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基于不变矩和神经网络的三维物体识别

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摘要 为了提高三维物体识别系统的识别率，研究了将三维物体的不变矩作为物体特征，结合改进的BP神经网络应用于三维物体分类识别。理论分析和仿真实验表明，利用三维物体的不变矩特征能够有效地进行识别，对不变矩特征进行主成分分析可以进一步提高识别性能，达到100%的识别率，并降低神经网络结构复杂性和减少训练时间。

关键词 三维物体识别 不变矩 神经网络 主成分分析

分类号 TP391

Three dimensional object recognition based on the invariant moments and neural network

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Abstract

To improve the performance of a 3D object recognition system, the extraction of the invariant moments of 3D objects as object features, together with the modified BP neural network, is used for 3D objects classification and recognition. The theoretical analysis and simulation prove that using the invariant moments feature of 3D objects has the ability to make classification and recognition. The analysis of its is further principal components made to process these invariant moments features to get better recognition performance. A 100% classification rate can be obtained, and the complexity and training time of the neural network are reduced.

Key words 3-D object recognition invariant moments neural network principal components analysis

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