Social Networks
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Lecture – 37
Strong and Weak Relationships
Visualizing Communities using Gephi

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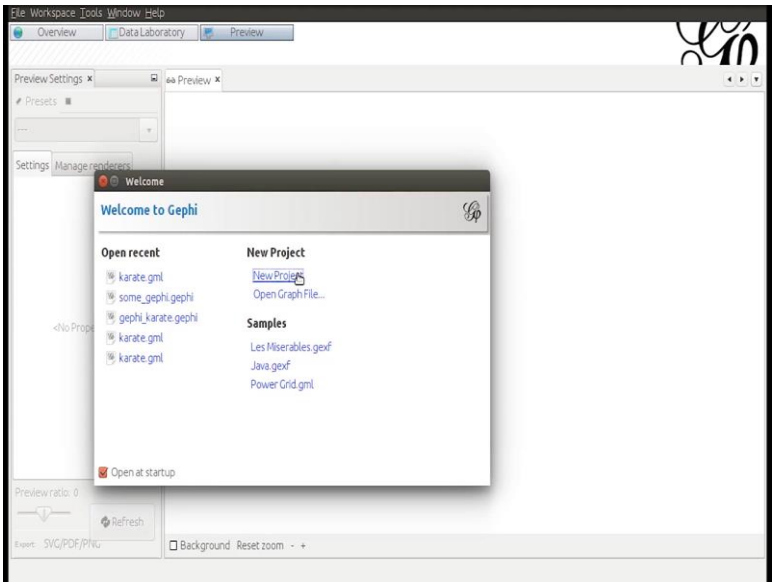

Hey everyone, in this video we are going to see how we can visualize the communities in the Zachary karate network. So, I have this Gephi opened already I am going to open the new project.

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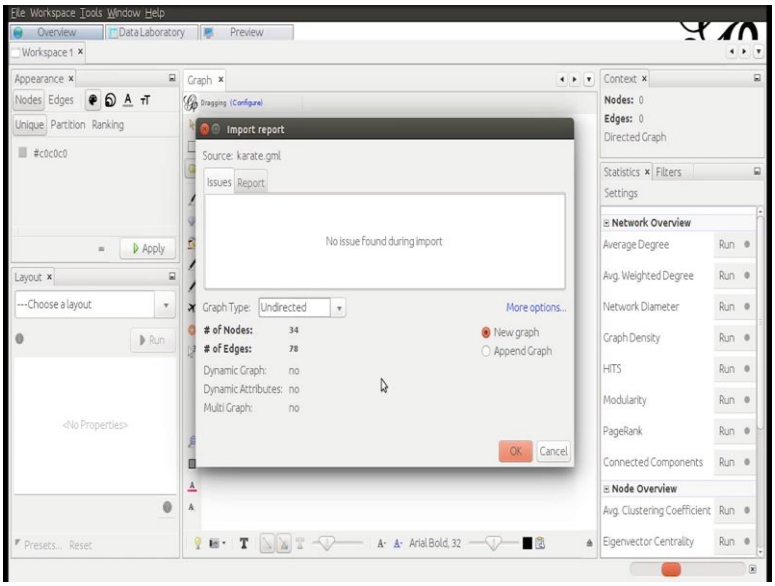

And in the overview, I am going to open the; I am sorry; I am going to open the file which is containing the karate network. So, I already have this karate.gml file, I am going to open that I know that this is undirected. So, I am going to select that this has 34 nodes and 78 edges.

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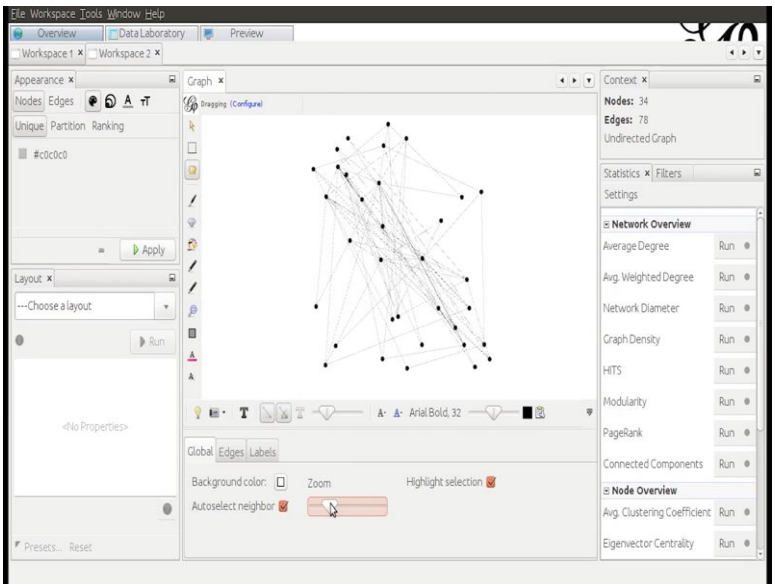

This is the graph that we are getting I think we did in the previous it as well let me zoom in, so this is the karate network let me thick in the edges.

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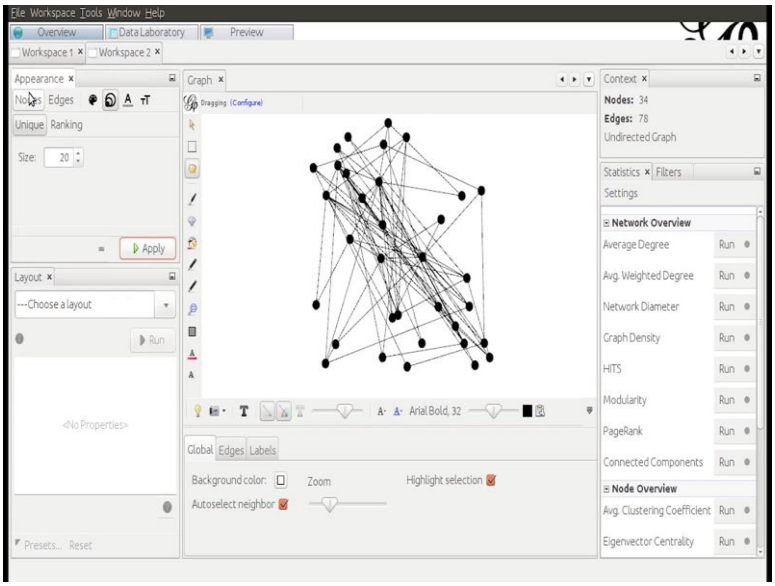

Let me increase the node size maybe. So, I will go to nodes and I will change the size of the nodes let me keep it 20; does not look so nice because they are black in color.

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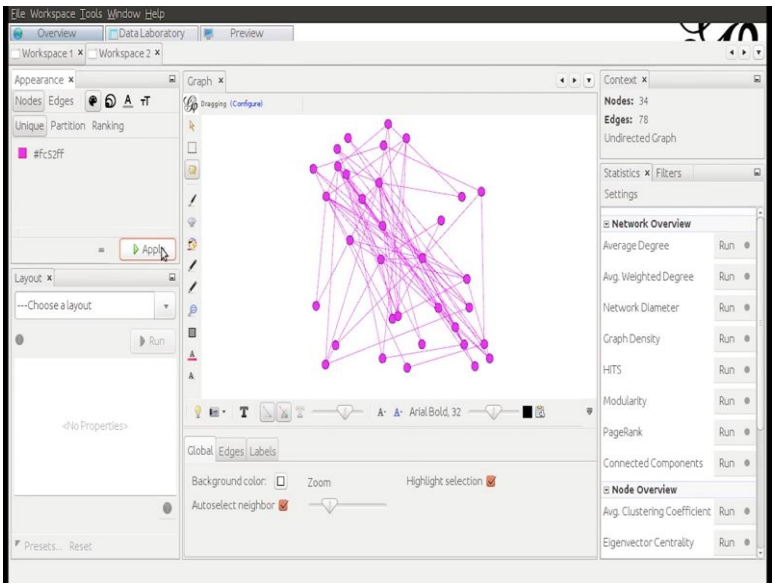

So, let me change the color of the nodes let me have something like this may be. So, it has changed the color the edges as well.

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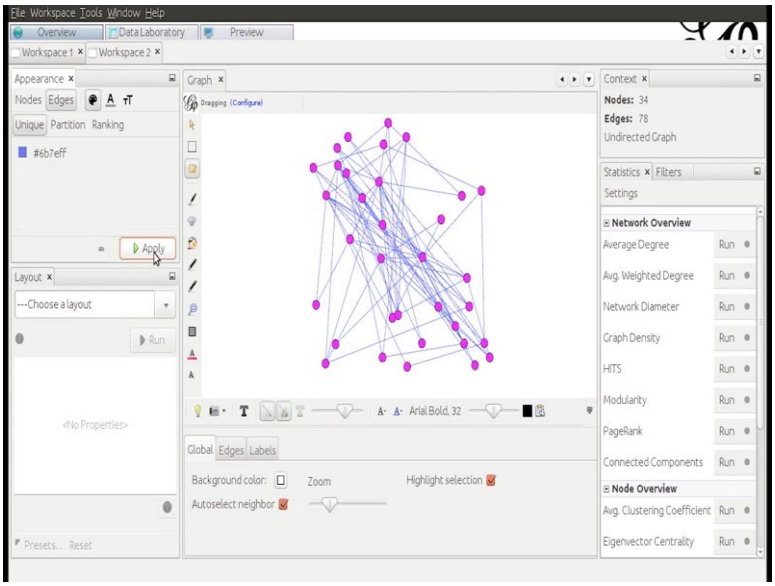

Let me change the color of the edges maybe with this one let see not so good, I will little darker decent.

So, I have to show you how to visualize the communities in this network. So, I am going to go to this right-hand side panel here we have this modularity feature I am going to run this.

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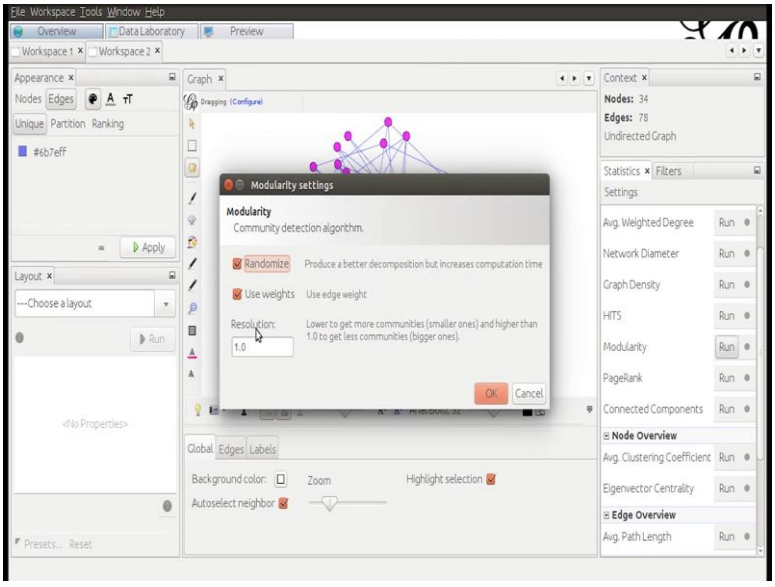

And here we have this resolution value if the value is less than we get more communities is resolution values higher we get less communities- let see how many communities we get with this value of resolution.

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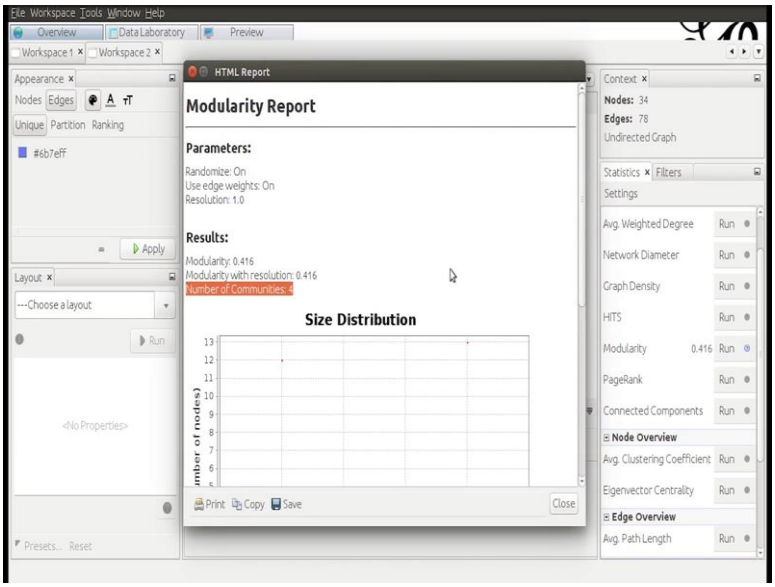

So, this is what we get we get 4 communities here.

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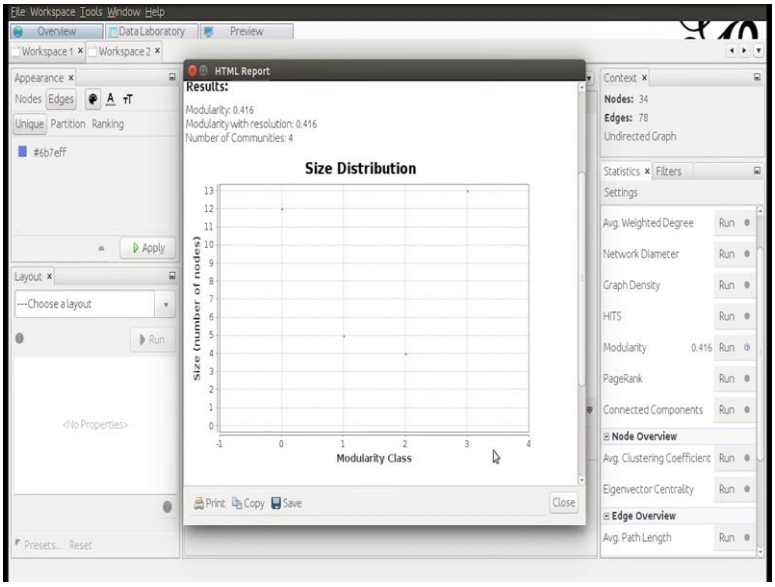

And these are community 0, 1, 2 and 3, these are you see the small red dots, these are the number of nodes, in these communities, I am going to close it, it is well known that

Zachary karate network had 2 communities. So, I am going to change the value of this resolution so that we get to 2 communities.

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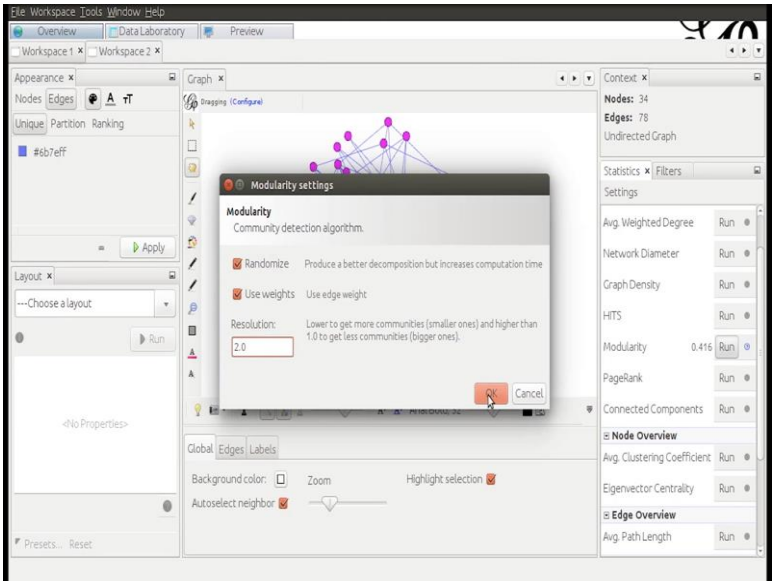

Let us change this where it 2 and let see how many communities to be get.

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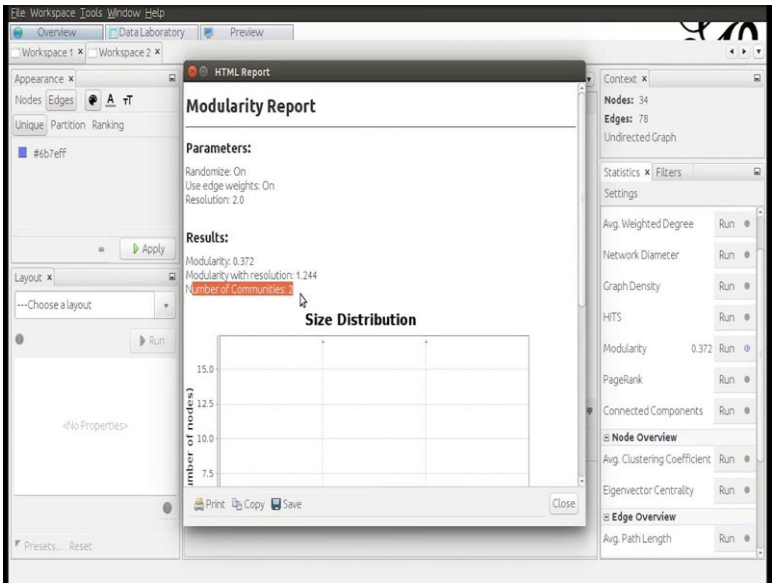

We are getting 2 communities here the 2 most prominent communities that existed the time of fight that happened there by be knowing the history behind this network.

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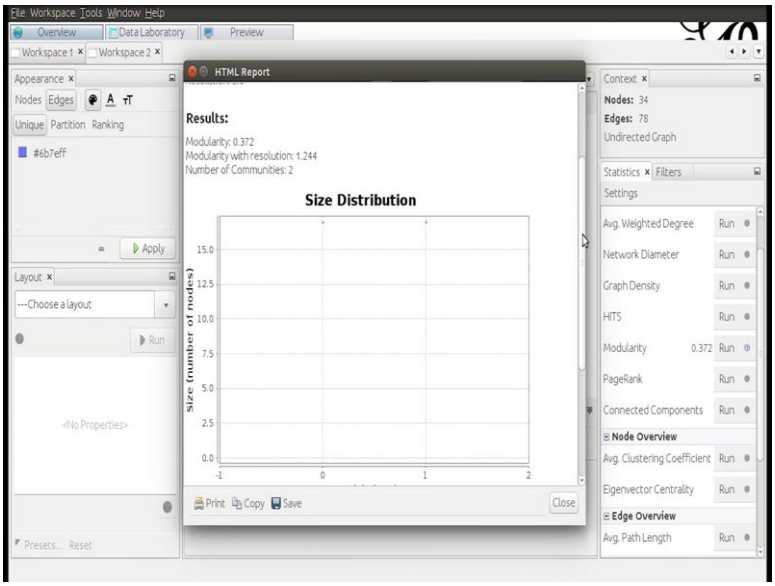

Let us close this and let us try to visualize the communities I am going to nodes and we basically want to partition the nodes into 2 communities. So, communities I have already been found we just want to display them accordingly. So, we want to change the colors color of the nodes based on the partitioning that has happened because of communities.

So, nodes just selected colors are selected partition we will click and here we have this modularity class.

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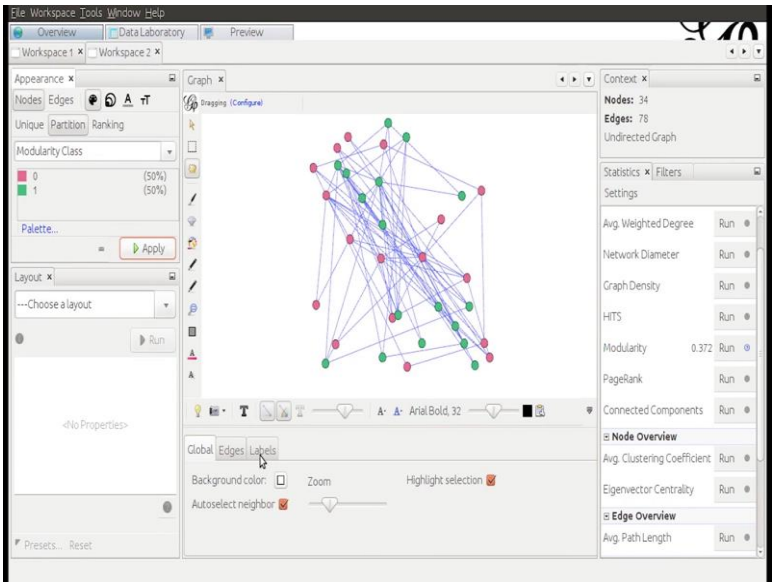

You see there are 2 communities. So, we are getting 2 different colors here when I apply. So, you see the nodes have changed color based on the communities that they belong to.

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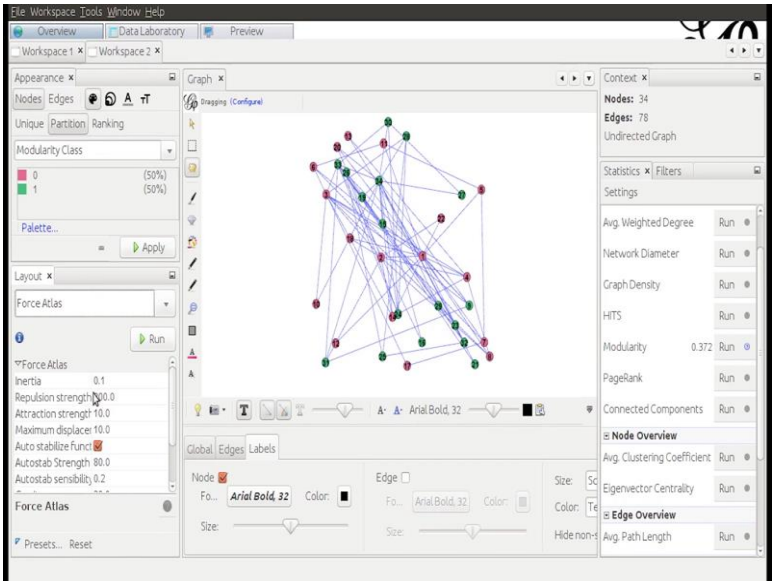

So, this is nice; we can see the nodes which belong to different communities and in case you want to display the labels so that you get to know which no which node belongs to which community you can do that. So, I am going to click this. So, you see the labels of the nodes are also visible.

Let me show you some layouts that might be useful maybe in this situation let me show you this force atlas layout. So, what this layout does is it forces the nodes in the given community to be displayed together.

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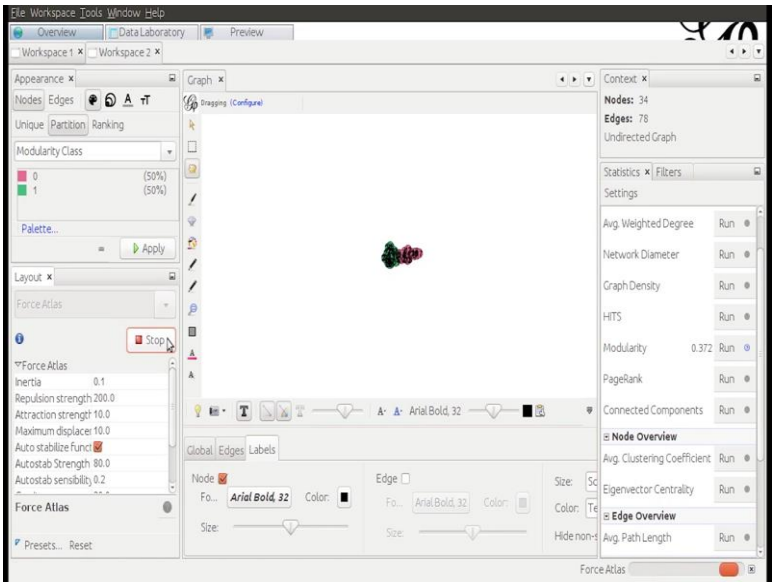

So, let us run this, it is not looking so nice and going to stop it. So, I am going to increase this value of repulsion strength. So, as of now the nodes I have gotten clustered together based on the communities you see all the green nodes are on one side and all the pink nodes are on the other side, but it is difficult to see them because the repulsion is less. So, let me increase the value of repulsion may be to this value you can just do it and try.

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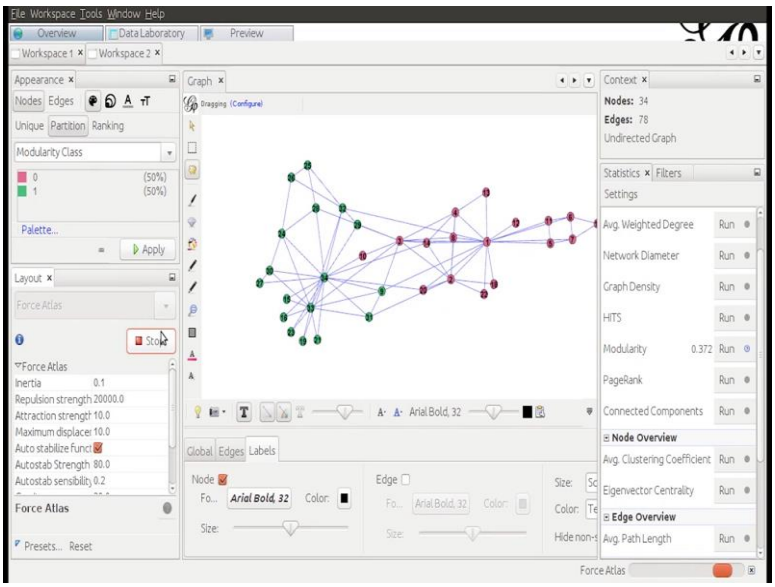

So, this is a little better. So, I am going to stop it. So, green nodes are in the left hand side and pink nodes are in the right hand side. So, this is a little better visualization let

me increase the size of nodes. So, that the labels are visible better. So, I am going to nodes unique and color partitioning we have done size basically we have to change size. So, let me make it 30.

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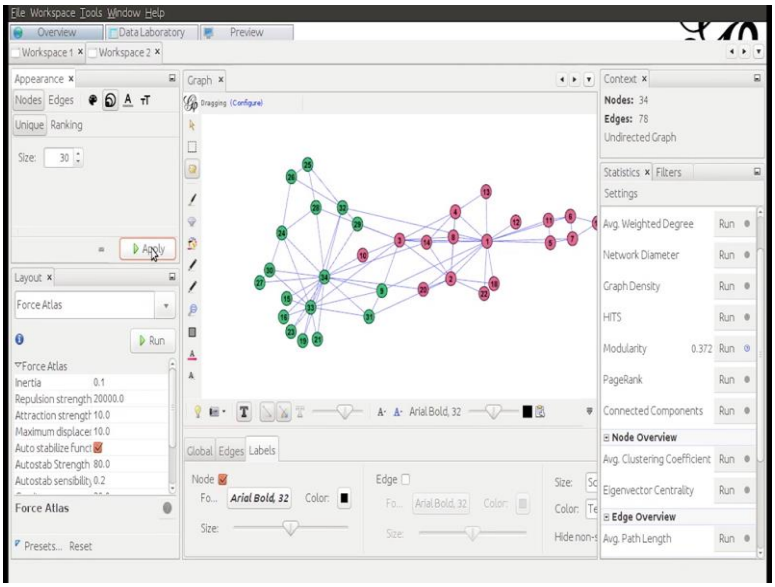

Little better; so this is one thing another thing that we can do here is that we can change the size of the nodes based on degree. So, I mean nodes I will change the size basically I am going to run the nodes based on decrease. So, I am going to click on ranking and the attribute that I will choose will be degree.

So, I think this is good enough hundred go should be the maximum size.

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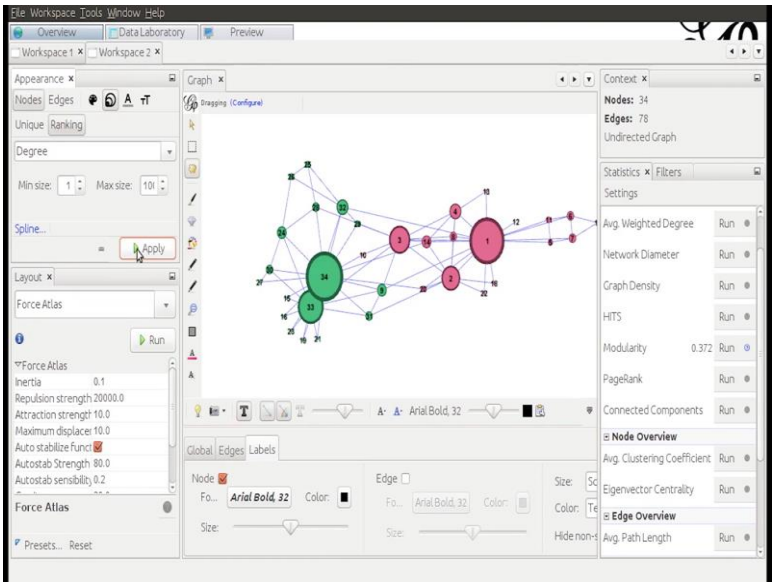

So this is what I see. So, you can quickly see which are the nodes that are having the high degree and you can; obviously, see the community is that they belong to let me also you should one more layout here which is force atlas 2 there is one particular nice feature that I will like about it and let me show you that let me click prevent overlap because I see some of the nodes overlapping. So, I do not want that to happen I think this we can go ahead.

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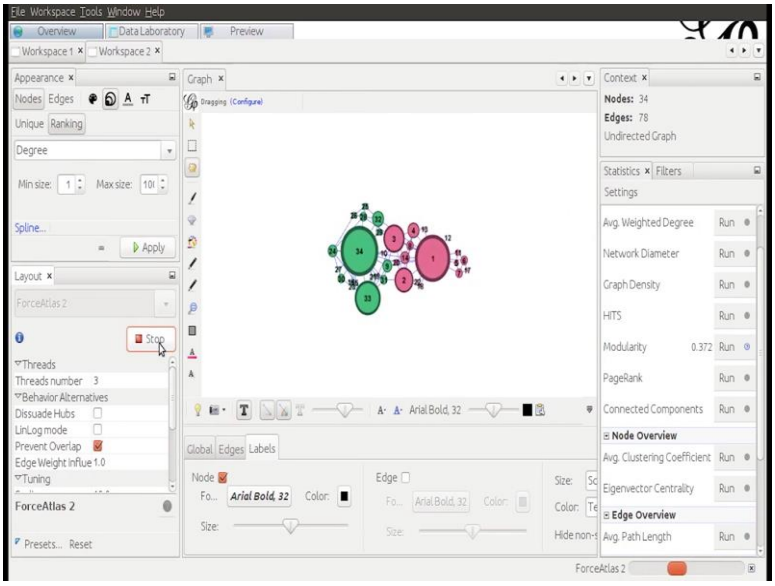

So, you see what it is doing it is sort of moving the graph.

So, whenever you like it you get this stop maybe I like the green nodes to be in this selection I will stop it.

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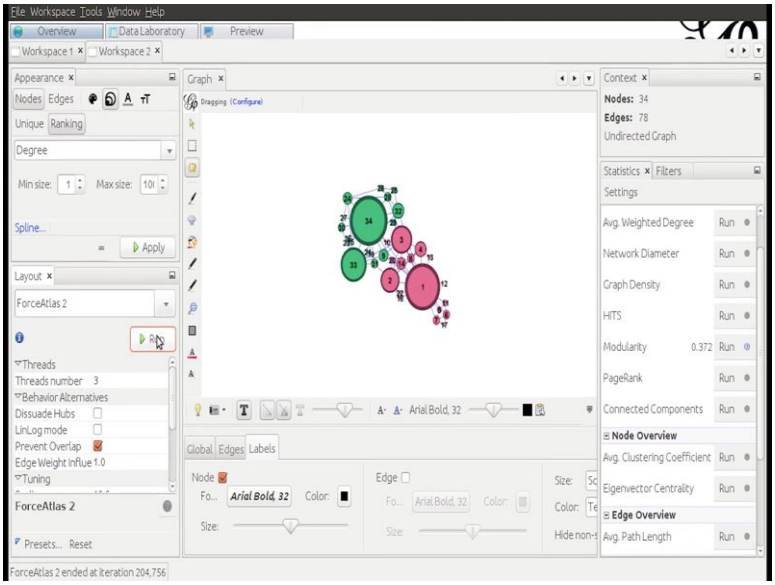

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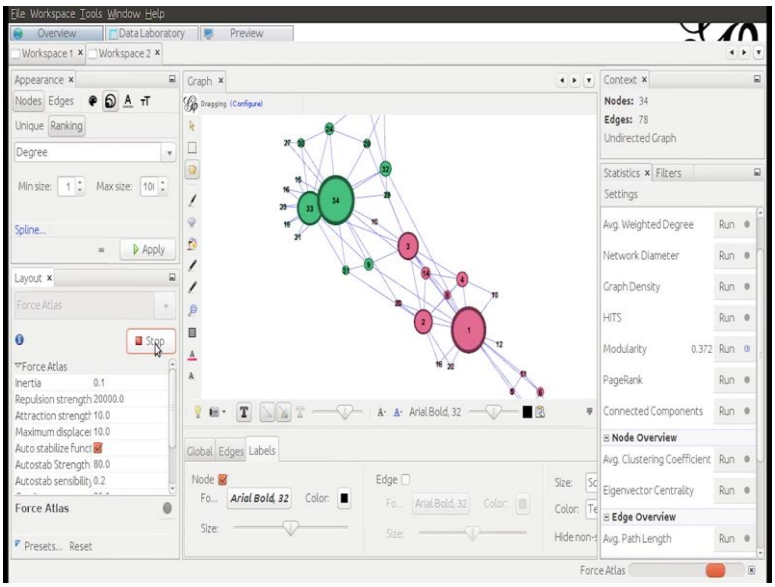

So, that is one thing and since they; the repulsion has reduced. So, I can go back to this force atlas and then run it and then again, I get the nodes you know for a part from each other so that I can nicely see them.

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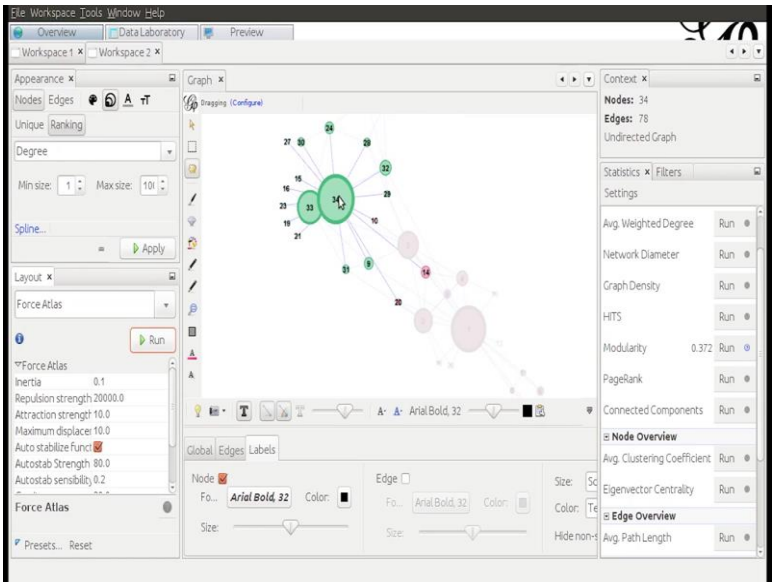

So when you see, they kind of high lighting that is happening when you when you how are your mouse on one node all the nodes in that community are visible and so on.

Let me reduce this size. So, that I can this is the labeling let me go back here let me.

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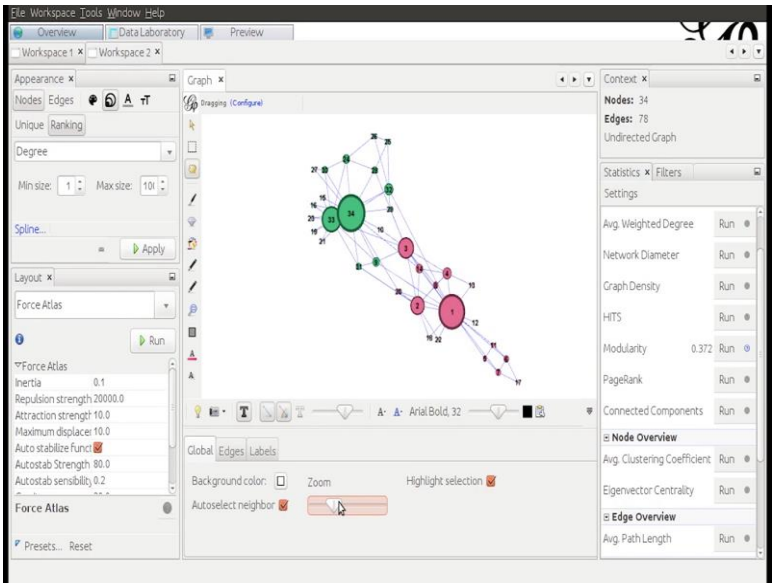

So, this is the network that you can see.

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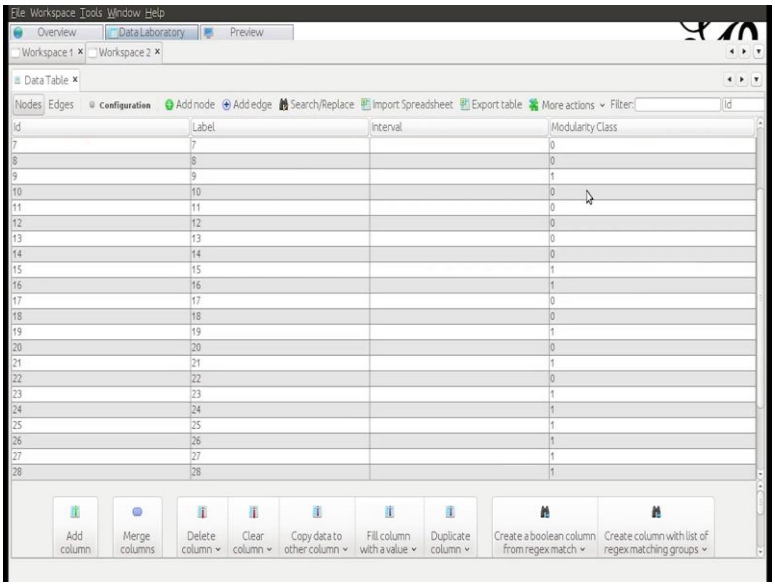

And you can also go to data laboratory. So, here you see modularity class for every node is given you can just export this table. So, that you can use it to the way you want in any other tool as well. So, there are 2 modality classes; class is 0 and 1 because there are 2 communities here and you can also go to preview and let me refresh; refresh you are that was about how we can visualize communities in Gephi.

So, that was a brief introduction to a few a feature of Gephi with respect to visualizing the communities in the graph.