

工程与应用

## 多方位结构元素路面裂缝图像边缘检测算法

李刚<sup>1</sup>, 贺昱曜<sup>2</sup>

1.长安大学 电子与控制工程学院, 西安 710061

2.西北工业大学 航海学院, 西安710062

收稿日期 2008-7-21 修回日期 2008-10-16 网络版发布日期 2010-1-7 接受日期

**摘要** 在数学形态学基础上, 针对路面图像中噪声和裂缝类病害不同的像素分布特点, 提出了多方位结构元素形态学边缘检测算法。该算法利用类间最大距离法确定路面裂缝图像中发生梯度变化的点, 后对其采用多方位结构元素腐蚀操作, 提取出路面裂缝边缘像素点并滤除噪声。实验结果表明: 较传统的边缘检测算法, 该算法在准确地检测路面裂缝边缘的同时有效地抑制了噪声干扰, 检测效果良好, 运算速度快。

**关键词** [边缘检测](#) [数学形态学](#) [结构元素](#) [类间最大距离](#)

**分类号** [TP391.41](#)

## Edge detection for road crack image with multidirection morphological structuring elements

LI Gang<sup>1</sup>, HE Yu-yao<sup>2</sup>

1.School of Electronic and Control Engineering, Chang'an University, Xi'an 710061, China

2.School of Marine Engineering, Northwestern Polytechnical University, Xi'an 710062, China

### Abstract

Based on the mathematical morphology, multidirection morphological structuring elements algorithm is proposed aiming to the different distributing characteristics between the noise and the disease pixel of the road image. The algorithm uses the method of the maximal distances between classes to ascertain the varied gradient pixel. Then it does erosion operation by using binary morphology to obtain the edge and remove the noise. Compared with the traditional edge detection algorithm, the proposed algorithm has restrained noise jamming effectively while detecting the road crack accurately and its effect is fine.

**Key words** [edge detection](#) [mathematical morphology](#) [structure elements](#) [maximal distances between classes](#)

DOI: 10.3778/j.issn.1002-8331.2010.01.067

通讯作者 李刚 [lglg930@163.com](mailto:lglg930@163.com)

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