What is claimed is:

1. An information processing apparatus comprising:

a network information acquisition unit that acquires network information which includes target nodes and adjacent nodes which are connected through links;

a classification ratio calculation unit that calculates a classification ratio, in which the target nodes are respectively classified as a plurality of communities corresponding to a predetermined number in the network information, so as to have correlation according to given resolutions with a classification ratio in which the adjacent nodes are respectively classified as the plurality of communities;

a first type community generation unit that generates one or more first type communities, to which the target nodes belong, in the network information based on the classification ratio which is relevant to the target nodes and which is calculated according to a first value of the resolutions;

a classification ratio updating unit that updates the classification ratio relevant to the target nodes so as to have correlation according to a second value of the resolutions with the classification ratio in which the adjacent nodes are respectively classified as the plurality of communities;

a second type community generation unit that generates one or more second type communities, to which the target nodes belong, in the network information based on the classification ratio which is relevant to the target nodes and which is updated by the classification ratio updating unit;

an importance degree calculation unit that calculates an importance degree of one community of the plurality of communities using the classification ratio which is calculated by the classification ratio calculation unit such that the importance degree is large when a ratio which one community occupies to the entirety of the plurality of communities is high;

an importance degree updating unit that updates the importance degree which is calculated by the importance degree calculation unit using the classification ratio which is updated by the classification ratio updating unit;

an importance degree variation calculation unit that calculates an amount of variation in the importance degree, which is updated by the importance degree updating unit, acquired before and after updating; and

an importance degree variation determination unit that determines whether or not the amount of variation, which is calculated by the importance degree variation calculation unit, is larger than a predetermined amount.

2. The information processing apparatus according to claim 1, further comprising:

a dependence degree calculation unit that calculates a dependence degree indicative of a ratio, in which one upper layer community of the one or more second type communities depends on one lower layer community of the one or more first type communities, such that the dependence degree becomes large as there are many redundancies between the one or more nodes, which are classified as the upper layer community, and the one or more nodes which are classified as the lower layer community.

3. The information processing apparatus according to claim 2, further comprising:

a resolution acquisition unit that acquires the values of the resolution when the importance degree variation determination unit determines that the amount of variation in the importance degree is larger than a predetermined amount; and

a stable resolution calculation unit that calculates a stable resolution which has a value between the two values of the resolutions which are acquired by the resolution acquisition unit,

wherein the dependence degree calculation unit calculates the dependence degree using the stable resolution.

4. The information processing apparatus according to claim 3,

wherein the stable resolution calculation unit calculates a value of a middle point of the two values of the resolutions, which are acquired by the resolution acquisition unit, as the stable resolution.

5. The information processing apparatus according to any one of the preceding claims,

wherein the classification ratio calculation unit calculates the classification

ratio through sequential computation, and

wherein the classification ratio updating unit updates a first classification ratio with a second classification ratio through a smaller number of sequential computations than a number of sequential computations performed by the classification ratio calculation unit.

6. The information processing apparatus according to any one of the preceding claims, further comprising:

an independent part determining unit that, before updating is performed by the classification ratio updating unit, determines whether or not at least one of the one or more first type communities includes two or more independent parts; and

a community correction unit that, when the independent part determining unit determines that at least one of the one or more first type communities includes the two or more independent parts, corrects the one or more first type communities such that the two or more independent parts become two or more first type communities.

7. The information processing apparatus according to any one of the preceding claims,

wherein the first type community generation unit and the second type community generation unit respectively generate the two or more first type communities and the two or more second type communities.

8. A program causing a computer to function as:

a network information acquisition unit that acquires network information which includes target nodes and adjacent nodes which are connected through links;

a classification ratio calculation unit that calculates a classification ratio, in which the target nodes are respectively classified as a plurality of communities corresponding to a predetermined number in the network information, so as to have correlation according to given resolutions with a classification ratio in which the adjacent nodes are respectively classified as the plurality of communities;

a first type community generation unit that generates one or more first type communities, to which the target nodes belong, in the network information based on the classification ratio which is relevant to the target nodes and which is calculated

according to a first value of the resolutions;

a classification ratio updating unit that updates the classification ratio relevant to the target nodes so as to have correlation according to a second value of the resolutions with the classification ratio in which the adjacent nodes are respectively classified as the plurality of communities;

a second type community generation unit that generates one or more second type communities, to which the target nodes belong, in the network information based on the classification ratio which is relevant to the target nodes and which is updated by the classification ratio updating unit;

an importance degree calculation unit that calculates an importance degree of one community of the plurality of communities using the classification ratio which is calculated by the classification ratio calculation unit such that the importance degree is large when a ratio which one community occupies to the entirety of the plurality of communities is high;

an importance degree updating unit that updates the importance degree which is calculated by the importance degree calculation unit using the classification ratio which is updated by the classification ratio updating unit;

an importance degree variation calculation unit that calculates an amount of variation in the importance degree, which is updated by the importance degree updating unit, acquired before and after updating; and

an importance degree variation determination unit that determines whether or not the amount of variation, which is calculated by the importance degree variation calculation unit, is larger than a predetermined amount.