成像技术与图像处理

尺度相互作用墨西哥帽小波提取图像特征点

丁南南[1,2], 刘艳滢[1], 朱明[1]

1. 中国科学院 长春光学精密机械与物理研究所,吉林 长春 130033;
2. 中国科学院 研究生院,北京 100039

摘要：　图像特征点是图像的重要局部特征,它是图像理解和模式识别中的重要信息,图像特征点提取技术也是图像处理的有力工具之一。提出了一种在尺度相互作用模型下利用墨西哥帽小波来提取图像特征点方法,该方法对于经过旋转、亮度、模糊以及噪声处理后的失真图像仍能提取出相对位置和数量都较为一致的特征点。而针对尺度相互作用的墨西哥帽小波提取不同尺度的图像时的特征点相对位置不一致的问题,提出了在墨西哥帽小波中加入尺度因子的方法,通过仿真实验验证了算法的正确性。

关键词：　特征点提取　尺度相互作用模型　墨西哥帽小波　尺度因子

Extracting Image Feature Points Using Scale-Interaction of Mexican-Hat Wavelets

DING Nan-nan[1,2], LIU Yan-ying[1], ZHU Ming[1]

1. Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, Changchun 130033, China;
2. Graduate University of Chinese Academy of Sciences, Beijing 100039, China

Abstract: The feature point is an important local feature in the image, and it is also the important information in the image comprehension and pattern recognition, so the feature point extraction technology becomes a powerful tool of image processing. A method that based on scale-interaction of Mexican-hat wavelets is presented, and the method could extract close number of feature points corresponding to the same location in the images distorted by rotation,brightness, blur and noise. For the problem that the feature points extracted by scale-interaction of Mexican-hat wavelets are corresponding to the different locations in images of different scales, the method that resizes the Mexican-hat wavelets by the scale factors is presented. Finally, the algorithm is proved by simulation experiments.

Keywords: feature point extraction　scale-interaction model　Mexican-hat wavelets　scale factors

通讯作者：

作者简介: 丁南南(1985-),男,河南焦作人,博士研究生,主要研究方向为数字图像处理。

作者Email: dn8504@163.com

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