Tutorial for CMI2NI

1. Introduction

CMI2NI is a MATLAB program for inferring Gene Regulatory Networks (GRN) from gene expression dataset based on Conditional Mutual Inclusive Information (DMI) which can accurately measure direct associations or causal strength between genes.

2. Matlab Code description

2.1 CMI2NI

```
[G,Gval,order]=CMI2NI(data,lamda,order0)
```

2.1.1 Input

Code	Description
Data	Expression of target gene.
lamda	Parameter for threshold of dependence.
order0	The parameter to end the program when order meet order_fix given; Default value is null.

2.1.2 Output

Code	Description
G	0-1 network or graph inferred by CMI2NI
Gval	Network with strengthens
order	Order number of algorithm terminated.

2.2 Example_CMI2NI.m

As an example, ‘Example_CMI2NI.m’ is to infer gene regulatory network from gene expression dataset.

```
% An example of using CMI2NI for inferring gene regulatory
networks from gene
% exrepssion data.

clear; clc;

% Data importation
% data: Rows are genes and columns are samples.
load example_data

% Parameter setting
lamda= 0.03;

[net,net_value,order]=CMI2NI(data,lamda);
net,net_value

[net2,net_value2,order]=CMI2NI(data,lamda,1);
net2,net_value2
```

3. Contact information

If you encounter any problem, please do not hesitate to contact us at

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