

## 局部自适应方向模板匹配的高分辨率遥感影像道路提取

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## Road extraction from high-resolution remote sensing imagery based on local adaptive directional template match

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## 摘要

提出了一种基于局部自适应方向模板匹配的高分辨率遥感影像道路提取方法。该方法利用局部自适应方向模板匹配对遥感图像进行初步分割,得到二值化的粗糙道路段;利用局部灰度一致性原理对输入图像进行一致性检测,得到图像中各像素点的局部灰度检测结果。将初步分割结果和局部灰度一致性检测结果进行信息融合,获得较纯净的初始道路段。最后,使用道路的形状特征对经信息融合后的结果进行滤波,得到初始道路提取结果。由于道路在空间上是连续的,所以在图像中道路的面积不会太小,利用面积指数剔除小面积区域,利用长宽比指数剔除非道路信息,即可获得提取结果。采用2幅高分辨率遥感影像对算法进行了验证,并与现有的道路提取方法进行了对比。实验结果表明,该方法能较好地提取出道路信息。

**关键词** : 道路提取, 高分辨率遥感影像, 局部灰度一致性, 局部自适应方向模板匹配

## Abstract :

An approach of road information extraction for the high-resolution remote sensing imagery was proposed based on local adaptive directional template match. The remote sensing imagery was segmented by means of the local adaptive directional template match and a binary image of the coarse road was obtained. Guided by the principle of local gray-scale consistency, the consistency of the input images was tested and the test results on local gray-scale of all the pixels in the image were received. Afterwards, the preliminary segmented results and the results of local gray-scale consistency test were fused to get a better original part of the road. Finally, the results after information fusion were filtered according to the different features of the road shapes and the original part of the road was attained. The areas of the road in the image are not too small as the road is successive from the space aspect. Accordingly, the parts of smaller area were removed on the basis of area index and non-road information was also removed based on the length-width ratio, so that the exacted results were obtained. The algorithm was verified by two high-resolution remote sensing images and it was compared with known road information exaction methods were accomplished. The results show that the road information can be more successfully exacted by this approach as shown in the experiment results.

**Key words** : road extraction high-resolution remote sensing imagery local gray-scale consistency local adaptive directional template match

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