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State of the art on automatic road extraction for GIS update: a novel classification

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Abstract

This paper surveys the state of the art on automatic road extraction for GIS update from aerial and satellite imagery. It presents a bibliography of nearly 250 references related to this topic. The work includes main approaches on general methods of road network extraction and reconstruction, road tracking methods, morphological analysis, dynamic programming and snakes, methods multi-scale and multi-resolution, stereoscopic and multi-temporal analysis, hyper-spectral experiments, and other techniques for road extraction. Likewise, other approaches related in any way with the road extraction topic are also considered. Between them different papers on segmentation, vectorization, optimization, evaluation, semantic nets and neural networks, fusion techniques, fuzzy logic, and other methods are discussed. A novel classification of road extraction methods according to our criteria is included in order to provide a significant contribution to research in this topic.



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Keywords

Automatic road extraction; GIS update

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