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# Gephi Tutorial Quick Start for v0.10.1

Welcome to this introduction tutorial. It will guide you to the basic steps of network visualization and manipulation in Gephi. Gephi version **0.10.1** was used to do this tutorial.

Inspired by Gephi Quick Start

Editor: Xubo Wang

Edited on Feb 17<sup>th</sup>, 2025

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## Open Gephi

Download the file:

#### <u>LesMiserables.gexf</u>

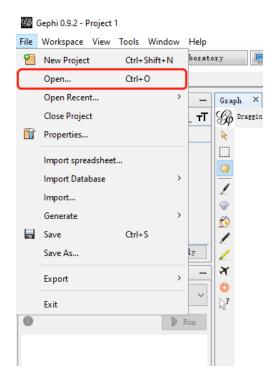
Open Gephi then create a new project

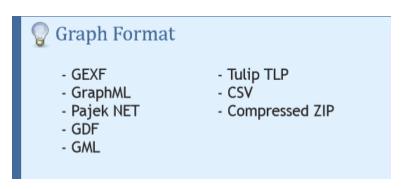


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## Open Graph File

In the menubar, go to File Menu and Open...



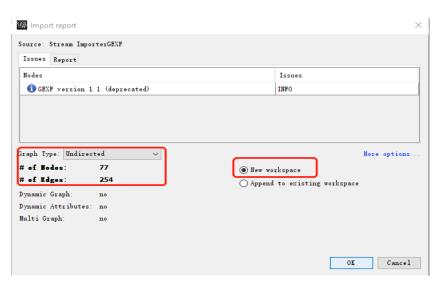


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### Import Report

When your filed is opened, the report sum up data found and issues.

- Number of nodes
- Number of edges
- Type of graph

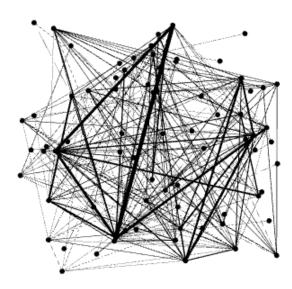


•Choose to open it in a new workspace, then Click on OK to validate and see the graph

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### You should now see a graph

We imported "Les Miserables" dataset. Coappearance weighted network of characters in the novel "Les Miserables" from Victor Hugo.



Node positions are random at first, so you may see a slightly different representation.

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## Graph Visualization

- Use your mouse to move and scale the visualization
- Zoom: Mouse Wheel
- Pan: Right Mouse Drag
- Locate the "Edge Weight Scale" slider on the bottor



• If you lose your graph, reset the position









Drag

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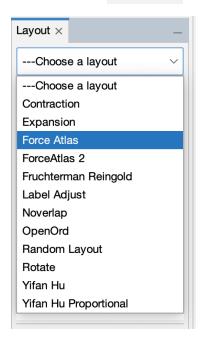
## Layout the graph

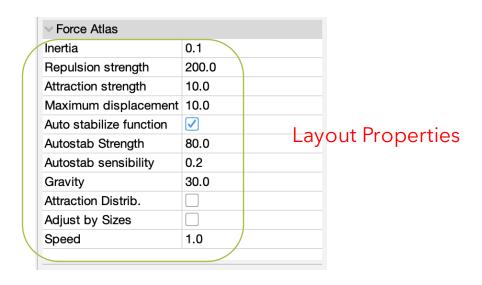
Layout algorithms set the graph shape which is the most essential action.

- Locate the Layout module, on the left panel.
- Choose "Force Atlas"

You can see the layout properties below, leave default values.

• Click on Run to launch the algorithm





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## Control the layout

The purpose of Layout Properties is to let you control the algorithm in order to make an aesthetically pleasing representation.

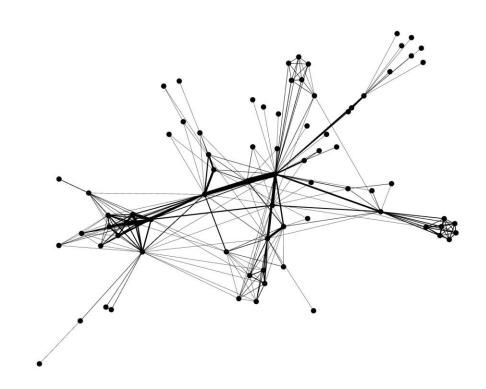
- Set the "Repulsion strength" at 10000 to expand the graph.
- Type "Enter" to validate the changed value.

∨ Force Atlas	
Inertia	0.1
Repulsion strength	10000.0
Attraction strength	10.0
Maximum displacement	10.0
Auto stabilize function	<b>✓</b>
Autostab Strength	80.0
Autostab sensibility	0.2
Gravity	30.0
Attraction Distrib.	
Adjust by Sizes	
Speed	1.0

• And now stop the algorithm.

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You should now see a layouted graph

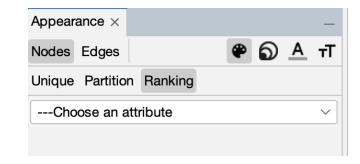


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## Ranking (color)

Ranking module lets you configure node's color and size.

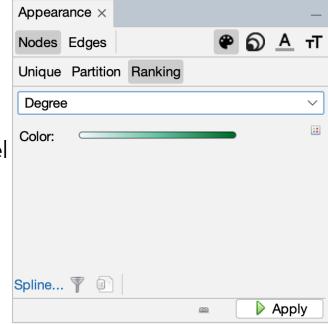
• Locate Ranking module, in the top left.



• Choose "Degree" as a rank parameter.

You should obtain the configuration panel like this:

Click on Apply to see the result.



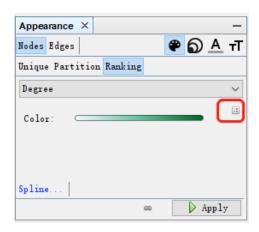
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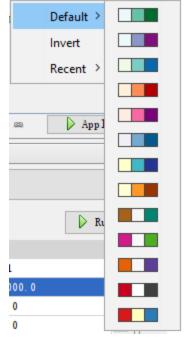
## Let's configure colors

Move your mouse over the gradient component.



• Use palette to change colors by clicking the four-color square



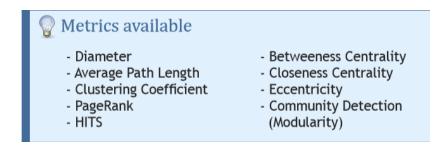


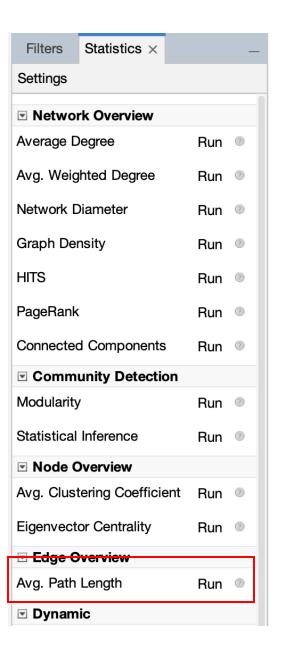
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### Metrics

We will calculate the average path length for the network. It computes the path length for all possible pairs of nodes and give information about how nodes are close from each other.

- Locate the Statistics module on the right panel.
- Click on Run near "Avg. Path Length".

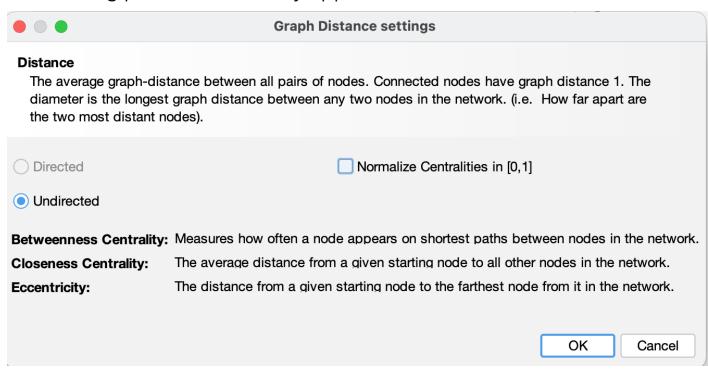




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### Metric settings

The setting panel immediately appears



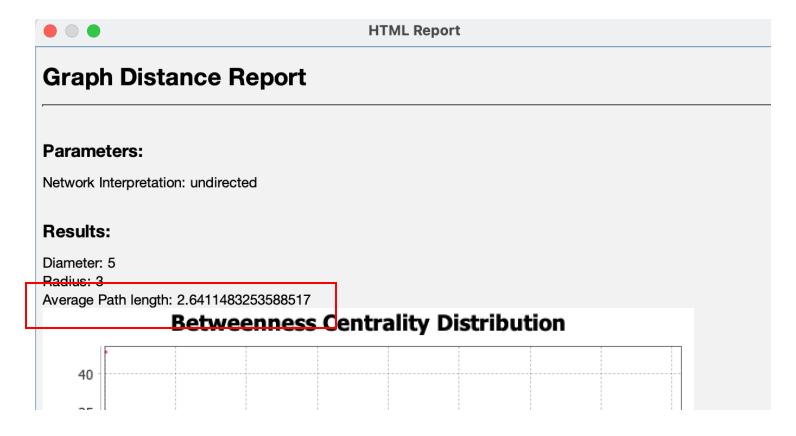
Select "Undirected" and click on OK to compute the metric

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### Metric result



When finished, the metric displays its result in a report.

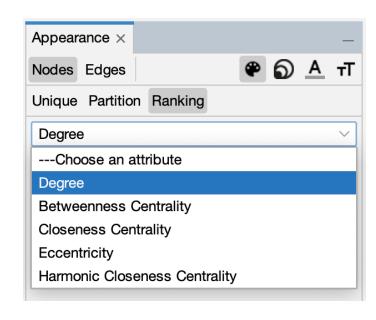


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## Ranking (size)

Metrics generates general reports but also results for each node. Thus three new values have been created by the "Average Path Length" algorithm we ran.

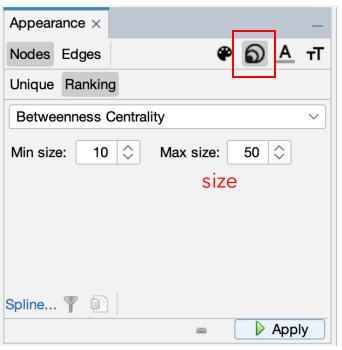
- Betweenness Centrality
- Closeness Centrality
- Eccentricity
- Go back to Ranking
- You can now see more the new ranking metrics
- "Betweenness Centrality" in the list indicates influential nodes for highest value.



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## Ranking (size)

The node's size will be set now.

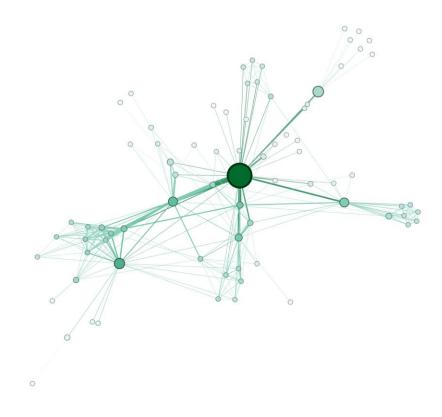


- Select the diamond icon in the toolbar for size.
- Set a min size at 10 and a max size at 50.

• And click on Apply to see the result.

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## You should see a colored and sized graph



Color: Degree

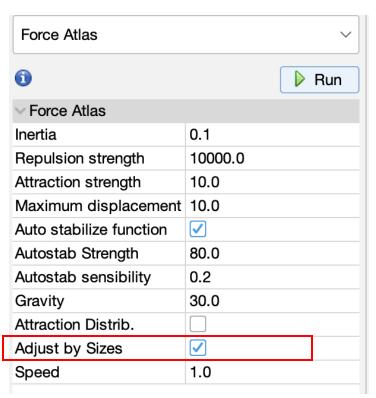
Size: Betweenness Centrality metric

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### Layout again

The layout is not completely satisfying, as big nodes can overlap smaller ones.

The "Force Atlas" algorithm has an option to take node size in account when layouting.



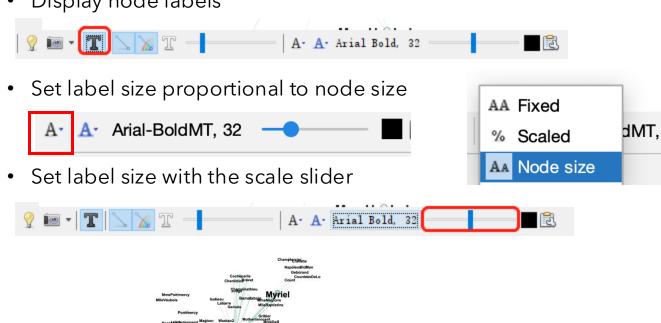
- Go Back to the Layout panel.
- Check the "Adjust by Sizes" option and run again the algorithm for short moment.
- You can see nodes are not overlapping anymore

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### Show labels

Let's explore the network more in details now that colors and size indicates central nodes.

Display node labels



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### Community detection

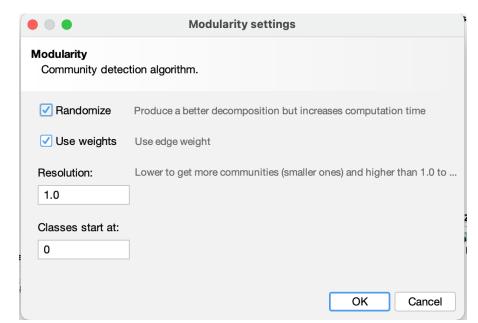
The ability to detect and study communities is central in network analysis. We would like to colorize clusters in our example.

Gephi implements the Louvain method, available from the Statistics panel.

Click on "Run" near the "Modularity" line



- Select "Randomize" and "Use weights" on the panel.
- Click on "OK" to launch the detection.



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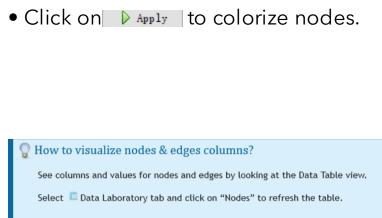
### **Partition**

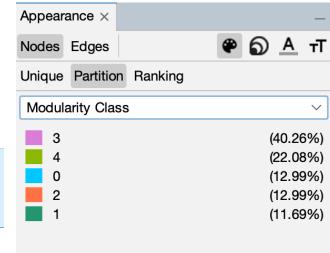
The community detection algorithm created a "Modularity Class" value for each node.

The partition module can use this new data to colorize communities.

- Locate the "Nodes>Partition" on the left panel.
- click palette icon then select "Modularity Class" in the partition list.

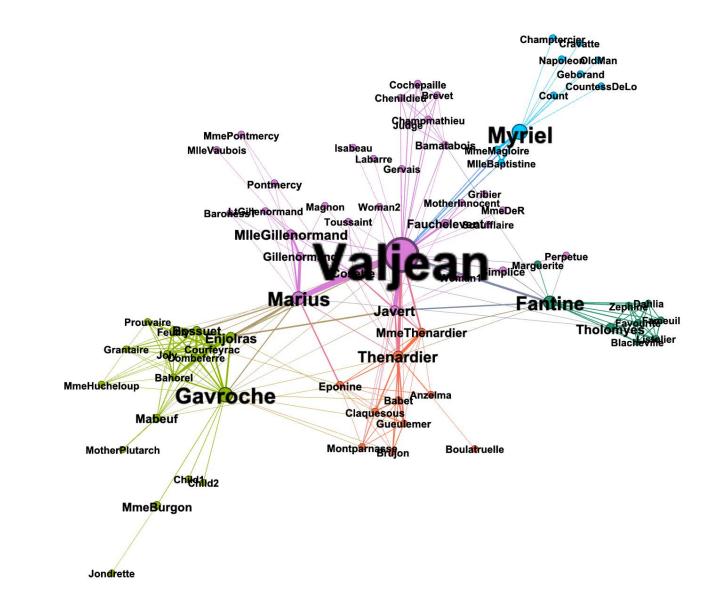
You can see that 5 communities were found, could be different for you. A random color has been set for each community identifier.





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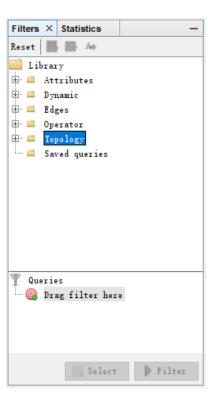
#### What the network looks like now



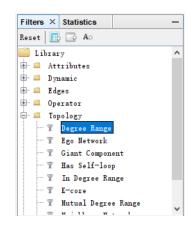
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### Filter

The last manipulation step is filtering. You create filters that can hide nodes and edges on the network. We will create a filter to remove leaves, i.e. nodes with a single edge.



- Locate the Filters module on the right panel.
- Select "Degree Range" in the "Topology" category.

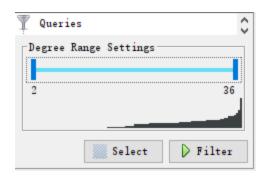


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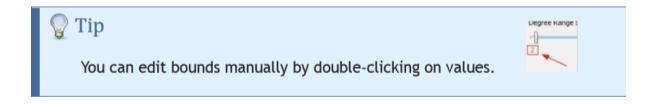
### Filter

It shows a range slider and the chart that represents the data, the degree distribution here.

Move the slider to set its lower bound to 2.

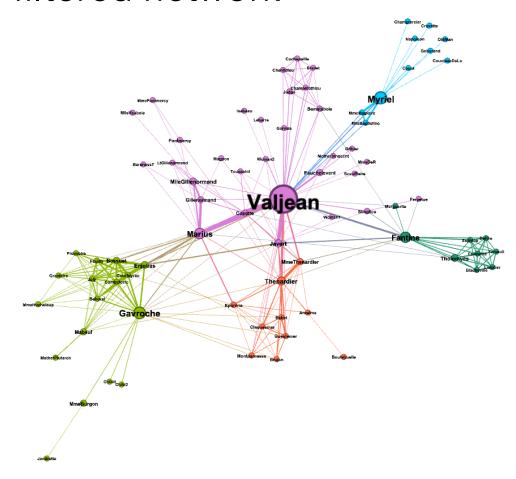


- Enable filtering by pushing the Filter button.
- Nodes with a degree inferior to 2 are now hidden.



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### The filtered network

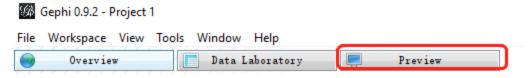


That ends the manipulation. We will now preview the rendering and prepare to export.

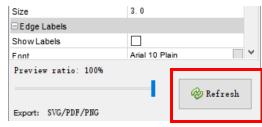
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### Preview

- Before exporting your graph as a SVG or PDF file, go to the Preview to:
- See exactly how the graph will look like
- Put the last touch
- Select the "Preview" tab in the top banner:



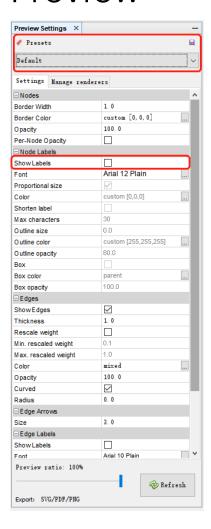
• Click on "Refresh" on the left bottom to see the preview





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### Preview



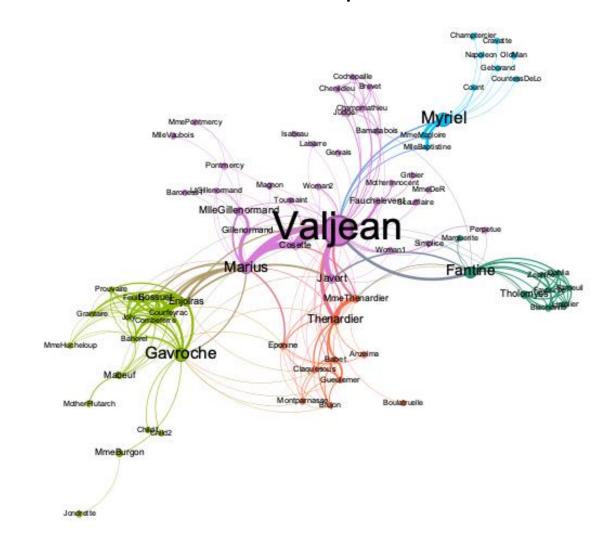
- In the "Node Labels" property, find "Show Labels" and enable the option.
- Click on



Preview Settings also support "Presets", click on the presets list and try different configurations.

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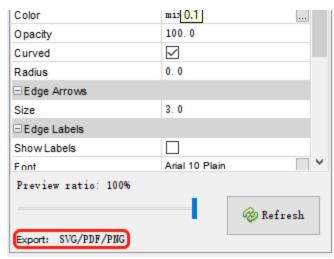
## The Previewed Graph



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### Export as SVG/PDF/PNG

From Preview, click on SVG/PDF/PNG near Export.



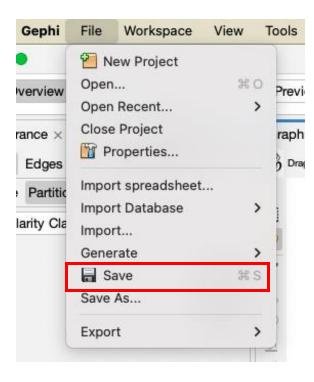
• SVG Files are vectorial graphics, like PDF. Images scale smoothly to different sizes and can therefore be printed or integrated in high-res presentation.

Transform and manipulate SVG files in Inkscape or Adobe Illustrator.

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## Save your project

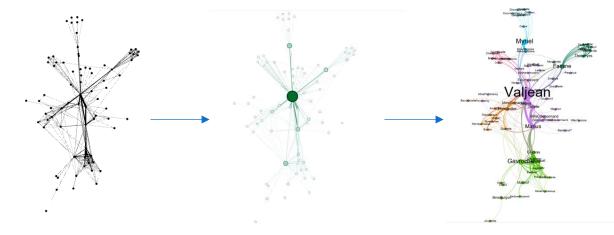
Saving your project encapsulates all data and results in a single session file.



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### Conclusion

In this tutorial you learned the basic process to open, visualize, manipulate and render a network file with Gephi.



Go further:

Gephi website: <a href="https://gephi.org/">https://gephi.org/</a>