

NetSets web application overview

Web layout display options can be configured here

Edge lists corresponding to different networks can be pasted and assigned a distinct color here. Check buttons can be used to select/unselect networks

Configurable web layout options

The screenshot shows the NetSets web application interface. At the top, there is a navigation bar with links for Submissions, Installation & API, Contact, Microbiome Demo, PPI Demo, and Gene Demo. Below the navigation bar, there is a configuration section with options for Display mode (Classic, Edwards), Show Input Stats (Yes, No), View switch panel (Yes, No), and Edge De-limiter (Dash (-)).

The main content area is divided into several sections:

- Left Panel:** A list of networks with checkboxes and color selection options. Networks listed include Acidiphilium-Osci, Acinetobacter-Ru, Acidiphilium-Suttr, Actinobacter-Ha, Aggregatibacter-Cl, Actinomycetes-Tur, Akkermansia-Vict, Actinomyces-Hae, Acidaminococcus, Akkermansia-Bif, Acidiphilium-Ac, Alkistipes-Bacteri, Actinobacter-Blai, Actinobacter-Ca, and Actinobacter-Ca.
- Edges and Nodes:** Two bar charts showing the distribution of edges and nodes across four categories: East, West, North, and South. The Edges chart shows counts of 26, 35, 63, and 57 respectively. The Nodes chart shows counts of 28, 36, 36, and 51 respectively.
- Edge-Venn diagram panel:** A Venn diagram showing the overlap of edges between the four categories. The counts for each region are: East only (14), West only (22), North only (43), South only (1), East & West (0), East & North (3), East & South (4), West & North (3), West & South (4), North & South (4), East & West & North (0), East & West & South (2), East & North & South (4), West & North & South (4), and East & West & North & South (1).
- Graph Properties:** A bar chart showing the size of each list and the number of elements specific to 1, 2, 3, or more lists. The sizes are 26, 35, 63, and 51. The number of elements specific to 1 list is 118, and for 2 lists is 4.
- Network View:** A network graph showing the connections between nodes. A selected set of nodes is highlighted in yellow.

At the bottom, there is a table with columns for name, id, and other properties, listing various bacterial species and their associated IDs.

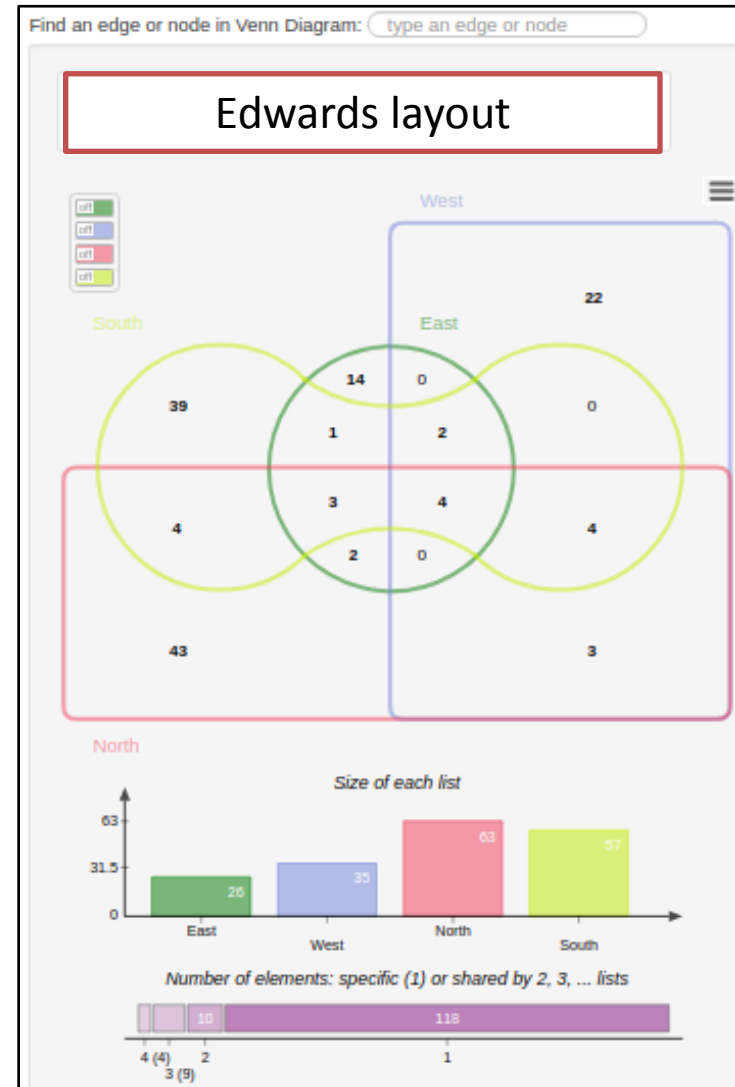
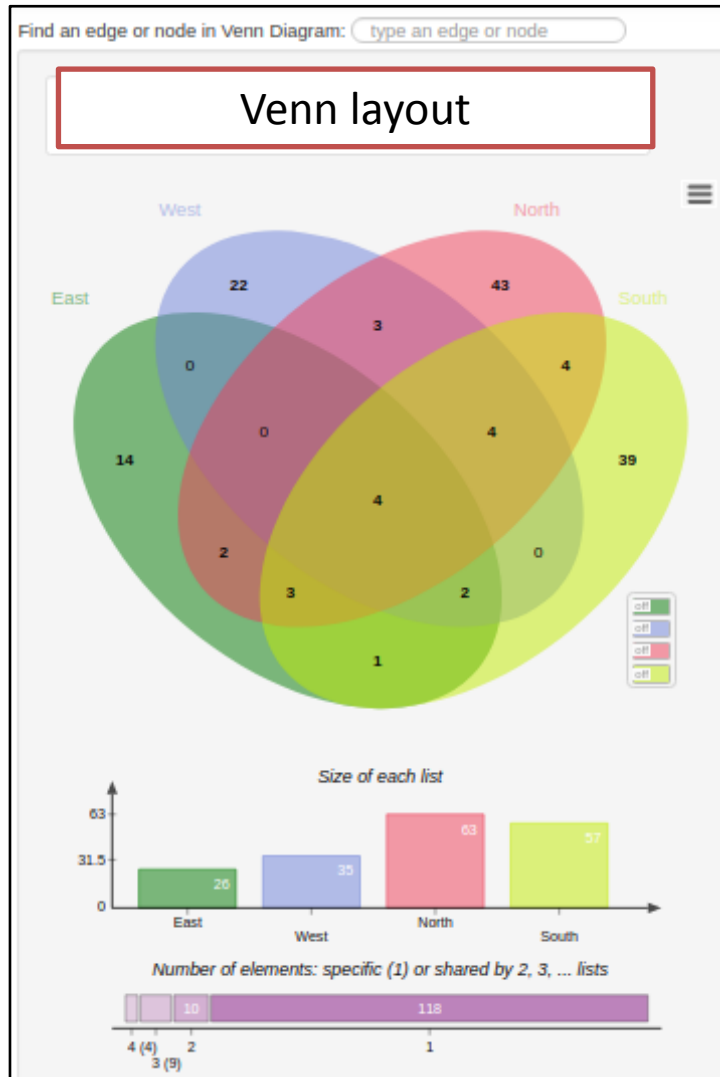
Node and Edge counts are graphically displayed here

A desired edge/node can be searched

A selected set from the Venn diagram can be viewed as an edge-list or network view here. The network can also be viewed in full screen

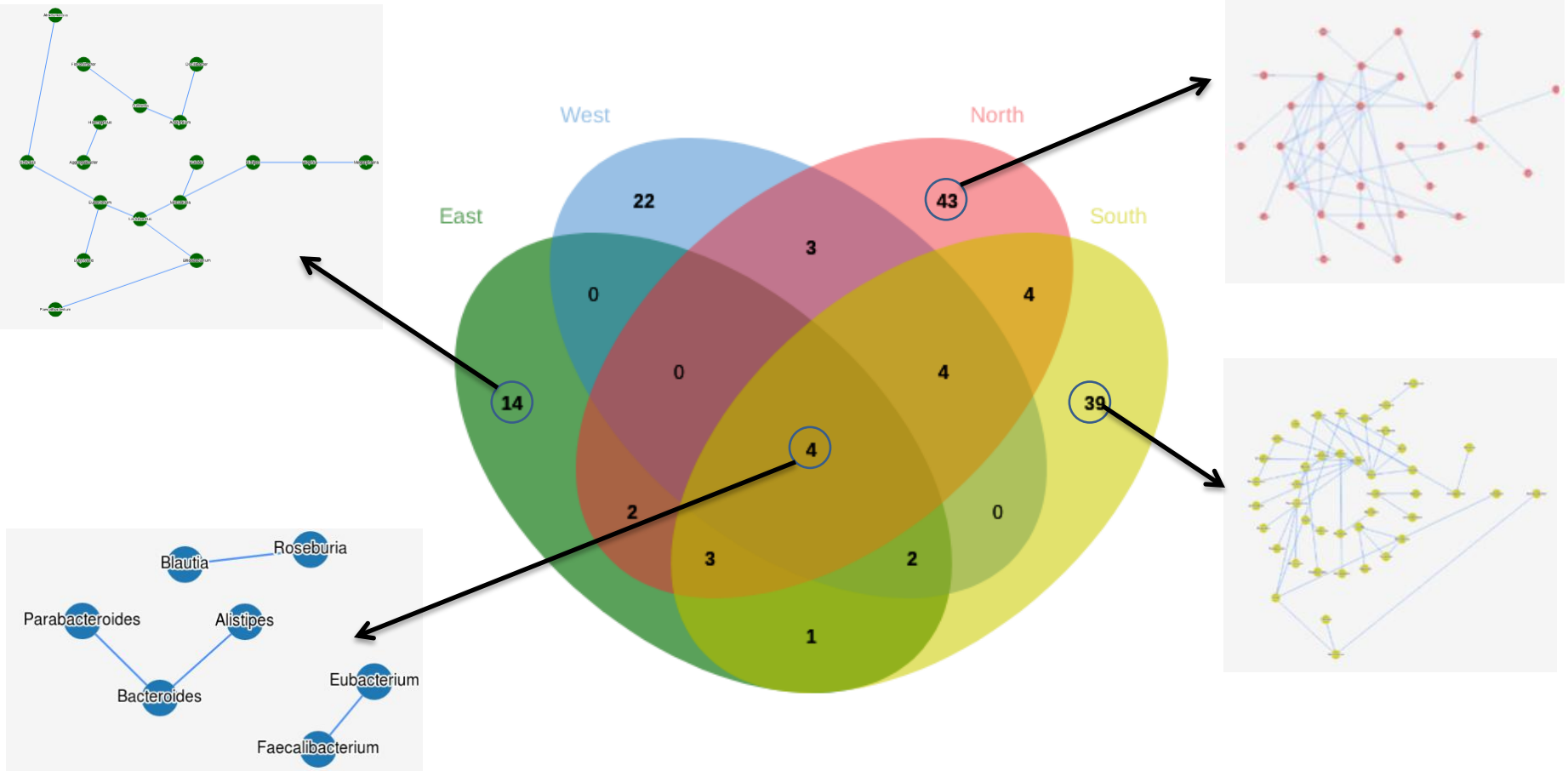
Graph properties for the selected network subset

Understanding the main layout



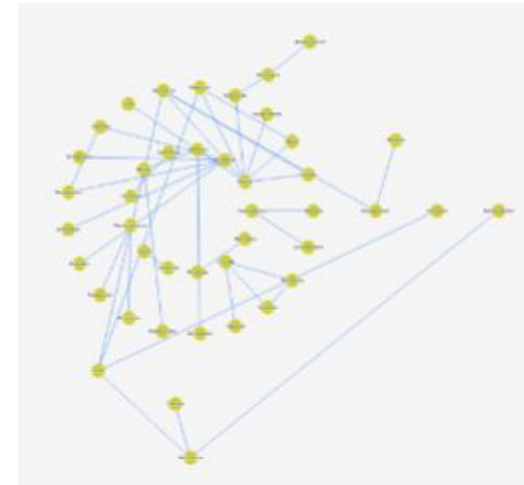
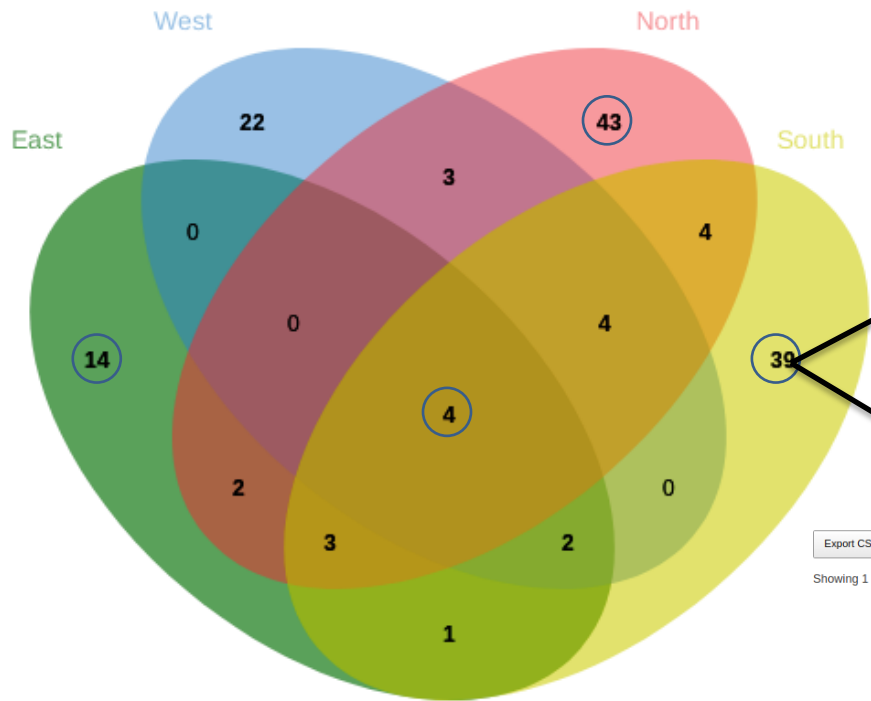
One or more networks can be selected to display their similarities and differences in terms of nodes and edges as a 'Venn' or 'Edwards' layout. Deselecting one/more networks automatically regenerates the plots.

Visualizing network sets as graphs



Clicking on the set number displayed in the Venn (or Euler) diagram automatically updates the corresponding displayed graph showing the corresponding edges. The color of the exclusive sets match to the corresponding networks. The node and font size of the displayed graph can be easily modified to suit user requirements. The generated networks can also be viewed in full screen as well as exported as images.

Visualizing graph properties of a selected network set



Export CSV

Showing 1 to 10 of 43 entries

Search: Previous 1 2 3 4 5 Next

Node	Degree (Normalized)	Closeness (Normalized)	Betweenness
Acidaminococcus	0.14285714285714285	0.4373271889400922	0
Acidiphilium	0.14285714285714285	0.29032258064516125	0
Acinetobacter	0.14285714285714285	0.29032258064516125	0
Actinobacillus	0.7142857142857143	0.48387096774193544	18
Actinomyces	0.14285714285714285	0.14516129032258063	0
Alistipes	0.2857142857142857	0.24193548387096772	4
Anaerobiospirillum	0.14285714285714285	0.4944700460829493	0
Anoxybacillus	0.2857142857142857	0.24193548387096772	0
Barnesiella	0.2857142857142857	0.24193548387096772	4
Bilophila	1	1	162

Selected graph properties namely degree (normalized), closeness and betweenness of the selected network set are automatically calculated and displayed in an interactive table. The respective values in the table can be sorted (by clicking on the network column header) and a desired node name can be searched using the 'search' option. In addition, the generated table can be exported as a 'csv' file.

Visualizing individual networks

East West

Acidiphilium-Oscillit
Acidiphilium-Suttere
Aggregatibacter-Ha
Akkermansia-Victiva

Acinetobacter-Rumi
Actinobacillus-Haer
Actinomyces-Clostri
Actinomyces-Turicit

edges:unset nodes:unset

edges:unset nodes:unset

Deselect all, but this

Deselect all, but this

North South

Actinomyces-Haem
Akkermansia-Bifidol
Akkermansia-Blauti
Alistipes-Bacteroides

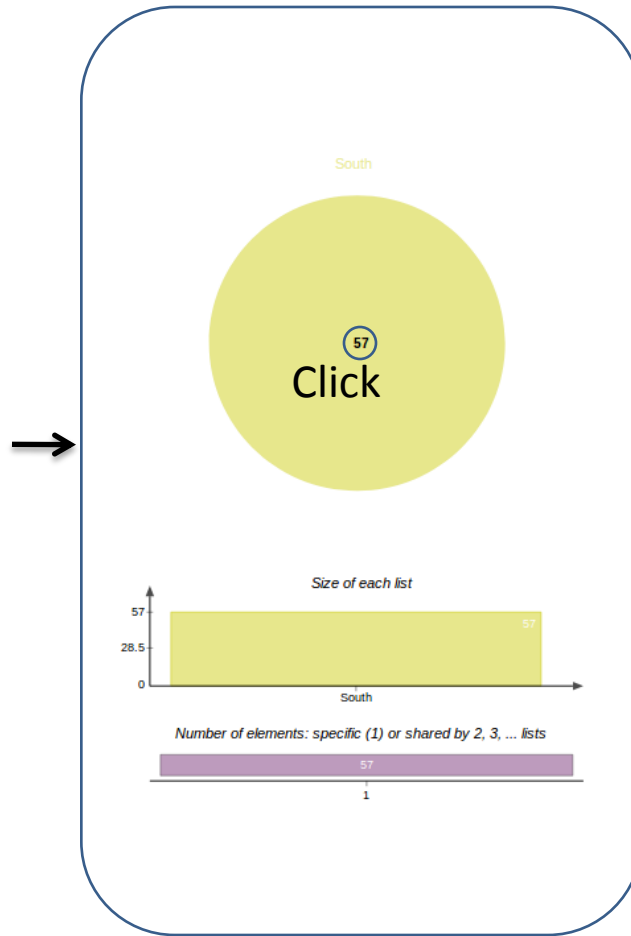
Acidaminococcus-F
Acidiphilium-Actinol
Acinetobacter-Actin
Actinobacillus-Cate

edges:unset nodes:unset

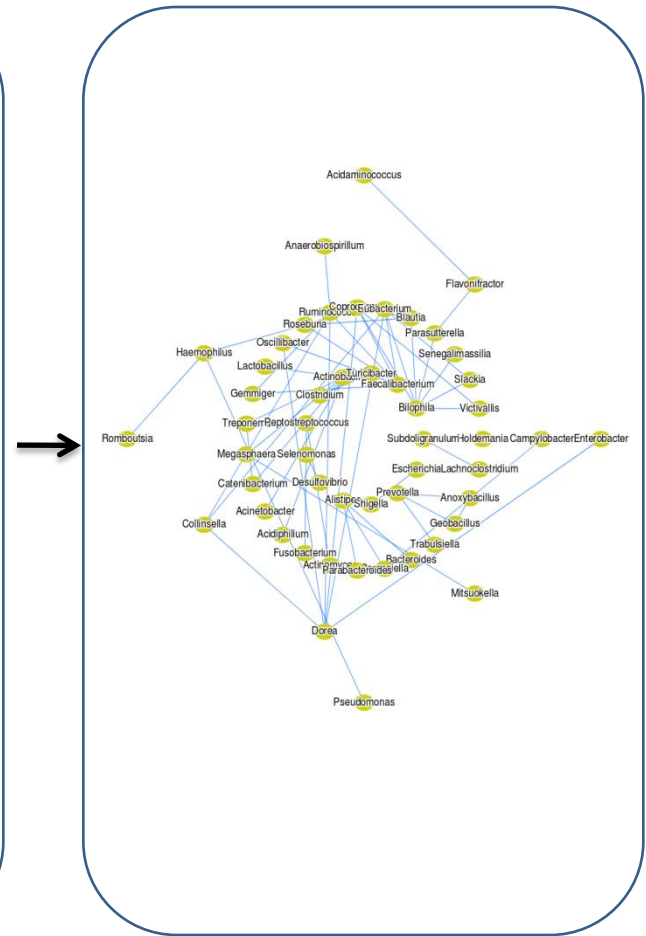
edges:57 nodes:51

Deselect all, but this

Select the desired network using the option 'Deselect all but this'



Click on the set number displayed in the Edge Venn diagram



The corresponding network is displayed in the right bottom panel

Connecting NetSets-Cyapp with Cytoscape

The screenshot shows the Cytoscape application window. The 'Tools' menu is open, and 'Cytoscape Web Browser' is highlighted. A dialog box titled 'Starting Cytoscape Web Browser' is displayed, containing the URL 'https://web.rniapps.net/netsets/cyapp.php' and a checked checkbox for 'Open in results panel?'. The dialog has 'OK' and 'Cancel' buttons. A black arrow points from the 'Cytoscape Web Browser' menu item to the dialog box. Another black arrow points from the checked checkbox to the text below.

Keep the checkbox selected to open NetSets-Cyapp inside Cytoscape in the Results panel

**Go to : Tools -> Cytoscape web browser and paste the link
<https://web.rniapps.net/netsets/cyapp.php>**

Importing networks into NetSets-Cyapp from Cytoscape

The screenshot displays the Cytoscape interface with the 'Import' menu open. The 'Import' menu is highlighted, and the 'Network from File...' option is selected. The 'Import Network From Table' dialog box is also open, showing a preview of a table with columns and rows.

Import Menu Options:

- Network from NEx...
- Network from File... Ctrl+L**
- Network from URL... Ctrl+Shift+L
- Network from Public Databases... Alt+L
- Table from File...
- Table from URL...
- Table from Public Databases... Alt+T
- Styles from File...

Import Network From Table Dialog:

Preview

Click on a column to edit it.

Column 1	Column 2	Column 3
nodeA	nodeB	1
nodeA	nodeC	1
nodeA	nodeE	1
nodeB	nodeD	1
nodeB	nodeF	1
nodeC	nodeD	1
nodeC	nodeF	1

Advanced Options...

OK Cancel

Importing networks into NetSets-Cyapp from Cytoscape

The screenshot displays the Cytoscape interface with the following components:

- Network Panel:** Lists two networks: Net1.txt (2 nodes) and Net2.txt (5 nodes).
- Network View:** A graph with nodes nodeA, nodeB, nodeC, nodeF, and nodeG. NodeA is at the top, connected to nodeB, nodeC, and nodeG. NodeB is connected to nodeC. NodeC is connected to nodeF. NodeG is connected to nodeF. A smaller inset graph shows the same structure.
- NetSets Cyapp Panel:** Contains a 'Fetch network' button (highlighted with a red box and an arrow), a 'Clear Session' button, and a search input field. Below it is an 'Edge-Venn diagram panel' showing a Venn diagram for Net1.txt (green circle) and Net2.txt (blue circle). The Venn diagram shows 2 nodes unique to Net1.txt, 0 nodes unique to Net2.txt, and 8 nodes in the intersection.
- Node Table:** A table at the bottom listing nodes: nodeA, nodeB, nodeC, nodeF.

Use the 'Fetch network' button in the NetSets-Cyapp panel in Cytoscape to display the Venn diagram plots and establish the link

Viewing network subsets selected from NetSets-Cyapp in Cytoscape

The screenshot displays the Cytoscape interface with the following components:

- Network List Panel (Left):** Shows a list of networks. The selected network is `Net1.txt.Net2.txt.json` with 10 nodes and 8 edges.
- Network Canvas (Center):** Displays a network graph with nodes labeled nodeA through nodeG. A black arrow points from the intersection count '8' in the Venn diagram to the nodeF node in the canvas.
- Venn Diagram (Right):** Shows the intersection of two networks: `Net1.txt` (green circle) and `Net2.txt` (blue circle). The intersection count is 8, and the word "click" is overlaid on this number.
- Node Table (Bottom):** A table listing the nodes in the selected network subset.

shared name	name	id	faveColor	size
nodeB	nodeB	nodeB	#1F77B4	50.0
nodeF	nodeF	nodeF	#1F77B4	50.0
nodeC	nodeC	nodeC	#1F77B4	50.0
nodeC	nodeC	nodeC	#1F77B4	50.0

Network list panel in cytoscape can be used to view the individual networks and subsets

Clicking on the intersection count in the Venn diagram shows the intersecting network subset in the Cytoscape canvas

Sending networks from NetSets-Cyapp into Cytoscape

The screenshot shows the Cytoscape interface with the NetSets-Cyapp panel on the right. A red-bordered box contains the following instructions:

1. Scroll down
2. Paste the edge list in a text box
3. Click 'Deselect all but this'

An arrow points from the text box to the 'Deselect all, but this' button in the Network1 section of the panel. The panel shows four networks: Network1 (green), Network2 (blue), Network3 (red), and Network4 (yellow). Network1 is selected and contains the following edge list:

nodeA	nodeC	1
nodeA	nodeS	1
nodeB	nodeC	1
nodeB	nodeF	1
nodeC	nodeD	1

The interface also shows a 'Network' panel on the left with a search bar and a 'Node Table' panel at the bottom with a search bar and a 'Drag network files here' area.

Scroll down the Netsets-Cyapp panel in Cytoscape and paste the edge-list corresponding to the desired network in a text box and press the button 'Deselect all but this'

Sending networks from NetSets-Cyapp into Cytoscape

The screenshot displays the Cytoscape interface. The main window shows a network graph with nodes labeled nodeS, nodeA, nodeC, nodeD, nodeG, and nodeB. The nodes are connected by edges. A small inset window shows a zoomed-in view of the network. The bottom panel shows the Node Table with the following data:

shared name	name	id	favColor	size
nodeA	nodeA	nodeA	rgb(0, 102, 0)	50.0
nodeB	nodeB	nodeB	rgb(0, 102, 0)	50.0
nodeC	nodeC	nodeC	rgb(0, 102, 0)	50.0
nodeS	nodeS	nodeS	rgb(0, 102, 0)	50.0

The CyBrowser window on the right shows a pie chart with a green segment labeled '10' and the word 'click' inside it. Below the pie chart is a bar chart titled 'Size of each list' with a green bar labeled '10' and 'Network1' on the x-axis. Below the bar chart is a purple bar labeled '1' and 'Number of elements: specific (1) or shared by 2, 3, ... lists' on the x-axis.

The network edge count will be displayed in a pie circle. Clicking in the edge count number inside the circle will send and display the network in Cytoscape