EXTRACTION OF HYDROGRAPHIC NETWORKS FROM SATELLITE IMAGES USING A HIERARCHICAL MODEL WITHIN A STOCHASTIC GEOMETRY FRAMEWORK. (WedPmPO2)

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Abstract :

This article presents a two−step algorithm performing an unsupervised extraction of hydrographic networks from satellite images, within a stochastic geometry framework. First, the thick branches of the network are detected by a segmentation algorithm based on a Markov random field. Second, the line branches of the network are extracted using a recursive algorithm based on a hierarchical model of hydrographic network, in which the tributaries of a given river are modeled by an object process in the neighborhood of this river. Optimization of the object process is done via simulated annealing using a reversible jump Markov chain Monte Carlo algorithm. We show experimental results on a satellite radar image.

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