

光电信息获取与处理

改进的live-wire交互式胸片图像分割

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摘要:

肺部轮廓提取是计算机辅助诊断(computer-aided detection, CAD)的关键之一, 并且能为医生提供可靠的诊断数据。提出了一种交互式肺部分割方法, 用优化的Gabor奇滤波器对胸片图像进行滤波得到边缘响应能量图, 然后用此边缘响应能量值来构造Live wire代价函数进行肺部分割。实验表明该算法能正确区分强弱边缘, 快速有效地提取出肺部轮廓, 与传统算法相比, 能减少人机交互次数, 更具鲁棒性和效率性的优点。

关键词: 医学图像分割 胸片图像 live-wire算法 Gabor奇部滤波器

Improved live-wire algorithm for interactive medical image segmentation

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Abstract:

Lung extract is very important for computer-aided diagnosis, and it provides reliable diagnostic data for doctors. This paper presents an interactive lung segmentation method. Firstly, using optimized Gabor odd filter to filter chest X-ray image, and we can get a map of edge response energy. Then, using the edge response energy values to construct live wire cost function, which can segment chest image. Test shows that this algorithm could correctly-distinguish strong and weak edge, and extract the lung's contour quickly and effectively. Compared with the traditional algorithm, it reduces the number of human-computer interactions, which is more robust and efficient.

Keywords: medical image segmentation chest radiograph live-wire algorithm odd Gabor filer

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