



Social Networking

الشبكات الاجتماعية

ITMC 413

إعداد

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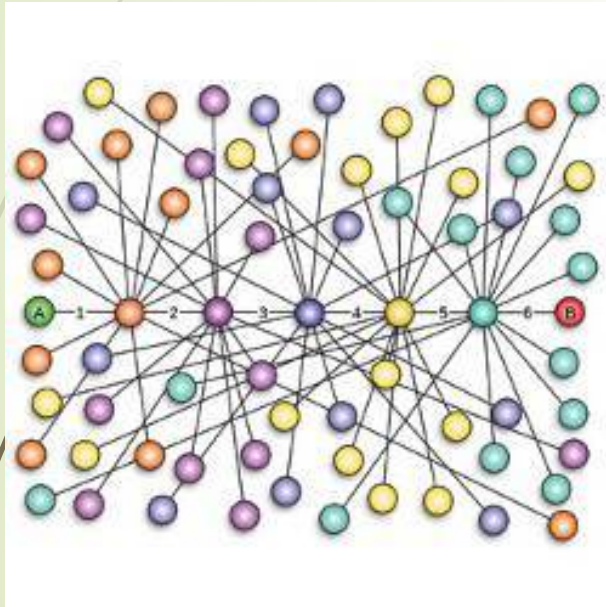
Small-world

What is the “small world” phenomenon?

- Principle that most people in a society are linked by short chains of acquaintances
- Sometimes referred to as the “six degrees of separation” theory



1. Meaning



A study of 721 million Facebook users showed an average of 3.74 intermediaries between a source and target user, as opposed to social psychologist Stanley Milgram's mean of five.

Credit: Dannie-Walker / Wikipedia



Any person on the planet can be connected to any other person on the planet



Every person in the world is no more than six people away from every other person on earth



Six degrees of separation

- Six degrees of separation is an idea that any two people on Earth, is on average, separated by no more than six intermediate connections so that a chain of "a friend of a friend" can be made to connect any two people in six steps or fewer. The idea was first proposed in 1929 in a short story by **Hungarian author Frigyes Karinthy**, and made popular by the **John Guare** play and movie, Six Degrees of Separation.

2. When, Who, What

Frigyes Karinthy

1929

Hungarian writer Frigyes Karinthy introduced the concept of six degrees of separation

1967

Stanley Milgram

American sociologist Stanley Milgram devised a new way to test the theory, which he called "the small-world problem."



John Guare

1990

Playwright John Guare popularized the phrase when he chose it as the title for his 1990 play.

Microsoft

2008

Microsoft attempted to validate the experiment by analyzing the minimum chain length it would take to connect 180 billion different pairs of users in the Microsoft Messenger database. According to Microsoft's finding, the average chain length was 6.6 hops

2001

Duncan Watts

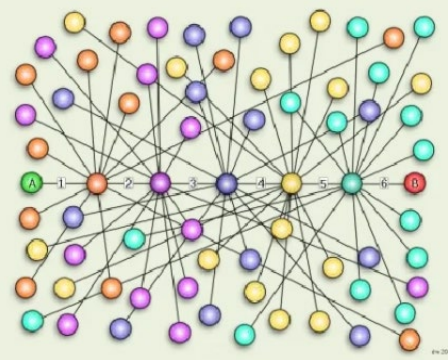
Duncan Watts, a professor at Columbia University, continued his earlier research into the phenomenon and recreated Milgram's experiment on the Internet. Watts used an email message as the "package" that needed to be delivered, and surprisingly, after reviewing the data collected by 48,000 senders and 19 targets (in 157 countries), Watts found that the average number of intermediaries was indeed six.



3.How

The theory of 'Six Degrees of Separation'

- The theory of 'Six Degrees of Separation' was first put to the test by social psychologist Stanley Milgram in the 1960's. Milgram selected 296 volunteers and asked them to send a message by postcard, through friends and then friends of friends, to a specific person in a Boston suburb. Milgram found that the average number of intermediate persons in these chains was 5.2 (representing about 6 hops), thereby cementing the 'six degrees' theory.



While Miligram's experiment involved less than 300 individuals, the new research at the University of Milan used had a bigger sample – 721 million Facebook users, representing more than one-tenth of the world's population.



My Degrees of Separation - old school



My Degrees of Separation.. now





The theory of 'Six Degrees of Separation'

- Facebook also offered insight into some other metrics about the site. Only 10% of people have less than 10 friends, 20% have less than 25 friends, while 50% (the median) have over 100 friends. Meanwhile, because the distribution is highly skewed, the average friend count is 190. An important finding from our study, however, is that the distribution is not nearly as skewed as earlier studies of social networks have suggested.



- ▶ *A classic paradox regarding social networks dictates that, for most people, the median friend count of their friends is higher than their own friend count. On Facebook, that's the case for 84% of our users. Why?*
- *Scott Feld wrote about this phenomenon in his 1991 paper *Why Your Friends Have More Friends than You Do*, showing that the same phenomenon dictates that college students typically find that their classes are larger than the average class size, and that when you get on an airplane, it will typically be more crowded than the average occupancy.*
- *These effects all arise because for people, classes, and flights to be popular, you must be much more likely to choose them. So you shouldn't feel bad if it seems like all your friends are more popular than you.*

4. Similar, but...



*“What is the right definition of distance when you're looking at social networks?” asks **Jon Kleinberg**. “It's not just how many steps I have to go”*

*We need a much more subtle way to do that and it is going to require some sophisticated **mathematical** ideas and **sophisticated** combinational ideas—what is the right definition of distance when you're looking at social networks? It's not just how many steps I have to go. That's an important question in everyday life and when you're designing some online system.*

Conclusion

- *We have seen the great importance this theory has and also its possibilities but it does not end here. Nowadays with the help of the internet and social media, we are getting to know more and more people. This, in terms of modules, is creating more connections between the nodes hence shortening path lengths..*
- *This proves how by time, with the help of technology, the world is getting smaller and smaller and people are getting to know more and more people. With this the technologies based on six degrees would get more and more accurate by time. However beneficial having more and more connections in a network might seem, it carries many threats which can disrupt the synchronicity and consistency in of the network.*

5. References



- <https://cacm.acm.org/magazines/2012/7/151240-degrees-of-separation/fulltext>



- <https://whatis.techtarget.com/definition/six-degrees-of-separation>

Thank You.



النجاح لا يأتي من قبيل الصدفة

فهو من العمل الشاق والمثابرة

والتعلم والدراسة والتضحية

والأهم من ذلك كله، ان تحب ما تقوم به

أو ان تتعلم ان تحبه