Mapping the ecological networks of microbial communities from steady-state data

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Package: Mapping the ecological networks of microbial communities

Download: NR_tutorial_1.1.zip
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The file NR_tutorial_1.1.zip contains:

1) "input":
"AllSteady_for_Brute.txt": steady-state samples from 7-species community (see Supplementary Note 6.2 for detailed description of this dataset). The file of "Tuple_6.txt" lists all the combinations of sign-patterns when the community only contains 7 species.

"AllSteady_for_Heuristic.txt": steady-state samples from 14-species community (see Supplementary Note 6.4 for detailed description of this dataset).

2) Matlab scripts for measuring the samples deviating from GLV and inferring zero-patterns, sign-patterns and interaction strengths.
"Deviation_from_GLV.m": The matlab code imports the steady-state data, and plot the R square of inferred hyperplanes.

"Infer_zero_pattern_Brute_force.m": The matlab code imports the steady-state data and other parameters described in the script, performs the inference of zero-patterns by brute-force method.

"Infer_zero_pattern_Heuristic_algorithm.m": The matlab code imports the steady-state data and other parameters described in the script, performs the inference of zero-patterns by heuristic method.

"Infer_sign_pattern_Brute_force.m": The matlab code imports the steady-state data and other parameters described in the script, performs the inference of sign-patterns by brute-force method.

"Infer_sign_pattern_Heuristic_algorithm.m": The matlab code imports the steady-state data and other parameters described in the script, performs the inference of sign-patterns by heuristic method.

"Infer_interaction_strengths.m": The matlab code imports the steady-state data and other parameters described in the script, performs the inference of interaction strengths. Note that this script requires the Matlab package of the Knockoff filter as provided in https://web.stanford.edu/~candes/Knockoffs/package_matlab.html.

3) "matlab_scripts" used by the script (The code was written on MATLAB R2014b).

Running the tutorial:

1) Extract the content of the enclosed "NR_tutorial_1.0.zip" file to a local directory.

2) Run the "Script_Infer_sign_pattern_Brute_force.m" for inferring the interaction types of a 7-species community.

3) Run the "Script_Infer_sign_pattern_Heuristic_algorithm.m" for inferring the interaction types of a 14-species community.