Step 1: Find Initial Seeds and Hub Neighborhoods

Among nodes not assigned to any preliminary module choose the node with highest connectivity as seed

Identify the neighborhood of size 20 around this seed by MTOM-based neighborhood analysis

Grow the hub neighborhood to a tentative module subject to the Controls

Tentative module → Find the closest neighbor → Check the closest neighbor by Global and Local Control

Success → Update the tentative module by adding the closest neighbor

Fail → Close the tentative module

Reject the hub neighborhood → Check whether this tentative module is large enough

Store the hub neighborhood

Step 2: Extend hub neighborhoods to preliminary modules

Input the initial hub neighborhoods found in Step 1

Hub neighborhood 1 → Hub neighborhood 2 → Hub neighborhood 3 → …… → Hub neighborhood N

Preliminary module 1 → Preliminary module 2 → Preliminary module 3 → …… → Preliminary module N

Find the closest neighbors for these preliminary modules

Determine whether there are ties, i.e., a node is the closest neighbor for more than one preliminary module

Yes → Break the ties by assigning the node to the preliminary module with which it has maximum similarity

No → Update or close preliminary modules

Check the closest neighbor by Global and Local Control to assess whether the preliminary module growth should be stopped

Step 3: Merge Preliminary Modules

Preliminary module 1 → Preliminary module 2 → Preliminary module 3 → …… → Preliminary module N

Compute the relative similarity between all pairs of preliminary modules

Determine whether the maximum relative similarity is larger than the given threshold

Yes → Merge the pair of preliminary modules corresponding to the maximum relative similarity

No → STOP: output the final module