

系统工程

基于面积的改进灰关联度算法

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摘要:

灰关联分析是灰色系统理论的重要组成部分, 寻找合适的相似性度量方法是提高灰关联分析准确性的关键。通过对现有灰关联模型的研究, 提出了一种基于面积的相似性度量方法, 以序列相邻采样点间对应面积作为灰关联系数的计算依据, 并用灰关联系数的均值作为序列的灰关联度。理论推导证明该方法符合灰关联四公理, 体现了灰关联分析中衡量曲线相似性的基本思想。仿真实验表明, 在邓氏灰关联度和广义灰关联度算法失效时, 该方法仍能得出与定性分析一致的关联序, 具有较高的可靠性。

关键词: 灰关联分析 邓氏灰关联度 广义灰关联度

Improved algorithm of grey incidence degree based on area

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Abstract:

Grey incidence analysis is an important component of the grey system theory, and a proper algorithm of similarity measure can improve the accuracy of grey incidence analysis. Based on the existing algorithms of grey incidence, a new algorithm is proposed. The incidence coefficient of the new algorithm is calculated by the area between two adjacent sample points of the corresponding curves, and the degree of grey incidence is obtained by means of incidence coefficients. The new algorithm satisfies four axioms of grey incidence and is consistent with the fundamental idea of curves similarity of grey incidence analysis. Simulation results show that the new method obtains the correct order of grey incidence when Deng's degree and generalized absolute degree fail.

Keywords: grey incidence analysis Deng's degree generalized absolute degree

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