

Distance Transformation

Transforms distances in a dataset.

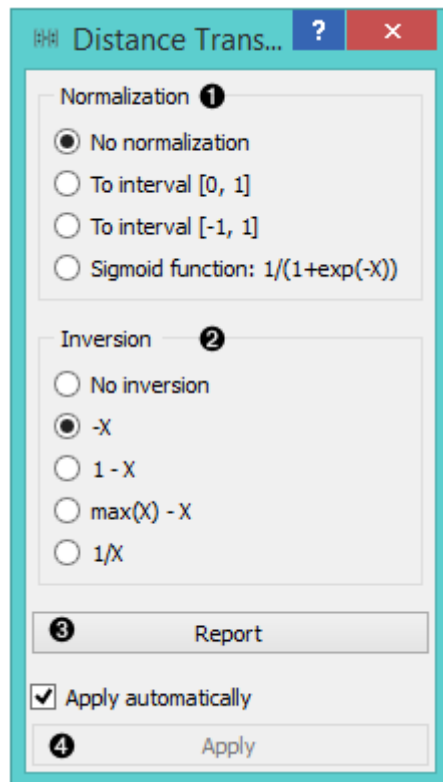
Inputs

- Distances: distance matrix

Outputs

- Distances: transformed distance matrix

The **Distances Transformation** widget is used for the normalization and inversion of distance matrices. The normalization of data is necessary to bring all the variables into proportion with one another.

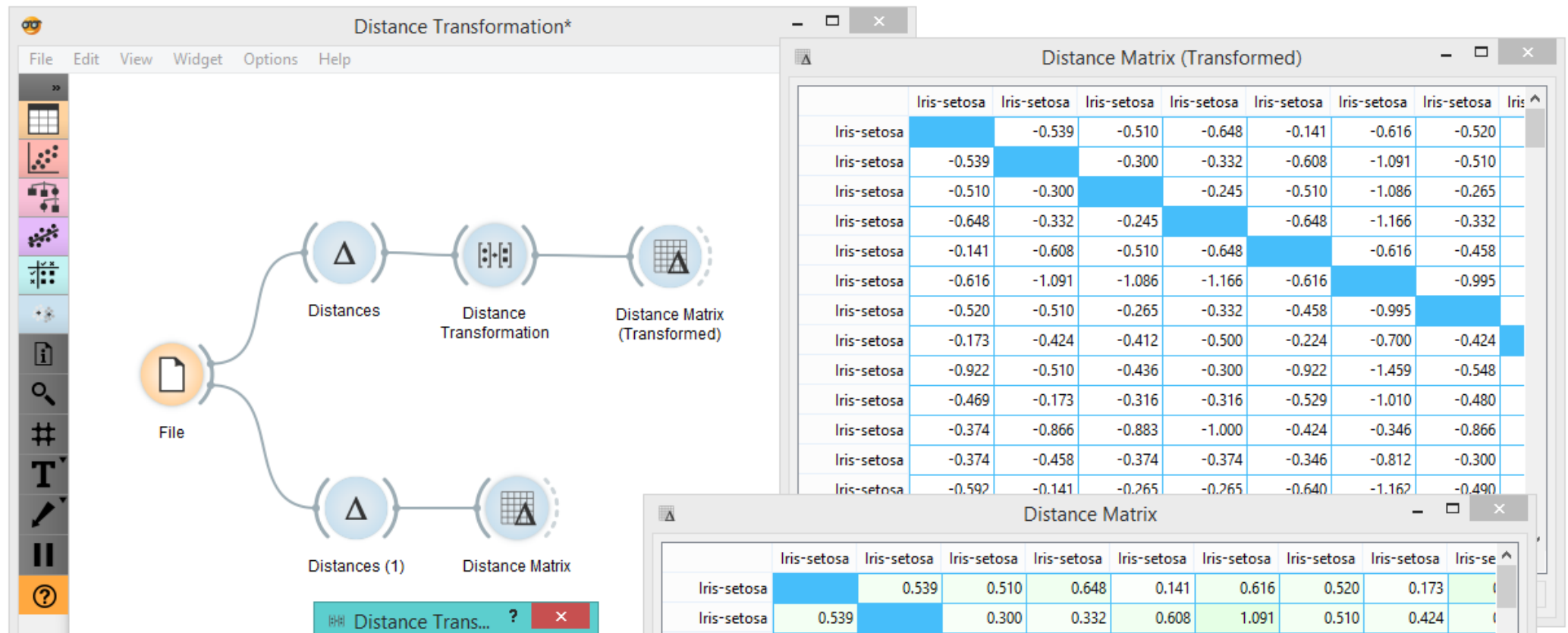


1. Choose the type of **Normalization**:
 - **No normalization**
 - **To interval [0, 1]**

- To interval $[-1, 1]$
 - **Sigmoid function:** $1/(1+\exp(-X))$
2. Choose the type of Inversion:
 - **No inversion**
 - $-X$
 - $1 - X$
 - $\max(X) - X$
 - $1/X$
 3. Produce a report.
 4. After changing the settings, you need to click *Apply* to commit changes to other widgets. Alternatively, tick *Apply automatically*.

Example

In the snapshot below, you can see how transformation affects the distance matrix. We loaded the *Iris* dataset and calculated the distances between rows with the help of the **Distances** widget. In order to demonstrate how **Distance Transformation** affects the **Distance Matrix**, we created the workflow below and compared the transformed distance matrix with the “original” one.



Normalization

☒ No normalization

☐ To interval [0, 1]

☐ To interval [-1, 1]

☐ Sigmoid function: $1/(1+\exp(-X))$

Inversion

☐ No inversion

☒ -X

☐ 1 - X

☐ max(X) - X

☐ 1/X

Report

☒ Apply automatically

Apply

Orange Data Mining - Distance Transformation

Iris-setosa	0.510	0.300	0.245	0.510	1.086	0.265	0.412	
Iris-setosa	0.648	0.332	0.245	0.648	1.166	0.332	0.500	
Iris-setosa	0.141	0.608	0.510	0.648	0.616	0.458	0.224	
Iris-setosa	0.616	1.091	1.086	1.166	0.616	0.995	0.700	
Iris-setosa	0.520	0.510	0.265	0.332	0.458	0.995	0.424	
Iris-setosa	0.173	0.424	0.412	0.500	0.224	0.700	0.424	
Iris-setosa	0.922	0.510	0.436	0.300	0.922	1.459	0.548	0.787
Iris-setosa	0.469	0.173	0.316	0.316	0.529	1.010	0.480	0.332
Iris-setosa	0.374	0.866	0.883	1.000	0.424	0.346	0.866	0.500
Iris-setosa	0.374	0.458	0.374	0.374	0.346	0.812	0.300	0.224
Iris-setosa	0.592	0.141	0.265	0.265	0.640	1.162	0.490	0.469
Iris-setosa	0.995	0.678	0.500	0.520	0.975	1.572	0.616	0.906
Iris-setosa	0.883	1.360	1.364	1.530	0.917	0.678	1.360	1.044

Labels: None

Report ☒ Send Automatically