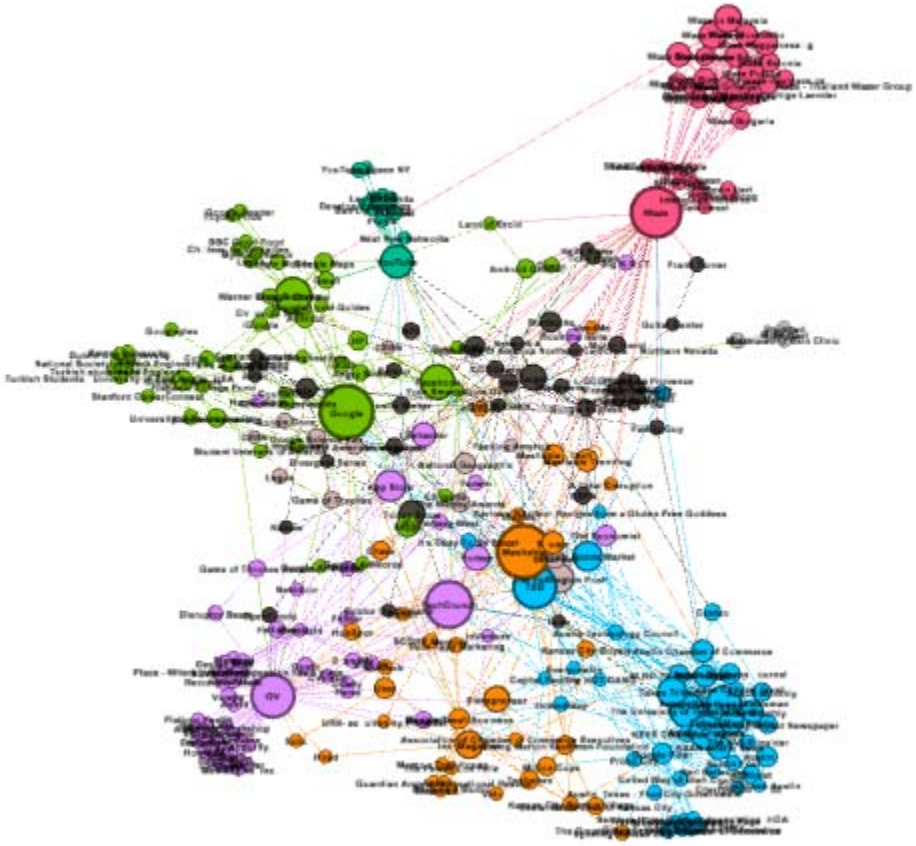
MIS 304: Using and Managing Information Systems

Lab Session 4: Social Network Analysis – Google's Facebook Connections

The goal of this lab is to help you build the Facebook social network for Google by using Gephi. A social network is a social structure made of nodes that are generally individuals or organizations. A social network represents relationships and flows between people, groups, and organizations.



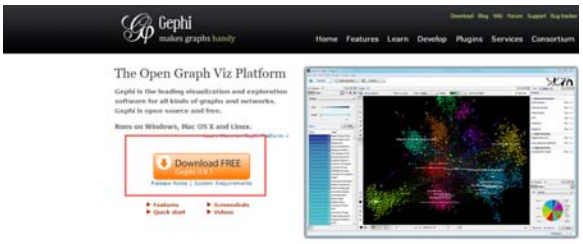
We will first install Java 8 and Gephi - the leading visualization software. Then build the social network based on Google's Facebook connections.

1. Install Java 8

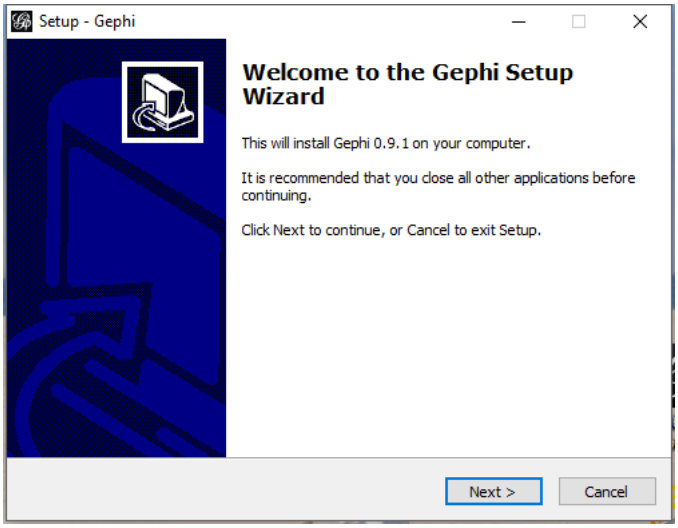
Please read the instructions here https://www.java.com/en/download/help/download_options.xml

Downloading and installing Java is easy and free. There are a couple ways by which you can get Java for Windows:
Online download: https://www.java.com/en/download/help/windows_manual_download.xml
Offline download: https://www.java.com/en/download/help/windows_offline_download.xml

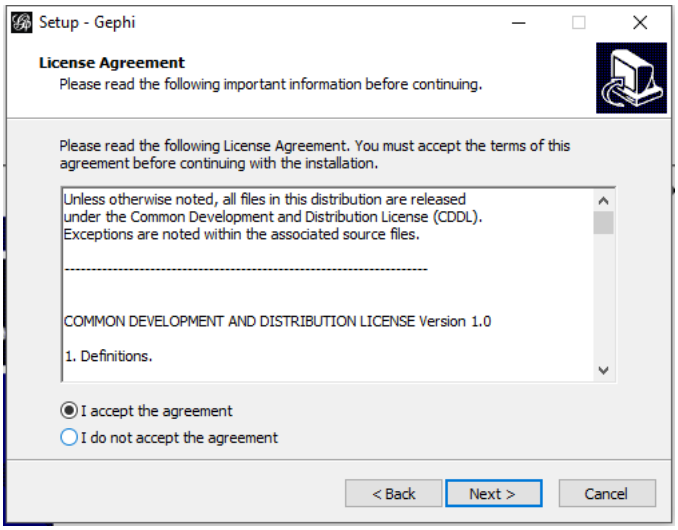
2. Install Gephi
   (1) Download the latest version: https://gephi.org/



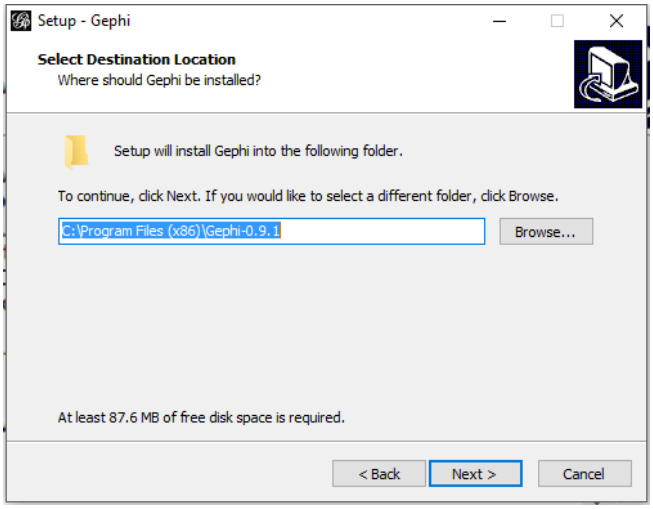
(2) Double-click on the file that was downloaded above. You may have a question asking you if you really want to run the file. Click OK. Then click "Next".



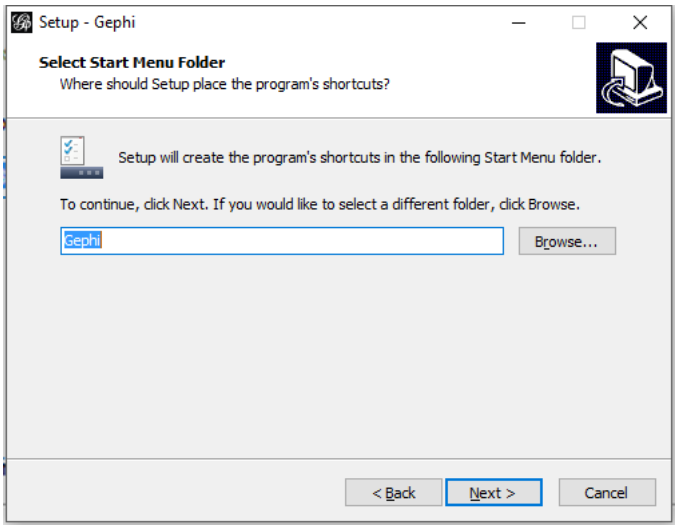
(3) Click "I accept the agreement" and then "Next".



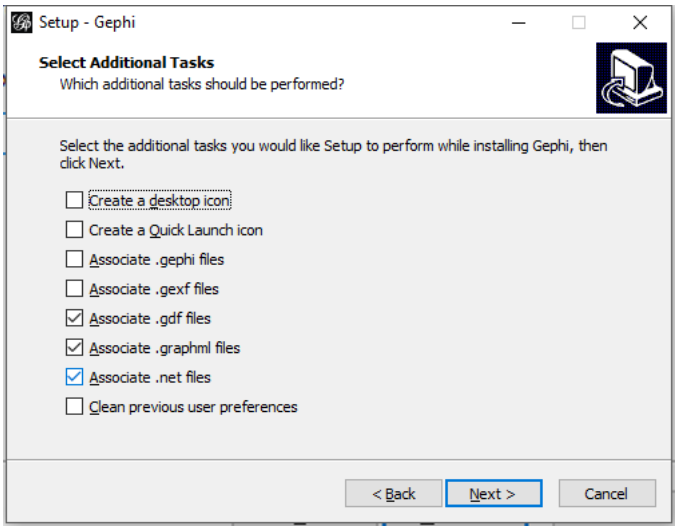
(4) Change where you install Gephi if you want. Click "Next" to continue.



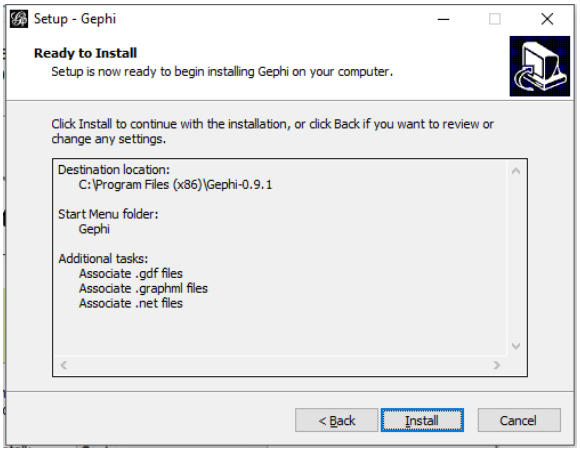
(5) Click “Next” again.



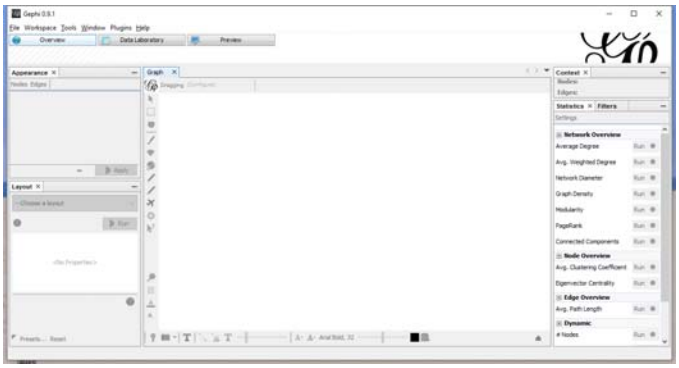
(6) The default setting is sufficient. Click “Next”.



(7) Click “Install”.

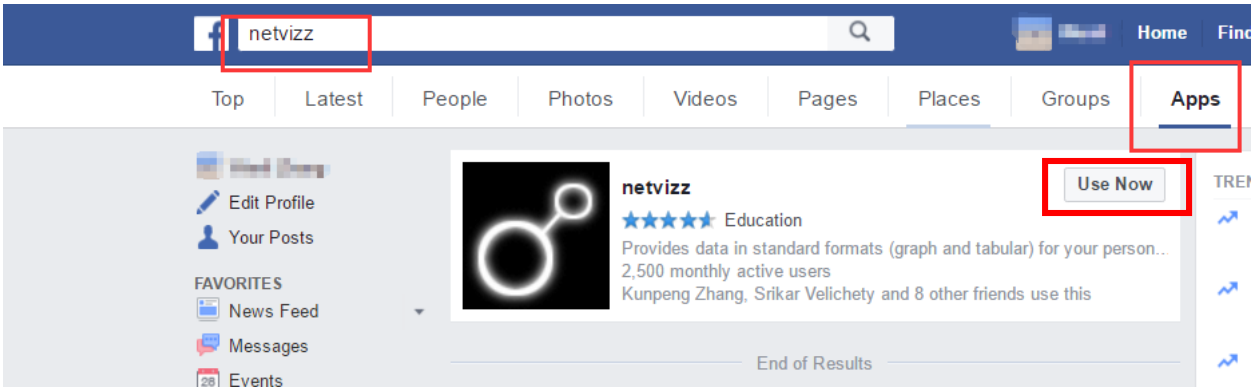


(8) Test if you can open Gephi..

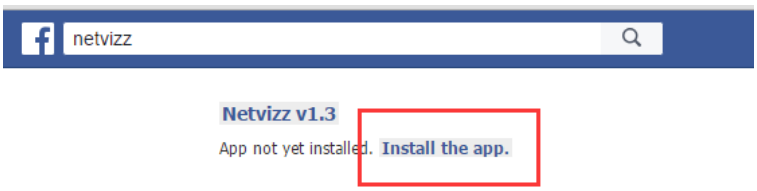


3. Download Google’s Facebook network data

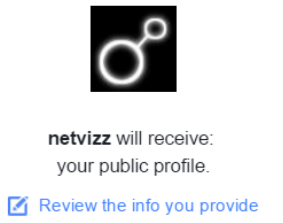
(1) Log into your Facebook account. Type in “Netvizz” in the search box. Click “Use Now”.

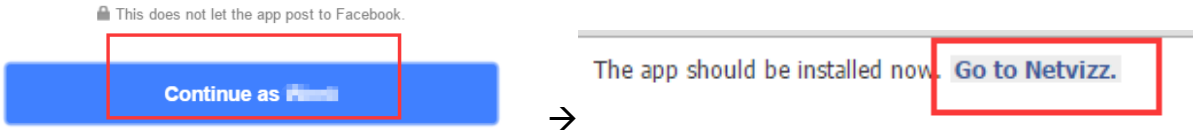


(2) Click “Install the app”.

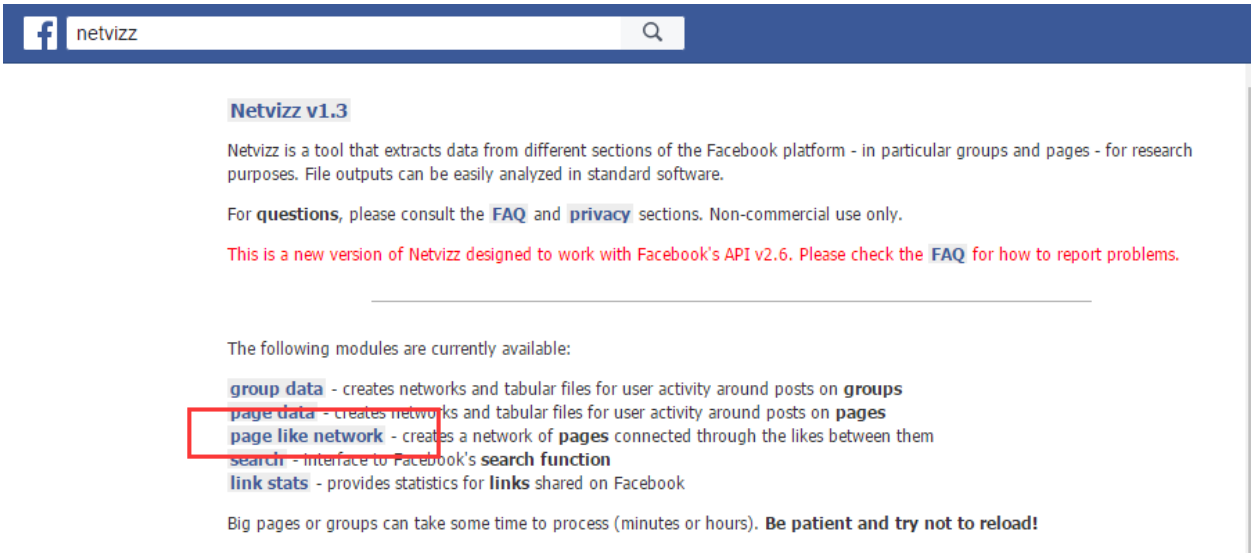


(3) Click "Continue as *yourFacebookUserName*" and then "Go to Netvizz."

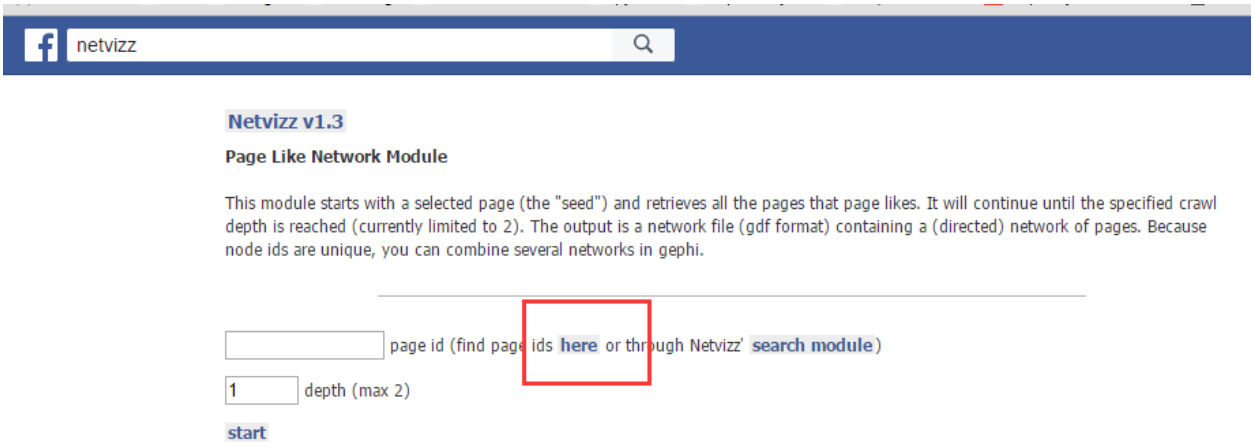




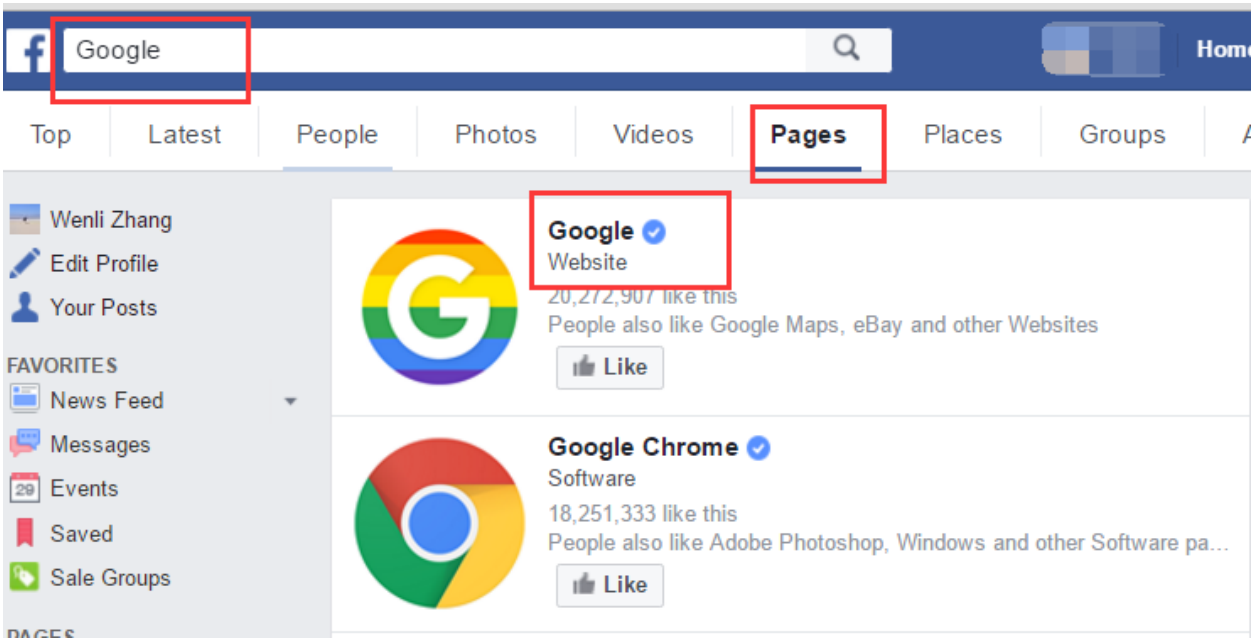
(4) Click "page like network".



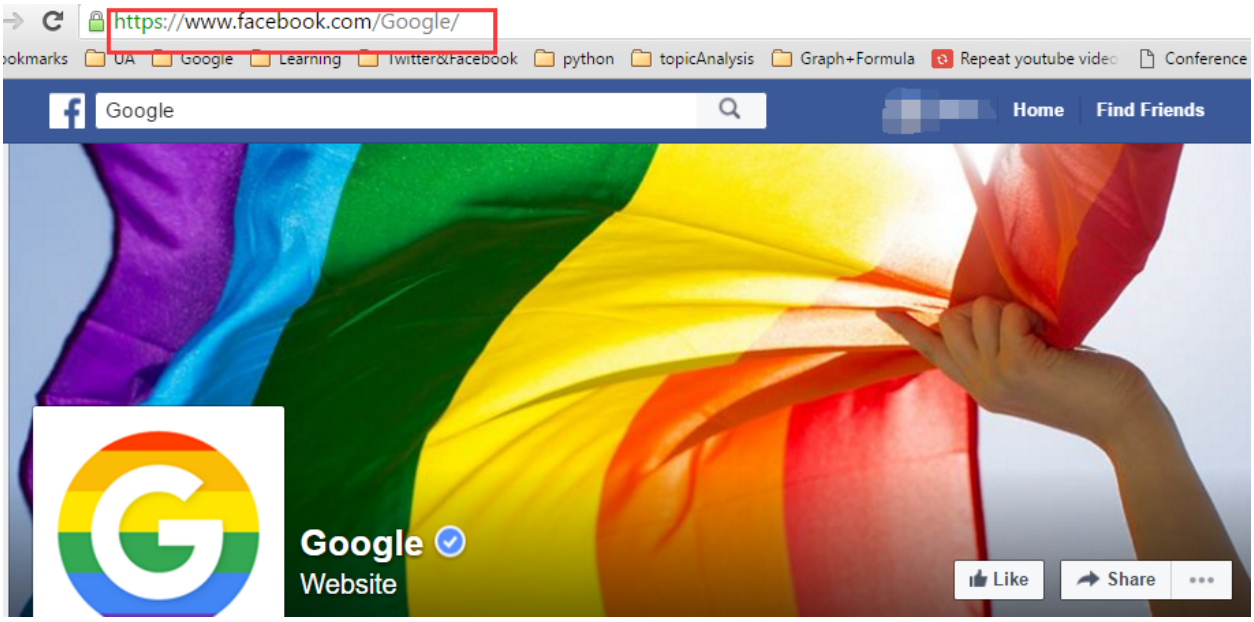
(5) Find Google's Facebook page id by click "here". You will open Look-up-ID.com.



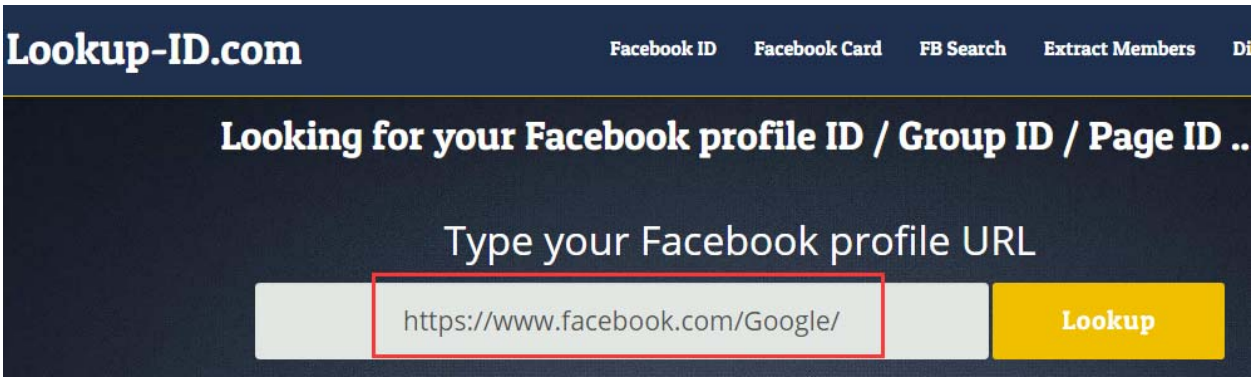
(6) Open **another** Facebook page. Type in "Google" in the search box. Go to Google's Facebook page.



Copy Google's Facebook URL.

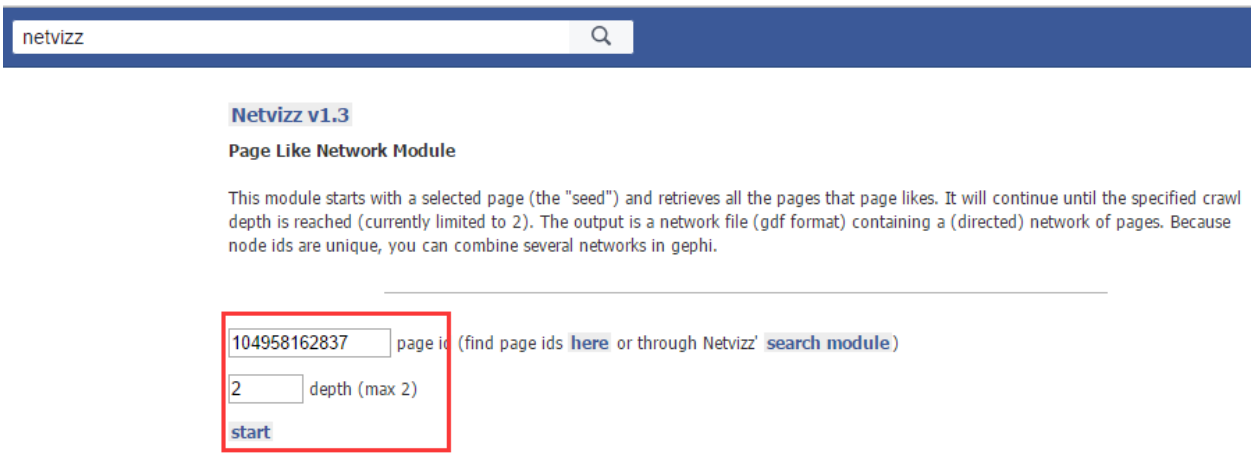


(7) Paste the URL into Look-up-ID.com. Click “Lookup”.

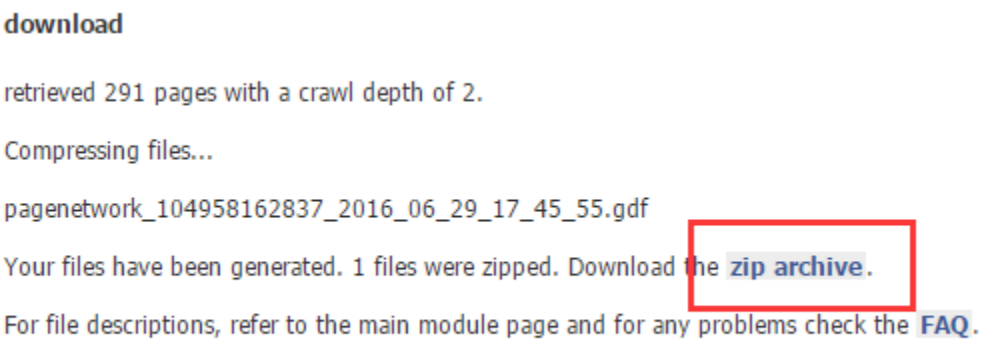


You should get Google’s Facebook page ID now.

(8) Copy Google’s Facebook page ID and go back to the netvizz Facebook page, paste the ID here. Change the “depth” to 2. Then click “start”. Wait about 5 minutes.

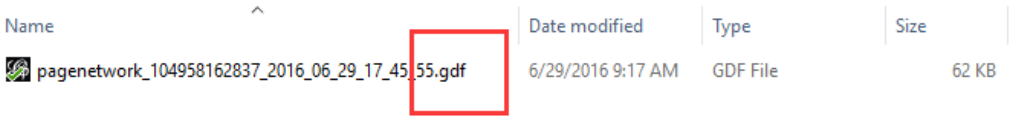


Download the "zip archive".

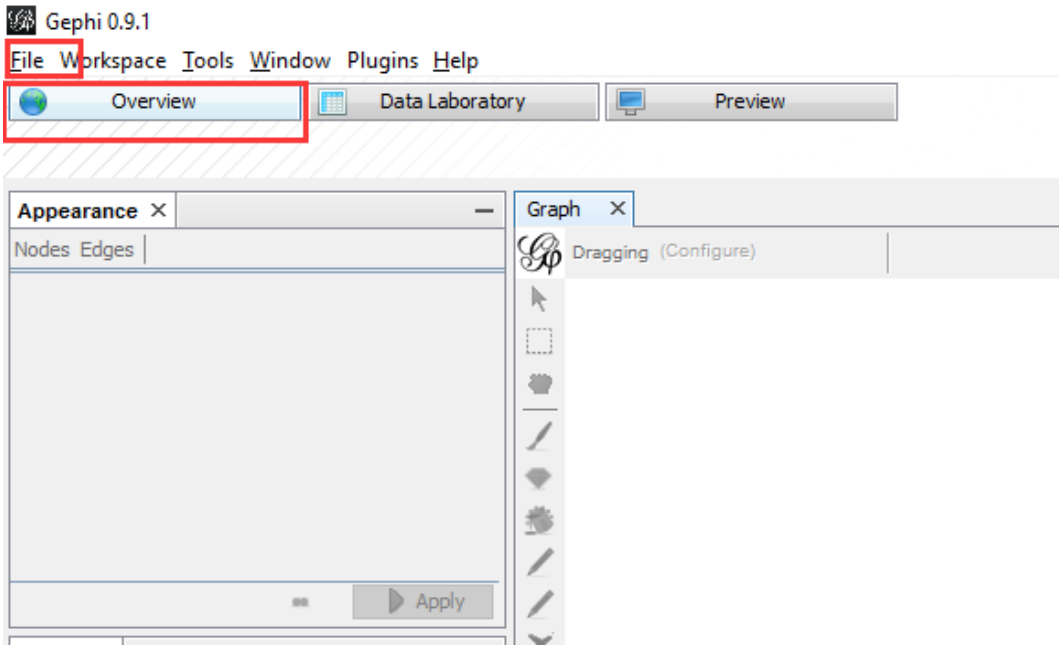


(9) Unzip this file, you should get the GDF file for Google.

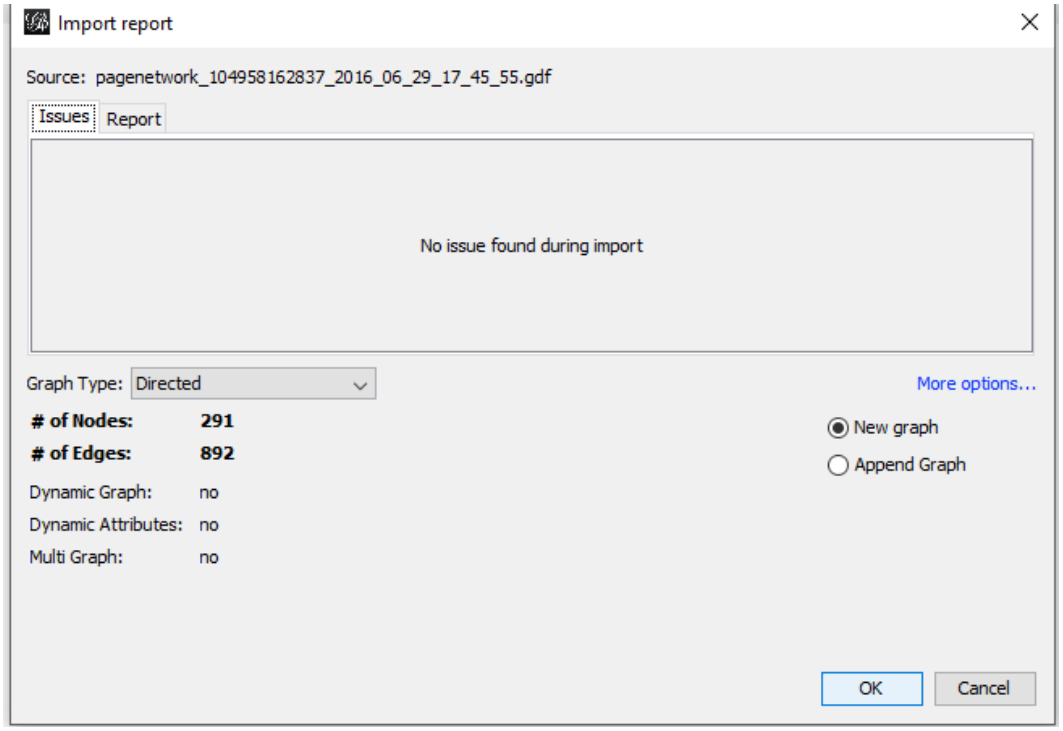
What is GDF file? Read: https://en.wikipedia.org/wiki/Geographic_Data_Files



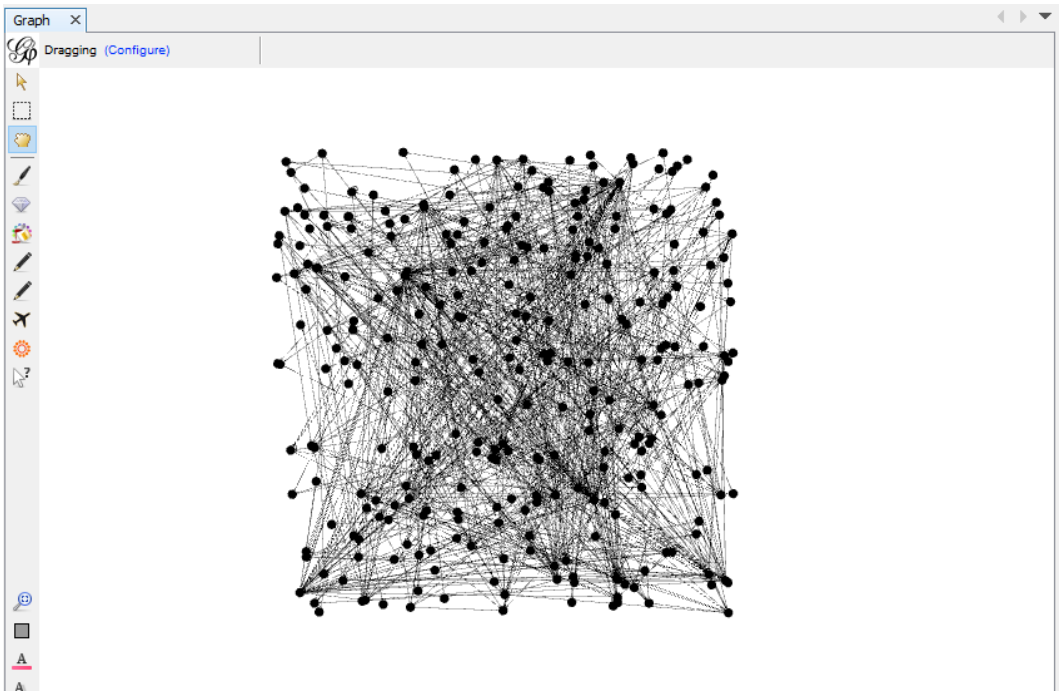
4. Create the Facebook social network for Google.
   (1) Open Gephi. Make sure you are in the "Overview" tab. Go to the menu "File" and click "Open". Open your gdf file.



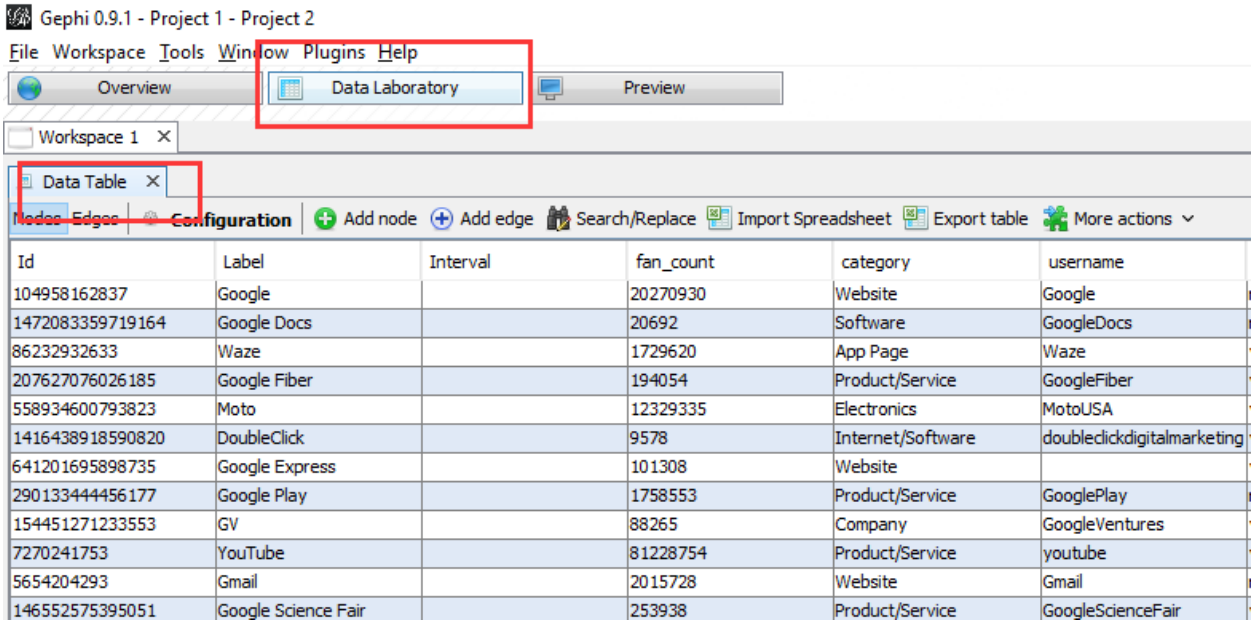
(2) You should see the "Import report" like below. How many nodes and how many edges are in the network? Click "OK".



(3) You should see a compact cloud of nodes. More or less dense depends on the size of the network (how many nodes) and its connections (how many edges). Each node corresponds to one of the Facebook page and the links represent "LIKED BY THIS PAGE".

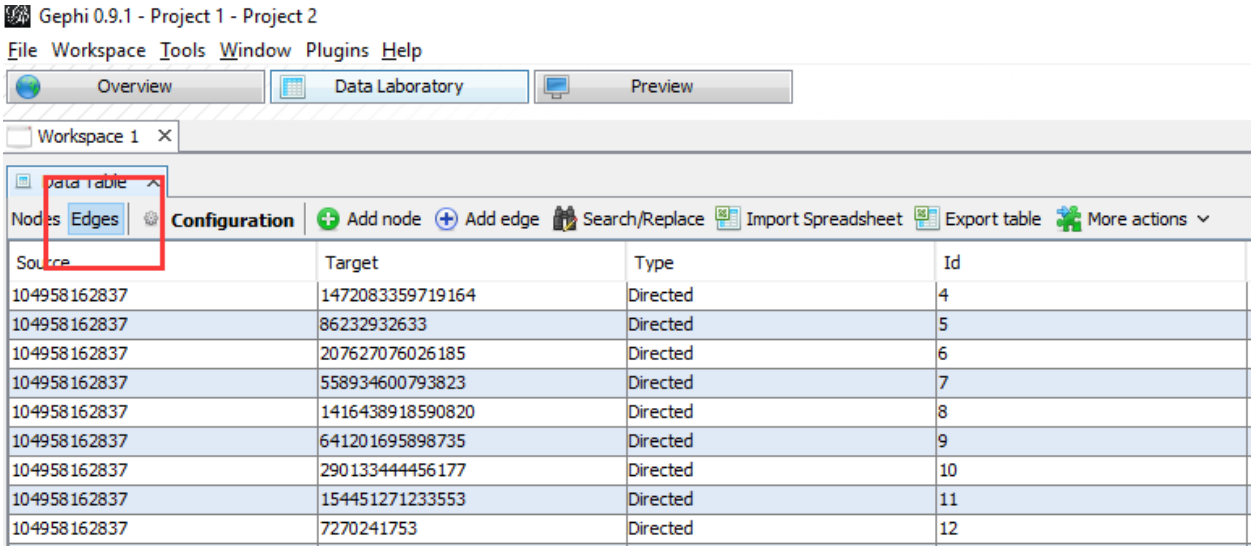


(4) If you click on the "Data Laboratory" tab, you'll see a table with all of your contacts. Click on "Edge" on the top left-hand side to see the connections between them.



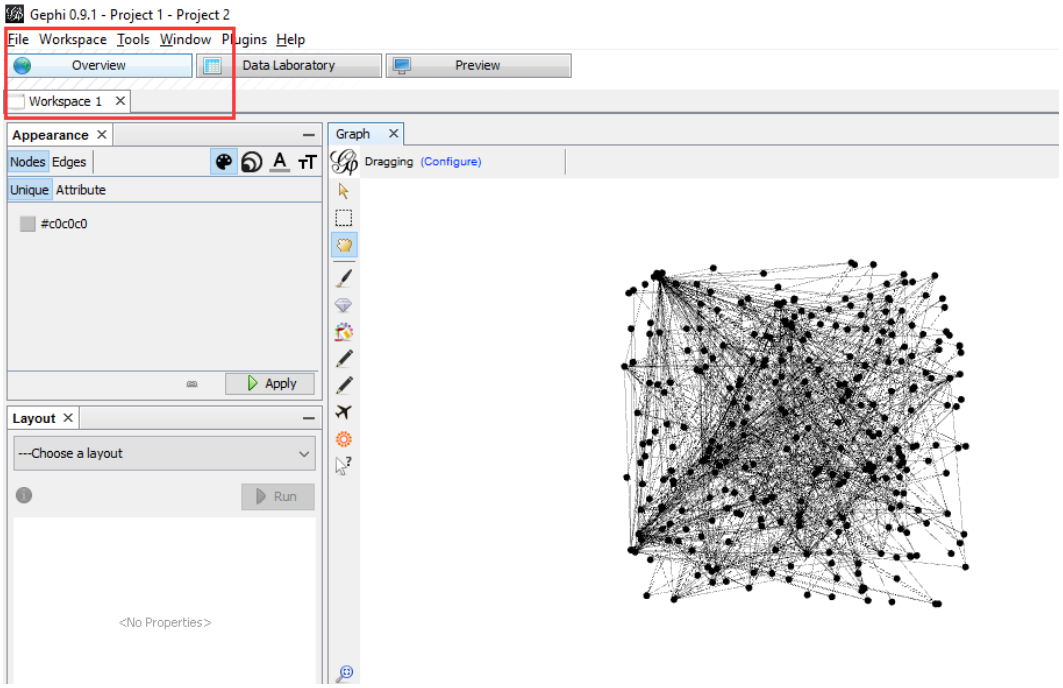
Id	Label	Interval	fan_count	category	username
104958162837	Google		20270930	Website	Google
1472083359719164	Google Docs		20692	Software	GoogleDocs
86232932633	Waze		1729620	App Page	Waze
207627076026185	Google Fiber		194054	Product/Service	GoogleFiber
558934600793823	Moto		12329335	Electronics	MotoUSA
1416438918590820	DoubleClick		9578	Internet/Software	doubleclickdigitalmarketing
641201695898735	Google Express		101308	Website	
290133444456177	Google Play		1758553	Product/Service	GooglePlay
154451271233553	GV		88265	Company	GoogleVentures
7270241753	YouTube		81228754	Product/Service	youtube
5654204293	Gmail		2015728	Website	Gmail
146552575395051	Google Science Fair		253938	Product/Service	GoogleScienceFair

Check the "Edges" table.

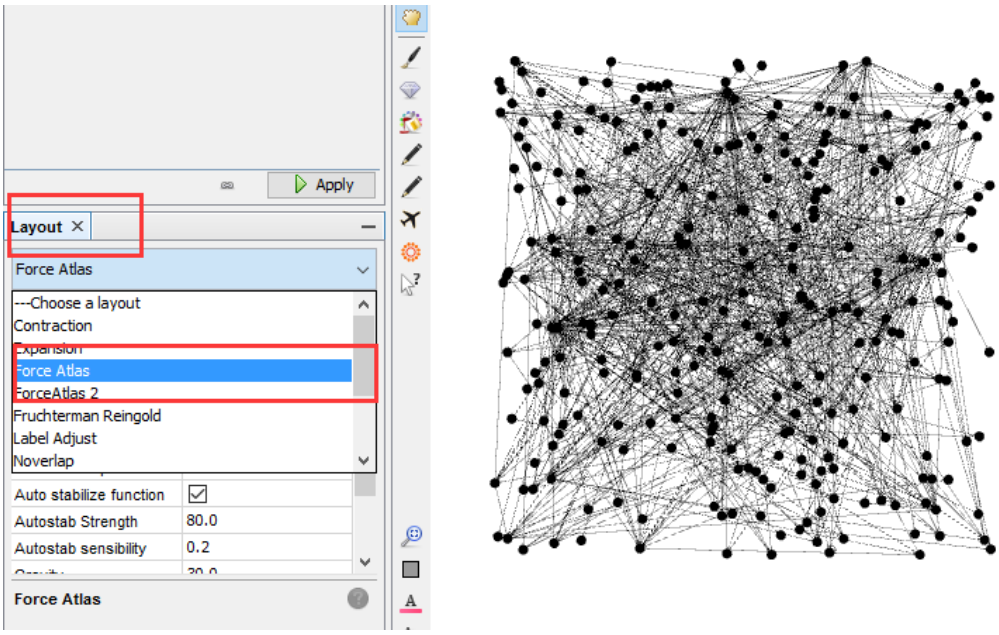


Source	Target	Type	Id
104958162837	1472083359719164	Directed	4
104958162837	86232932633	Directed	5
104958162837	207627076026185	Directed	6
104958162837	558934600793823	Directed	7
104958162837	1416438918590820	Directed	8
104958162837	641201695898735	Directed	9
104958162837	290133444456177	Directed	10
104958162837	154451271233553	Directed	11
104958162837	7270241753	Directed	12

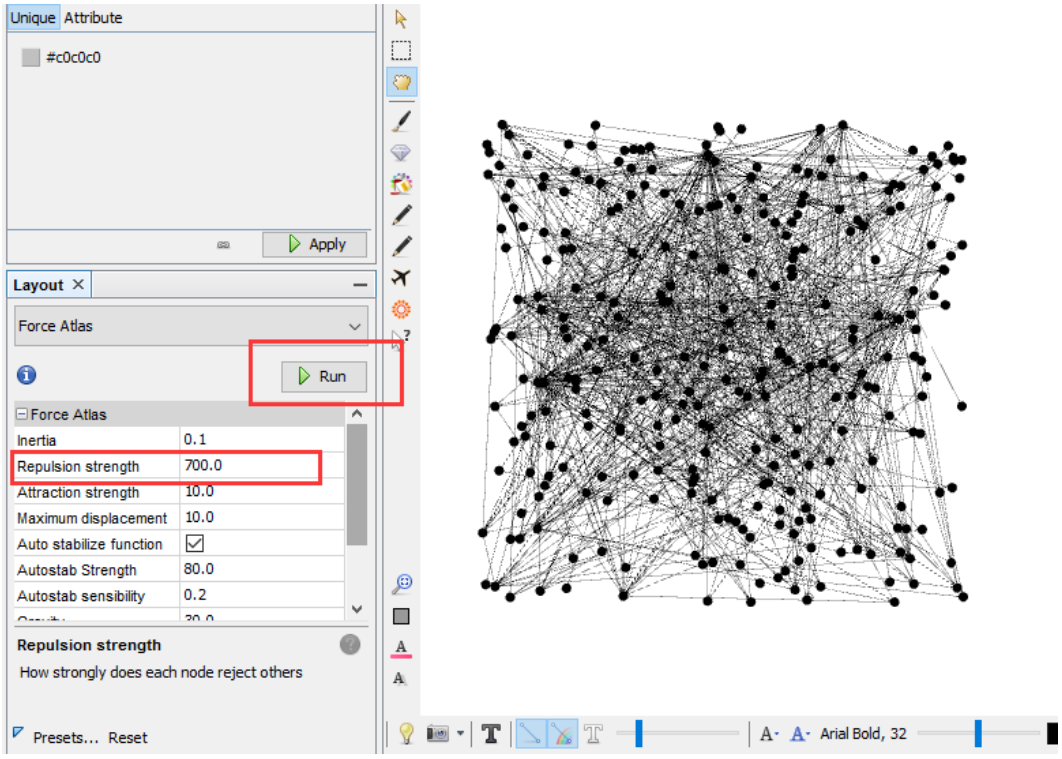
(5) Let's get back to the network. Click on "Overview" to return to the graph view.



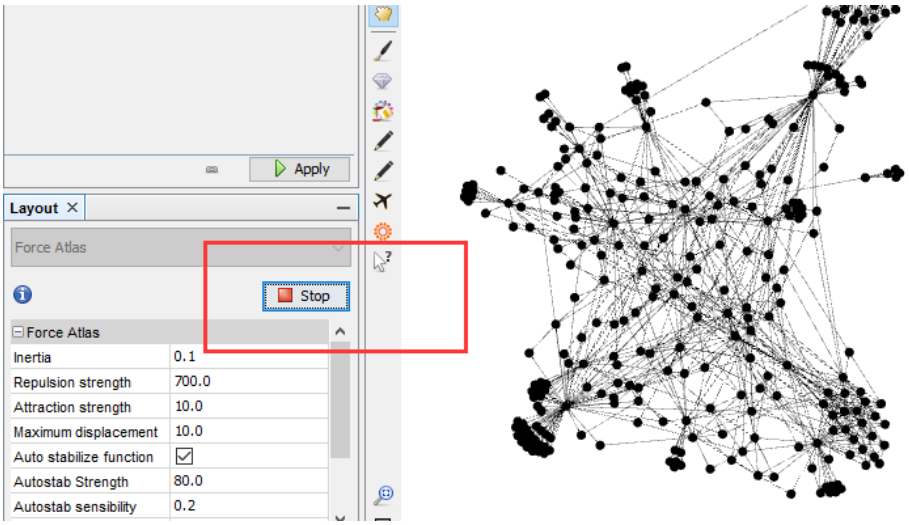
(6) Now re-arrange the nodes so the network is more readable. You'll see a "Layout" window. Select "Force Atlas" - it is one of the most readable and easy-to-use algorithm in Gephi.



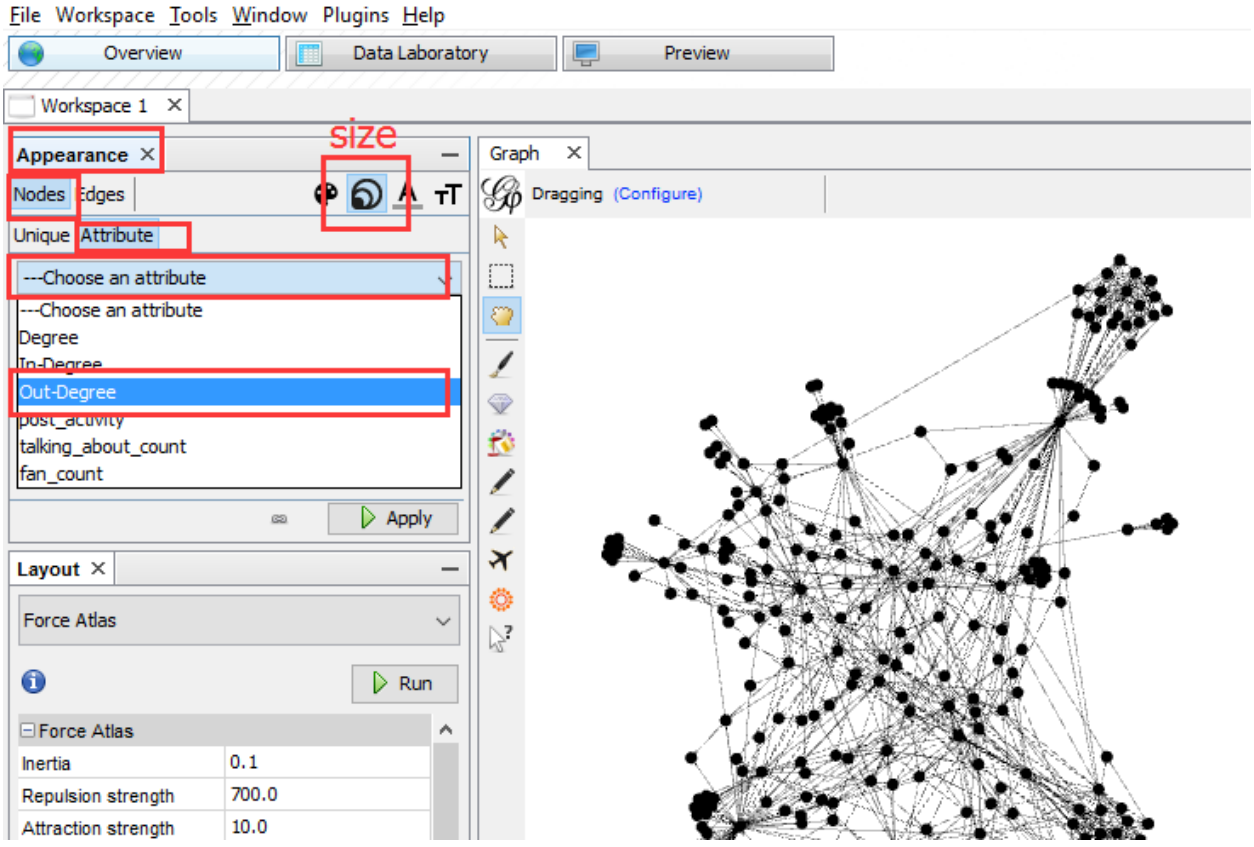
(7) A set of options should appear. They help defining the shape of your network. For example "Repulsion strength" is indicating how strongly each node rejects others. Set "Repulsion strength" to 700. Then click "Run".



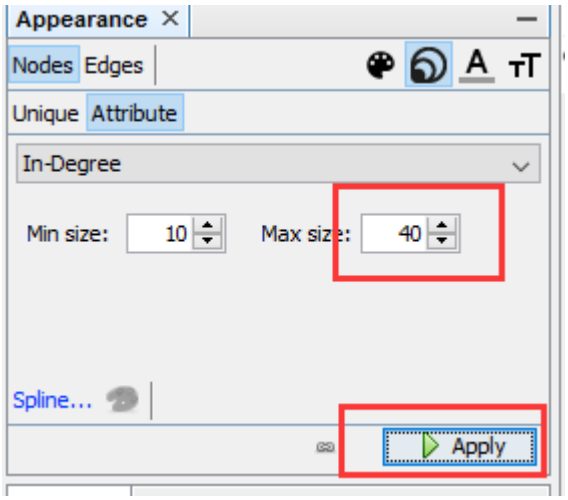
(8) You will now see the nodes' positions evolve. Once your network has reached a shape that satisfies you, just click "Stop".



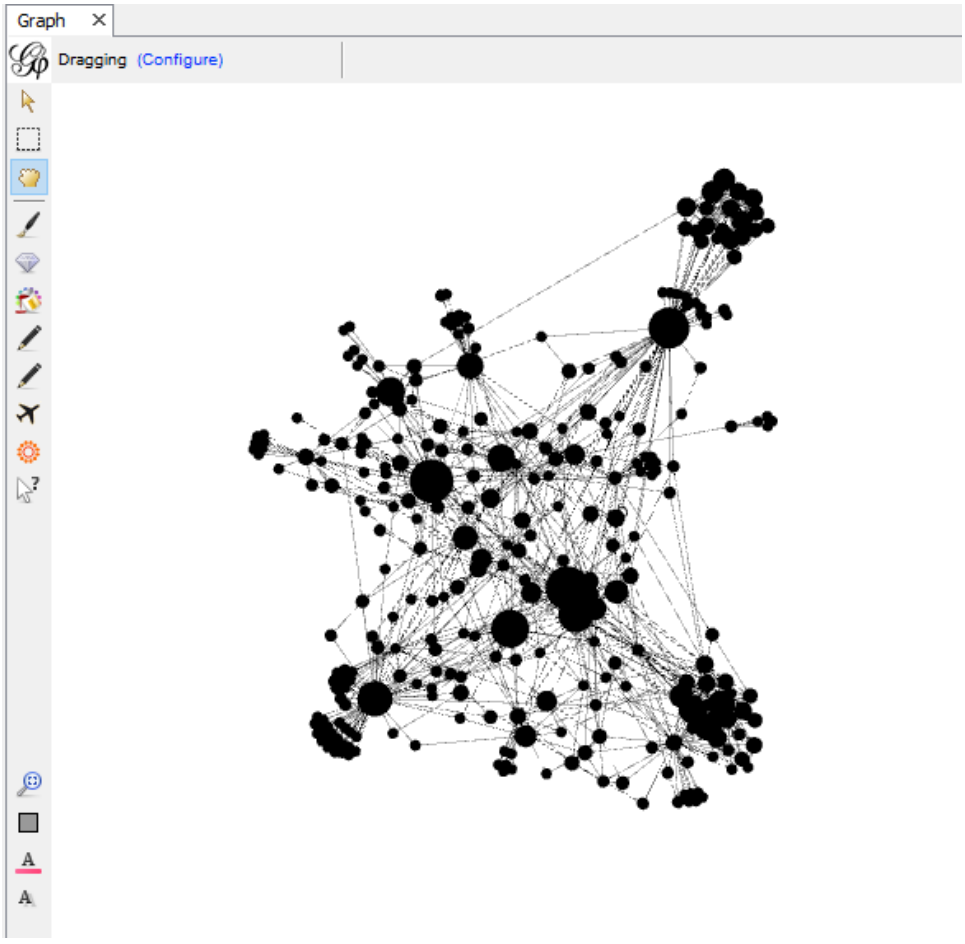
(9) Now, even if the positions are satisfying, the network still doesn't tell us much. Who are those nodes corresponding to? How are they related to each other? Let's add some color to this network. Look on the left-side, you will see an "Appearance" window. This window offers you options for both the Nodes and the Edges, enabling you set the color, the size and the labels display. Click Nodes → size → Attributes →-- Choose an attribute→Out-Degree



Set "Max size" as 40. Click "Apply".

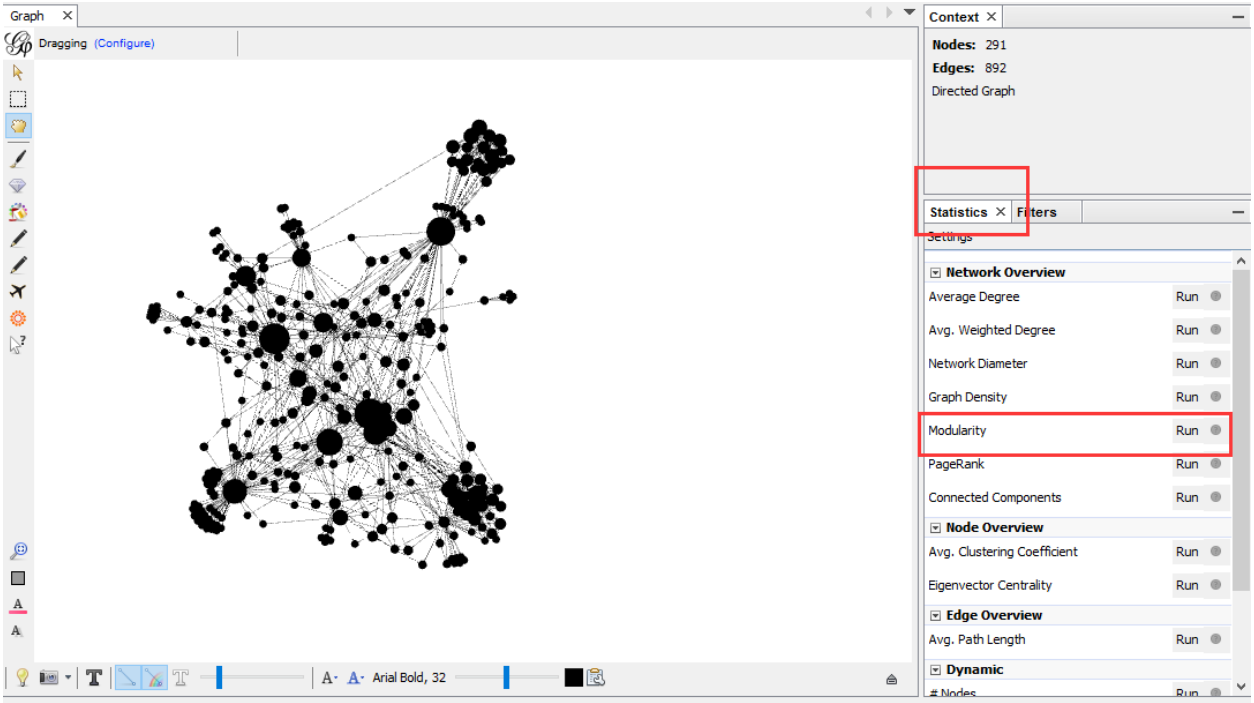


You should now see something similar like this:

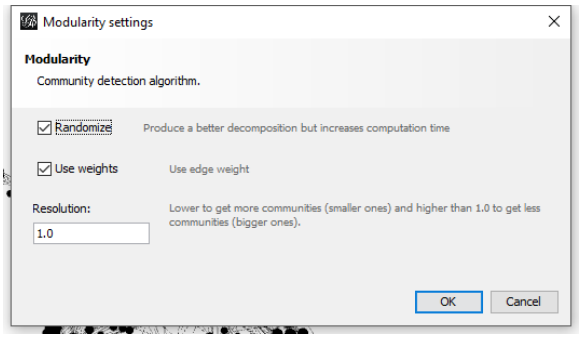


On the right side, you will see a “Statistics” window. Find "Modularity"; then click "Run".

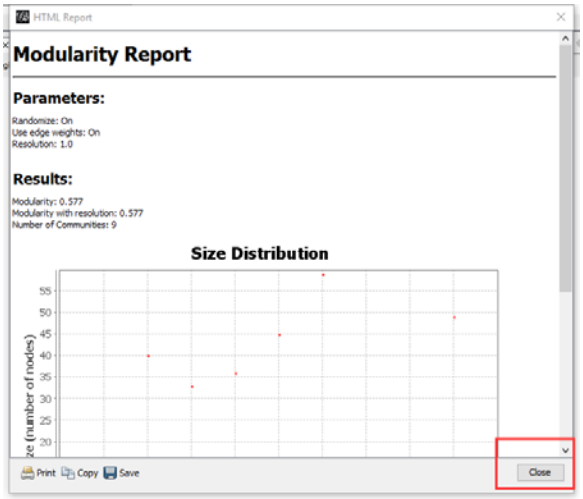
What is modularity? Read: https://en.wikipedia.org/wiki/Modularity



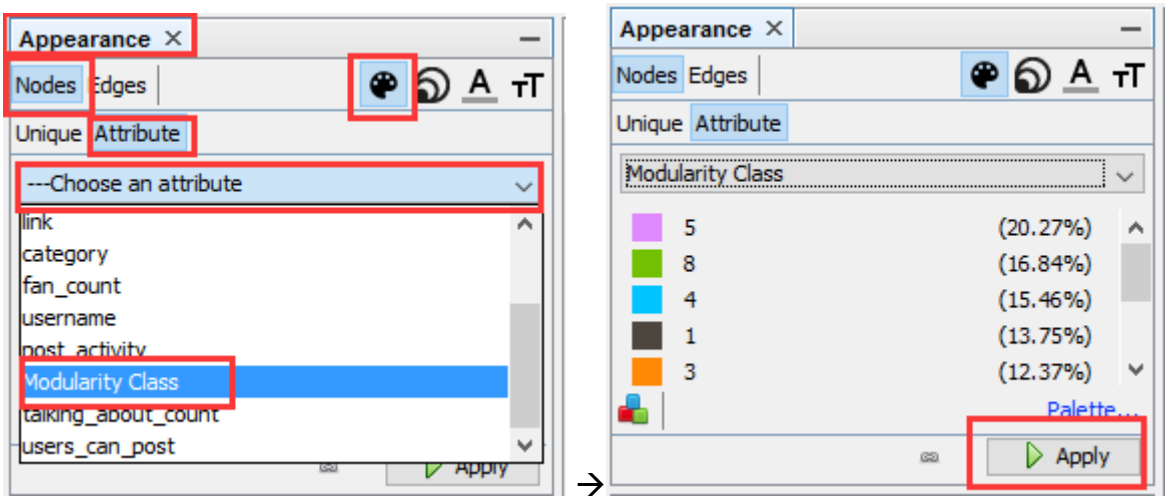
Click “OK”.



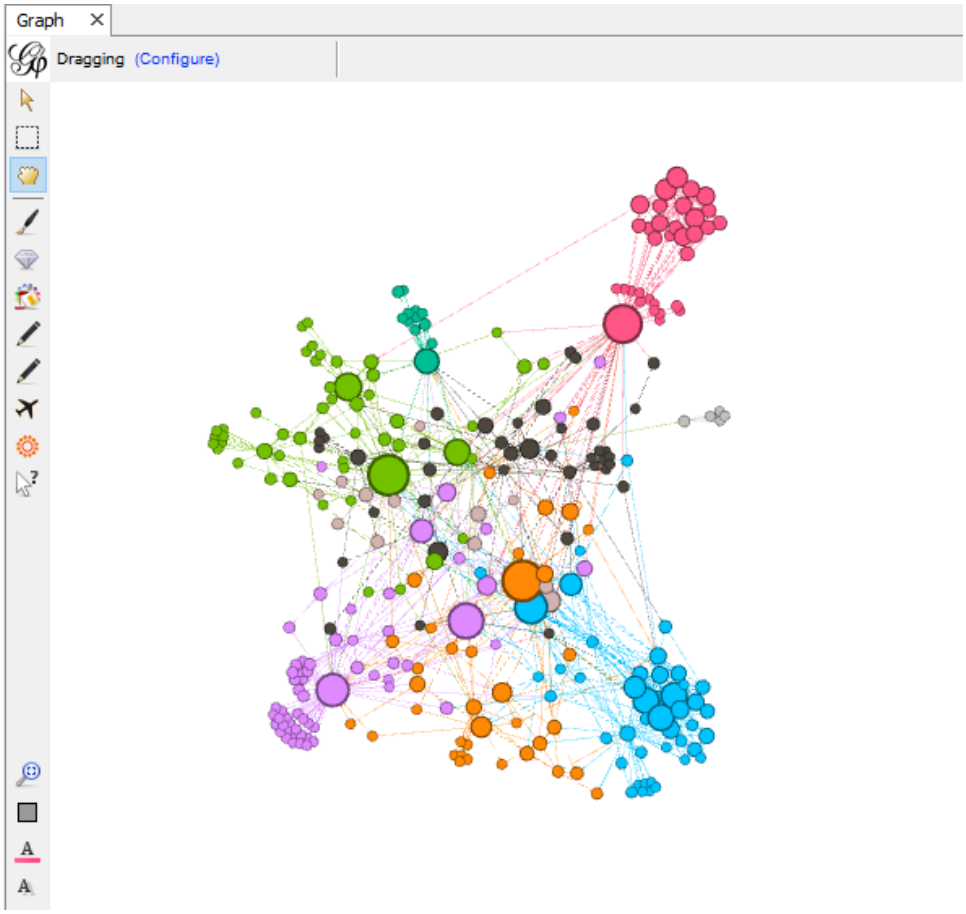
Read the “Modularity Report”. Then click “Close”.



Now go back to the "Appearance" window. Click Nodes → Color → Attributes →--Choose an attribute→Modularity Class. Then click "Apply".

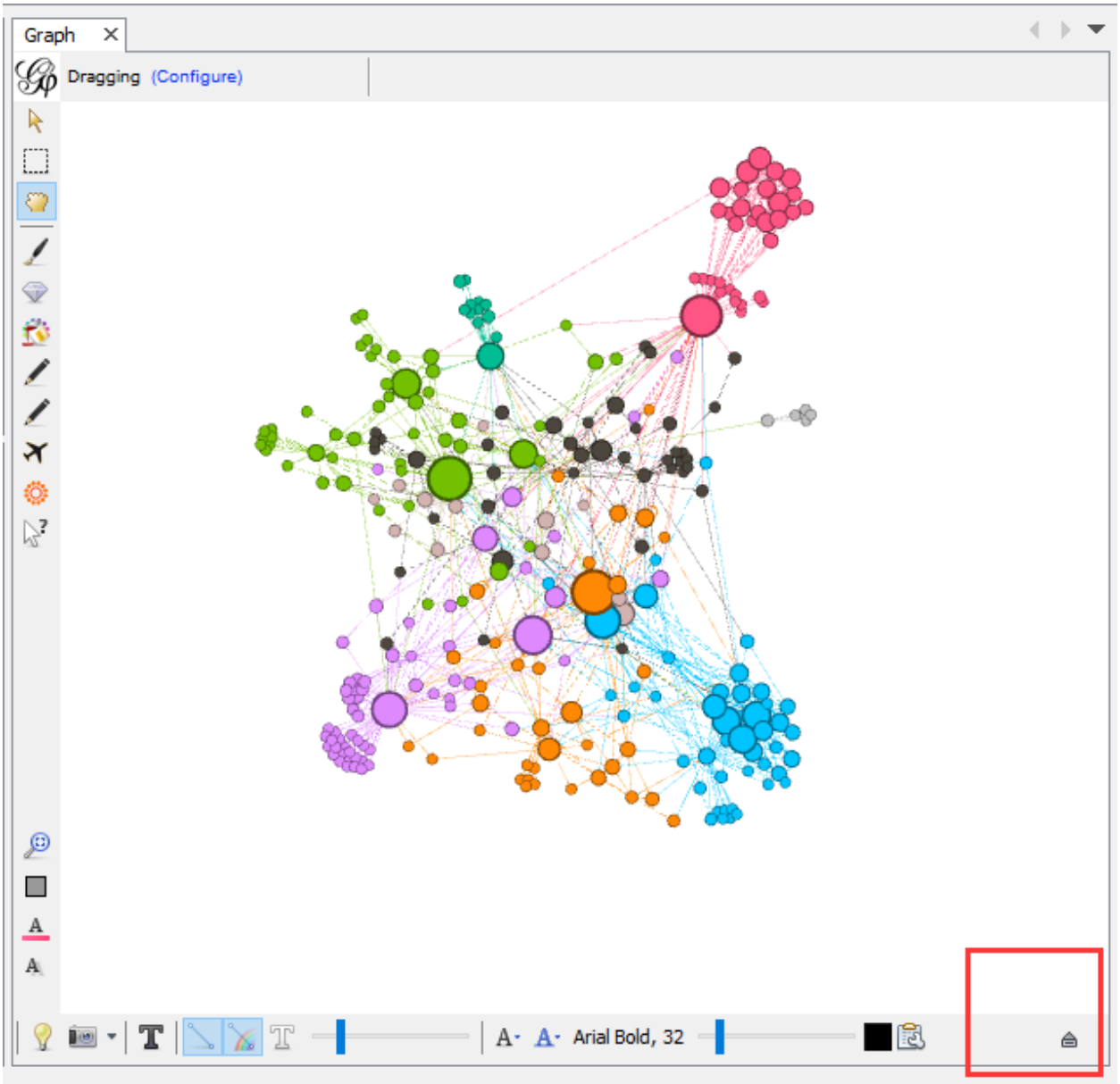


You should now see something similar like this:

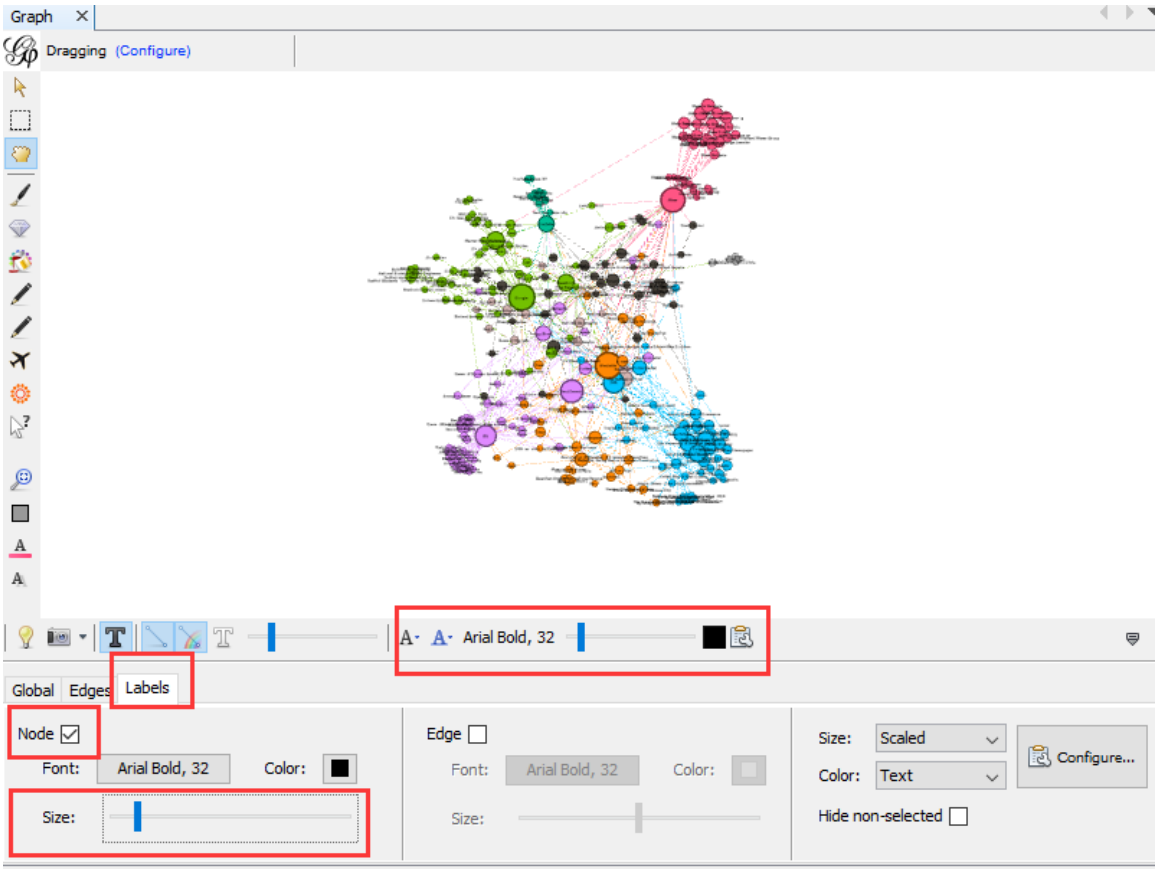


We can now check the community structure of Google's Facebook social network. The colors describes how the network is compartmentalized into sub-networks. These sub-networks (or communities) have been shown to have significant real-world meaning.

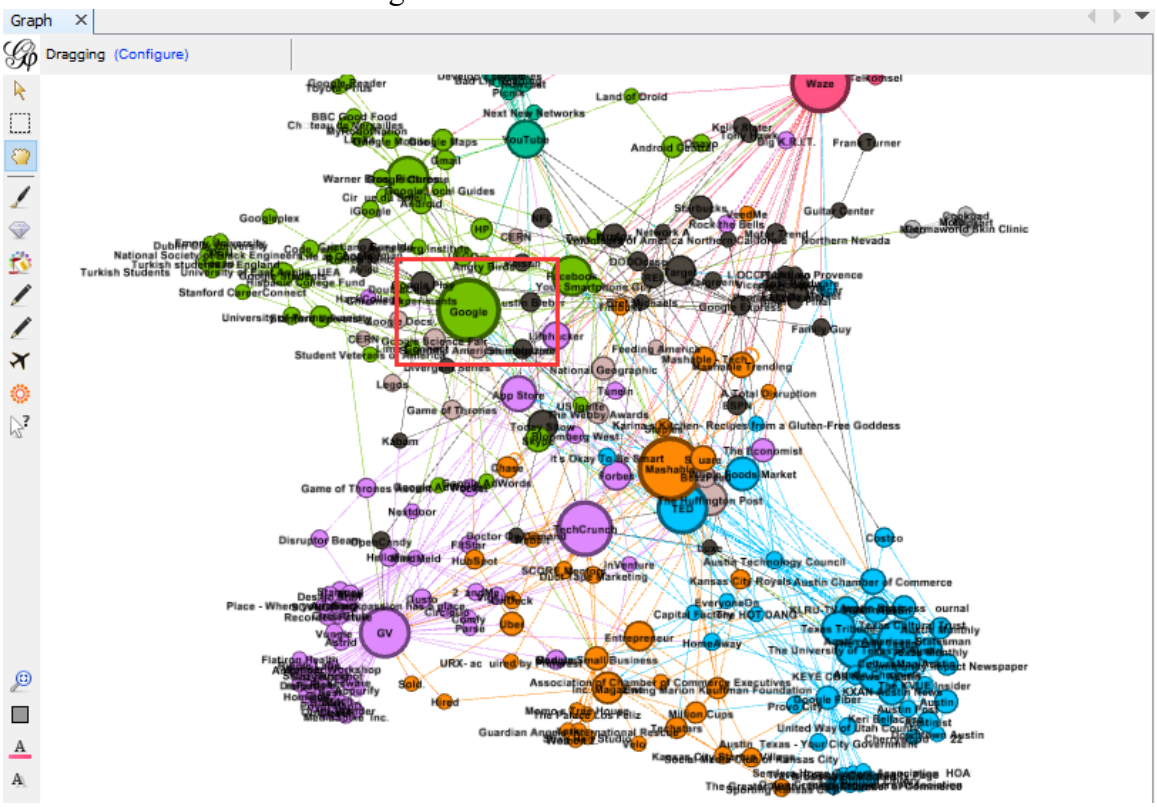
It is time to add some labels. Click the small arrow at the bottom right of the graph view.



Click "Labels". Then check "Node". Adjust the size of the labels.



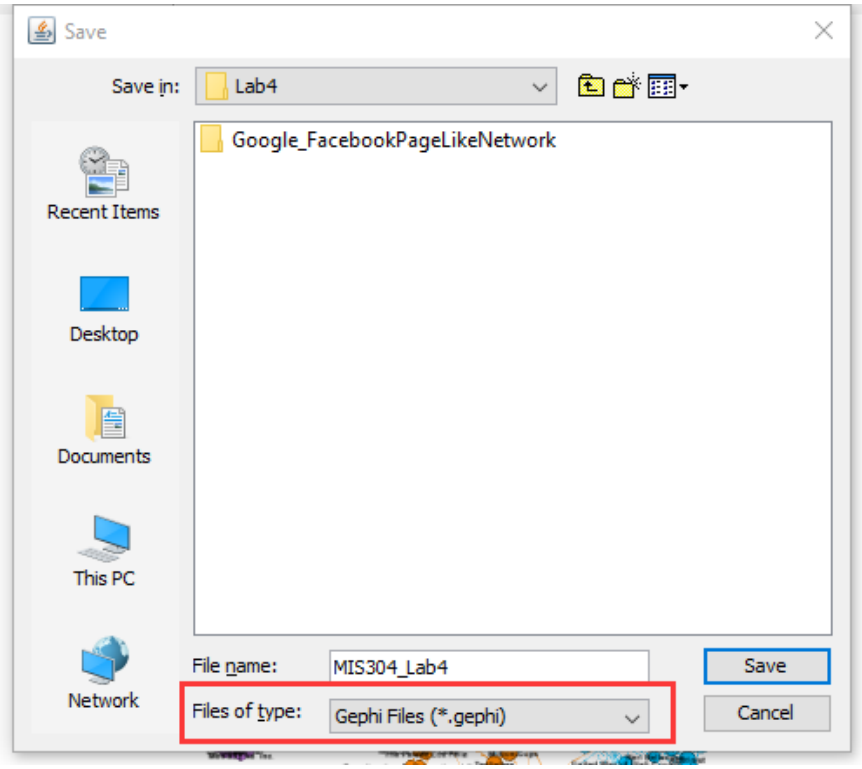
You should now see something similar like this:



Where is Google? Can you find something interesting?

If you want to save your work, just click "File" → "Save as" → "Files of type: Gephi Files (*.gephi)" → "Save".

Next time you can open it with Gephi directly.



Deliverables

Take a screen shot of your final result and paste it on a word file **yourNetID_L4.docx**, submit in TurnItIn.

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