 stockholders in Nebraska group and 96 people random Nebraska group but 100 stockholders in a far place with similar habit and 96 people in a far place, because there is no specific connection between Nebraska and Boston but just far! Then he found some important conclusions. Then, by delivering the document to who they think may know the target in

order to, these starting population would start to connect a chain from themselves to the target person.

Here is what the experiment concludes:

1. The mean distribution which is the mean intermediaries needed to link a starting person with target person is 5.2 which is for a random people we need 5.2 people to find a target person on average

2. The number of Incomplete chain due to the person who do not know who to send the document to or a person who is unwilling to participate decreases as the number of remove increase.

3. The percentage dropout (here I cannot find some important conclusion just data)

4. Boston Random Group has smaller mean chain length than that of Nebraska Stockholders Group, which has slightly smaller mean chain length than that of Nebraska Random Group, and this is inversely related to proportion of complete rate

5. Many common chains occur, which is people link to a same person after several intermediaries.

6. gender has an indispensable impact on which gender he/she would deliver the document to, which is male are more likely to deliver document to male, while female has equally likelihood.

In my opinion, this experiment is quite useful in discovering many useful features of real social nets in that period. There is actually one social feature I could somehow feel

it before but just realized from the reading. On page 17, the authors write 'Men were ten times more likely to send the document to other men than to woman, while woman were equally likely to send the folder to male as to female'. This makes a lot of sense because boy has a lot of male friends but few female friends, while girls always mixed in boy's group, and also they have their "sister" to play with. For all people around me and all of my friends, this is absolutely true. It is not only a psychology phenomenon but also an important feature needed to be taken seriously in this experiment. Because if we choose the participants with equally distributed gender, which is same amount of male versus female, the choice of different gender as the target person will create totally different result. The number of "chain" connected to a female will less than that of a male on average, so the conclusion may needed to classify by gender. They give this conclusion, but they fail to give further experiment based on this finding which make the result they show in the middle part of paper unclear.

However, from my perspective, this method can only be adapt in that period. Nowadays, due to the fast development of internet, everything around us change rapidly especially in those features of social nets.

First, male tend to have more female friends than before because man is interesting in adding and communicating with beautiful lady through social media. This contradicts to the conclusion of that paper. Then, because there is more ways to know someone, the information about target in document can be improved. People know someone always by adding their social media, so sometimes you even don't know where someone live or studied before, but you actually know him because you may often speaking with him through social media like Facebook. Also, because fill the document

online will be easier than before, the percentage of people who "dropped out" will dramatically decrease. As a result, based on these points, if this experiment will take place today, finding the chains by social media is the most useful and effectively way, and it may be the only possibility to set an edge between two people who "know" each other, and the number of chains needed to reach the target person will decrease because the way people know someone become simpler. Even though the paper give us people usually complete or give up in range 1-14(I think the completement in table1 reach 0 imply all people complete or may consider drop out). Therefore, after reading this paper, I wonder is there any feature of social structure concluded by the paper can still be useful, I think the one people tend to send to people with same gender as target person will be correct, but other features of social structure mentioned in that paper still remain uncertainty for me.

To conclusion, the experiment this paper show is nice and well-consideration in that period of time, but for now, I think it needs some improvement to adapt the appearance of many modern things like internet.