Social Networks
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Lecture – 16
Handling Real-world Network Datasets
Synonymy Network

I told you a sort of a weird example where one can see networks; I am going to tell you another example which is equally weird.

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So, assume I take all words in English, words that are available from thesaurus and I put an edge between two words if they are synonyms so; obviously, a love and let say passion has an edge because they are synonyms. Let us say one can think of obtain such examples of let us say I say hate synonym for hate is bad, so and so forth.
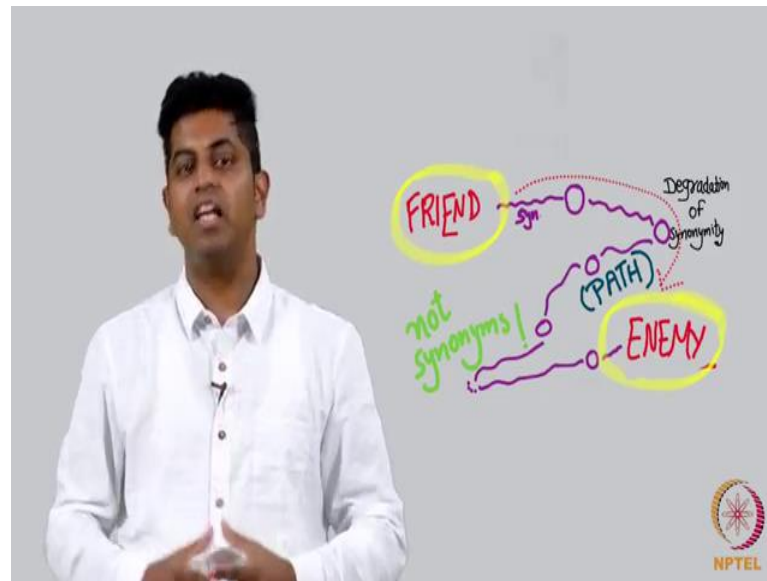
Now, the same old question; once you have a network, we will ask the following question; is it connected? So, it is surprisingly true that this network is connected, at least it as a huge component; large component. What by mean by this? By this I mean you take all words in English thesaurus and you put an edge between two words, if one is a synonym of the other as you know if A is synonym of B then B is synonym of A; it is symmetric you draw the graph I am telling you its connected, so what? Something surprising happens if it is connected; think about it for a minute.

There is this word love there is this word hate they are not synonyms given that the graph is connected there has to be some word which love is synonym to and this words is synonym to some other words, so on and so on and finally, you will be getting the word hate. Graph theoretically speaking there should be a path from love to hate and you move synonymously, how do I mean by this? By this I mean do you see that if a is synonym of B and B is a synonym of C, A should be a synonym of C that is what it means, synonym means what these two mean the same if the word A means the same as B, if the word B means the same as C then the word A must mean the C same as C, but you observe that from love we can go to hate through synonyms which means love is synonyms to hate.

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We can go from friend to let say enemy synonymously which means friend is synonyms to enemy I means the how weird is that; a graph theoretic analysis network theoretic analysis tells you of such weird retain English language not necessarily English language may be in many such many well known languages and what does this denote? It denotes that this synonym network synonym relation is not actually symmetric; if A is synonymous to B and B is synonymous to C, you cannot say A and C are actually synonymous, maybe there is a degradation of the synonyms as you proceed because from love you very beautifully get to hate, from enemy you very nicely get to friends synonymously. I just gave you an example of how a network theoretic analysis of question or an entity give some eyebrow raising results which are mostly generally is unexpected.