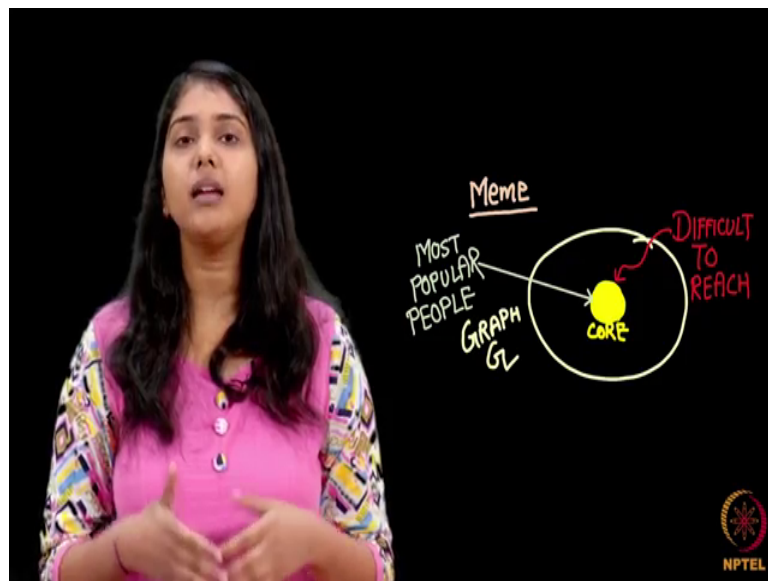


Social Networks
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How to go Viral on Web
Lecture - 166
Pseudo core

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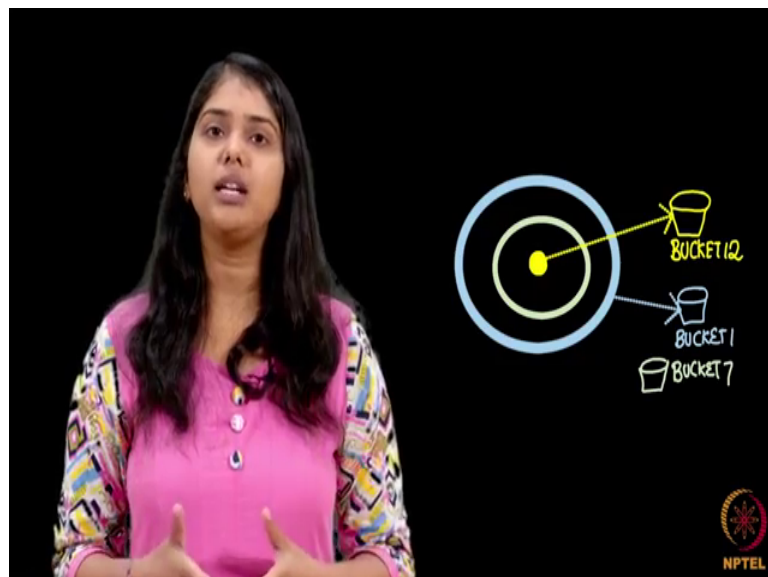
I have this internet mania which I really really want to become popular. I look at my network, I identify the core nodes and I try and convince them to adopt my idea. But, is that so easy? So, generally in this core are the most popular people of a network like the public figures, Bollywood celebrities let us say Amitabh Bachchan and Shahrukh Khan kind of people. Can I go to them and really ask them to share my meme further? Why will they listen to me? We know that it is very very difficult to reach such people.

So, how do we use this strategy? So, one idea is to obviously, pay them a lot of money like this different advertising companies do. So, if you want to let us say your next soap to become popular, you try to give some money to a say of Bollywood heroine and ask her to act in your shoot and so on. But, can we use a smarter approach? I might not have that much amount of money, how do I meet these core nodes when I do not have enough amount of money to give them, I do not know.

So, reaching these core nodes is actually very difficult and even sometimes with your money they might also not be ready to adopt your idea. That is mostly because these people are inside they form the crux of this network they are in the innermost part of this network. So, it is really very very difficult to infect such people, but see what now next we are going to do, we looked at this (Refer Time: 01:46) decomposition algorithm.

So, we have seen that there were multiple buckets. So, we had this bucket number 1, 1 core, bucket number 2, 2 core, bucket number 3, 3 core. What does this bucket actually tell us? These buckets actually tell us the different influence levels in this network.

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So, if you look at this bucket 12; let us say that twelve is the last bucket we formed. If you look at this bucket 12, it has the most influential people of the network the innermost core. If you look at bucket 1, it consists of the least influential people in the network. And if you look at let us say bucket 7, then it is somewhere in middle based on its influence.

So, we can actually look at this network in this way where, based on your buckets your network gets divided into multiple shells, outermost shell corresponds to bucket 1, innermost shell corresponds to bucket 12 and then here are our different buckets. So, we have here this network divided into multiple shells. And then we have seen that it is very difficult to convince these people in the innermost core.

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What next we will try to do if what we will do if we will look at these different, different shells and we will examine the influential power of all shells, what do I mean by that?

So, we have done this the done that experiment right where we choose some c nodes which are having the highest degree and then looked at how many people go to infected at the end or we looked at the nodes having highest closeness. And then looked at how many people got infected at the end. We do the same procedure here. We first of all choose nodes from the innermost shell; perform our cascade and look at how many nodes get infected at the end.

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Then we take this second shell here. So, let us say the innermost shell is shell 12, we took shell 12 look at the how many people go to infected towards the end. Then we take the shell number 11, again take some nodes from here infect the network and then look at how many people got infected and we term this just a term.

So, this final number of nodes which got infected here, we call it as the cascade capacity of a shell, of a shell. Cascade capacity means if you start infecting the network from the shell choosing the seed nodes from this shell, what is the final amount of network that you have infected.

And we do it for all the shells. What do you think is the result, should it be if i start the infection from the outermost shell, shell number 1, very less people gets infected towards the end, cascade capacity is very less. If I start from this second shell cascade capacity is a little bit more, third shell a little bit more and then it keeps increasing.

We expect the result should be something like that but when you do it, so what we did is we took some we can actually take some real world networks we can take some synthetic networks also, but since we are talking about the internet meme propagation in real world social networks, it is better to take our network which are which correspond to the online social networks.

So, we can take; so all these networks as we have seen before in our chapter data sets are now available online. You can get a graph for Facebook, you can get a graph for google plus, you can get a graph for twitter and almost every other online social network. So, you choose some of these social networks and then applying (Refer Time: 05:41) decomposition is very easy here. And then do this experiment. Take the nodes from different, different shells and look at the final cascade capacity.

And when you plot this graph, plot this graph on the x axis is the shell number, on the y axis is the cascade capacity what you observe? You see that it is not linear like what we expected. We will see what is happening here; It starts increasing starts increasing and add some shell it reaches its maximum and then it becomes constant. What does that mean? That means that to infect this network to make your meme go viral, it is not always necessary for you to go to the innermost core and convince these people.

So, if you look at some of these shells outer from this core shell, some of these they have actually the same cascade capacity as the core nodes. So, instead of these core nodes we have found a lot more people here which are actually we can called pseudo core, we call these people as Pseudo core. So, there is a big chunk of the pseudo core people, whom you can actually infect to make your meme go viral.