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Measure the structure similarity of nodes in complex networks based on relative entropy

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Abstract

Similarity of nodes is a basic structure quantification in complex networks. Lots of methods in research on complex networks are based on nodes' similarity such as node's classification, network's community structure detection, network's link prediction and so on. Therefore, how to measure nodes' similarity is an important problem in complex networks. In this paper, a new method is proposed to measure nodes' structure similarity based on relative entropy and each node's local structure. In the new method, each node's structure feature can be quantified as a special kind of information. The quantification of similarity between different pair of nodes can be replaced as the quantification of similarity in structural information. Then relative entropy is used to measure the difference between each pair of nodes' structural information. At last the value of relative entropy between each pair of nodes is used to measure nodes' structure similarity in complex networks. Comparing with existing methods the new method is more accuracy to measure nodes' structure similarity.

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