User Manual – SimNetX

1. Introduction

Welcome to SimNetX! This manual will guide you through the key features of the application with simple, step-by-step instructions. Each section covers a specific use case to help you achieve your goals quickly and effectively.

2. Getting Started

Before you begin, ensure you have:

- Login credentials acquired from the creators of the application.

- Access to your dataset or files in CSV format.

- Basic familiarity with the type of data you want to process.

- Preprocessed your dataset

- Have at least basic understanding on networks and their analysis

3. Use Case 1: Loading a Dataset

Goal

Import your dataset into the application for analysis.

Steps

1. Go to the toolbar menu → File → New.
2. Select Your File – Click Browse and choose the dataset file from your device.
3. Set Input Options – Separator, Headers, Construction Algorithm, Metric.
4. Click Next – A window with the list of attributes and their types will appear on the screen.
5. Review Attribute Types – Each attribute has been automatically assigned the most probable type. Change any attribute type if the automatic assignment is unsuitable.
6. Confirm and Upload – Dataset will be processed and a constructed network will be drawn on screen based on your inputs.

4. Use Case 2: Changing Layout Settings

Goal

Customize how your network's layout.

General Steps (applies to all settings)

1. Open the Layout Panel.
2. Choose a Setting to Modify – Select from force type and property.
3. Adjust the Values – Modify according to your preference.
4. Apply Changes – Click Redraw to refresh the view.

Available Settings

Setting	Description
Node Charge	Attracts (+) or repels (-) nodes to/from each other.
Node Collision	Prevents nodes from overlapping
Link Spring	Sets link length

5. Use Case 3: Changing Visual Settings

Goal

Customize your network's colors, labels and node size.

General Steps (applies to all settings)

1. Open the Visuals Panel.
2. Choose a Setting to Modify – Select the attribute.
3. Adjust the Values – Modify according to your preference.
4. Apply Changes – Click Run to apply the color setting.

Available Settings

Setting	Description
Unified Color	Sets the same color for every node
Label	Attribute values will be written directly on top of nodes
Gradient color	Sets the node color according to its feature value
Category color	Sets the node color

	according to its label
Partition color	Sets the node color according to its detected cluster
Node size	Sets the node size according to its feature value

6. Use Case 4: Reconstruction a network

Goal

Reconstruct a network with different settings and features.

Steps

1. Open the Visuals Panel.
2. Apply any transformation to features.
3. Move features from active to inactive to exclude them from construction process.
4. Choose the construction algorithm and similarity and their parameters.
5. Click Remodel – The network will be reconstructed according to settings and clusters will be automatically detected.

Available Settings

Setting	Description
Construction algorithm	LRNet, Epsilon kNN
Similarities	Gaussian Kernel, Cosine, Gower, Pearson correlation-based similarity, Spearman correlation-based similarity, Gower, Jaccard and Cooccurance
Feature Transformations	Normalization, Rescaling, Standardization, Logarithmization

7. Use Case 5: Cluster statistics

Goal

Visualize cluster statistics

General Steps (applies to all settings)

1. Open the Cluster Statistics Panel.
2. Choose a statistic plot
3. (Optional) Choose an attribute if the plot requires it.
4. Click Run – The plot will be drawn.

Available Settings

Setting	Description
Silhouette	Cluster silhouette index
Matthews correlation coefficient	Describes the relationship between a cluster and a class
Feature boxplots	Shows boxplots of features in clusters

8. Use Case 6: Saving the network state

Goal

Save the network state for later use.

General Steps (applies to all settings)

1. Go to the toolbar menu → File → Save Network.
2. The network state will be saved to json file.

9. Use Case 7: Loading the network state

Goal

Save the network state for later use.

General Steps (applies to all settings)

1. Go to the toolbar menu → File → Load Network.
2. The network state will be loaded from json file
3. The application will return to the state of the project in the moment of saving.

10. Use Case 8: Loading the network state

Goal

Load the network state from json file.

General Steps (applies to all settings)

1. Go to the toolbar menu → File → Load Network.
2. The network state will be loaded from json file
3. The application will return to the state of the project in the moment of saving.

11. Use Case 9: Exporting the data with clusters

Goal

Export all data columns and clusters into csv file

General Steps (applies to all settings)

1. Go to the toolbar menu → File → Export Data.
2. The csv file will be created with all the data + clusters.

11. Troubleshooting

Problem	Possible Cause	Solution
Dataset not loading	Wrong separator	Reupload the data with correct separator
Load a network state has failed	Wrong file	Check if the file is correct
Export failed	File permissions issue	Check folder permissions

and retry

12. Support

For further assistance, contact the creator team:

- Email: tomas.anlauf@vsb.cz