Lecture - 41

Strong and Weak Relationships (Continued) and Homophily

Introduction to Homophily - Should you watch your company?

The age-old parental advice that one should keep good company and avoid bad company has some truth to it, as research has shown that one's friends can have an impact on their life. Studies have shown that certain traits, such as happiness and obesity, can be contagious within a social network. For example, if someone is friends with people who are obese, they are more likely to become obese themselves. Similarly, if someone is surrounded by happy, energetic people, they are more likely to feel happy themselves.

In fact, research has shown that happiness can be contagious up to three levels within a social network, meaning that the happiness of one person can spread to their friends' friends' friends. This suggests that the company one keeps can have a significant impact on their own happiness and well-being. Therefore, the proverbial saying "tell me who your friends are and I'll tell you who you are" holds some truth, as the happiness and behavior of one's friends can influence their own happiness and behavior.

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Strong and Weak Relationships (Continued) and Homophily

Selection and Social Influence

The two broad categories of friendship dynamics are : selection and social influence. Selection refers to choosing friends who are similar to oneself, while social influence refers to being influenced by friends to adopt certain behaviors or habits. Examples of social influence include smoking, drinking, and partying, while examples of selection include language and eating habits. Love and friendship dynamics differ, with selfishness being a factor in love but not necessarily in friendships.

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Strong and Weak Relationships (Continued) and Homophily

Interplay between Selection and Social Influence

Wikipedia is a collaborative platform where anyone can write and edit articles. While there may be conflicts in the information added, the collective discussion and debate among the editors converge to the right answer, making Wikipedia a trustworthy database.The dataset available on Wikipedia includes the user talk pages, where editors can discuss their conflicts on what should be added or removed from the articles. A similarity measure is used to understand how similar two editors are in their editing transactions. For instance, the similarity measure between two people is the total number of unique Wikipedia pages they have edited in common divided by the total number of unique Wikipedia pages they have edited, both put together.

The similarity measure helps to understand the extent to which social influence and selection may be occurring in the editors' contributions to the articles. The dataset from Wikipedia provides a good platform to conduct research and unravel the facts about social influence and selection.

Lecture – 44

Strong and Weak Relationships (Continued) & Homophily

Homophily – Definition and Measurement

Homophily refers to the tendency of individuals to form social ties with others who are similar to them in some way, such as age, gender, race, ethnicity, education, occupation, or interests. This can be observed in many different contexts, including schools, workplaces, neighborhoods, online communities, and social events. Homophily can arise for various reasons, such as shared experiences, attitudes, beliefs, values, and lifestyles, as well as proximity, familiarity, and exposure.

Homophily can have both positive and negative consequences. On the one hand, it can facilitate social cohesion, trust, support, and identity formation among like-minded individuals, and enhance the efficiency and effectiveness of communication and cooperation within groups. On the other hand, it can also lead to polarization, segregation, discrimination, and inequality among different groups, and limit the diversity and creativity of ideas and perspectives.Homophily can be quantified in various ways, such as through measures of assortativity, clustering, correlation, and segregation. Assortativity refers to the tendency of individuals to connect with others who are similar to them in some attribute, such as age, gender, or race. Clustering refers to the tendency of social ties to form dense clusters or communities within a network, based on common characteristics or interests. Correlation refers to the degree of association between two attributes in a network, such as the correlation between age and friendship ties. Segregation refers to the degree of separation or concentration of different groups in a network, such as the degree of racial or ethnic segregation in a school or neighborhood.

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Strong and Weak Relationships (Continues) and Homophily

Foci Closure and Membership Closure

Example of Amit and Neeru who discover they share several affiliations and become friends through focal closure. Triadic closure happens when two people who have a common friend become friends. Membership closure occurs when a person brings their friends into a particular group, such as a music club.

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Strong and Weak Relationships (Continued) and Homophily

Quantifying the Effect of Triadic Closure

Triadic closure refers to the phenomenon where two individuals are more likely to become friends if they have a common friend.

A study was conducted to observe the probability of two individuals becoming friends with a varying number of common friends.

It was found that the probability increases as the number of common friends increases.

The study also involved tracking the friendship network over time to determine the probability of two individuals becoming friends given K number of common friends.

The probability was found to be a linear curve, and it was observed that the probability increases as the number of common friends increases.

The probability was denoted as T(K) and was defined as the probability of two people becoming friends when they have K common friends.

The curve was found to be a linear curve, and it was observed that for an appropriate p, the curve could be approximated by the formula (1 – (1 – p)^K).

It was observed that the value of p was very small in the real-world data set.

Overall, the study showed that the probability of two people becoming friends increases as the number of common friends increases, but the probability is still relatively low.