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ROAD EXTRACTION USING RADAR ERS SAR IMAGES OF ALGIERS (ALGERIA)

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1. Introduction

The launch of numerous radar sensors (ERS-1 and -2, JERS-1, and RADARSAT) as well as their widespread coverage increases the need for automatic or semi automatic interpretation tools for radar images. In particular, line detection can be used for several applications, In this paper, we are interested in the detection of the road network on satellite radar images.

We propose a two-step algorithm for detection of linear structures, in particular, main axes in road networks, as seen in synthetic aperture radar (SAR) images. The first step is local and is used to extract linear features from the speckle radar image. We present two local line detectors as well as a method for fusing information from these detectors. In the second step, we identify the real roads among the segment candidates by defining a Hough transform on a set of segments.

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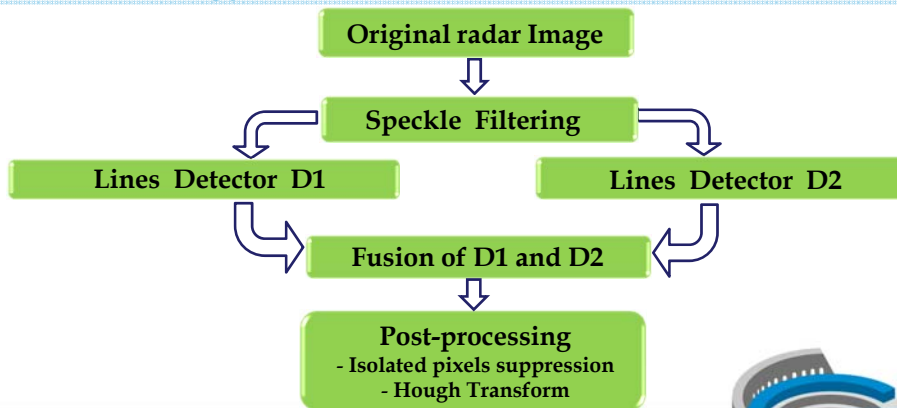
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Methodology



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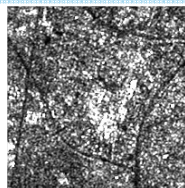
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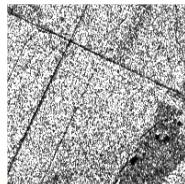
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Data used



PRI ERS-1 Image on Algiers area
(Dar El Beida)



AIRSAR Image on Costa Rica area
(La Selva)

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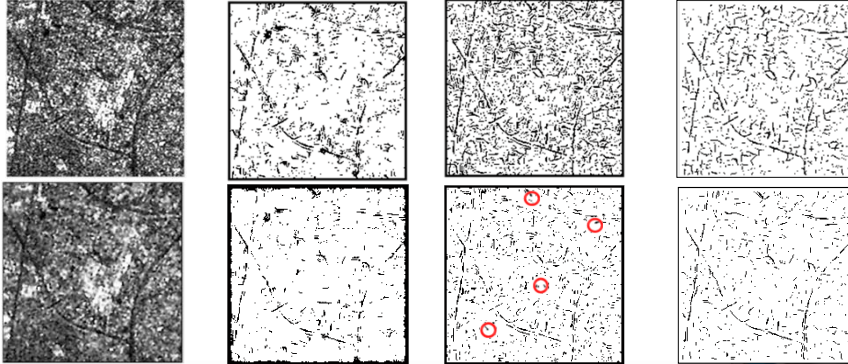
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First obtained results on Algiers area



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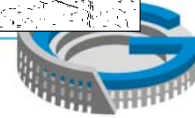


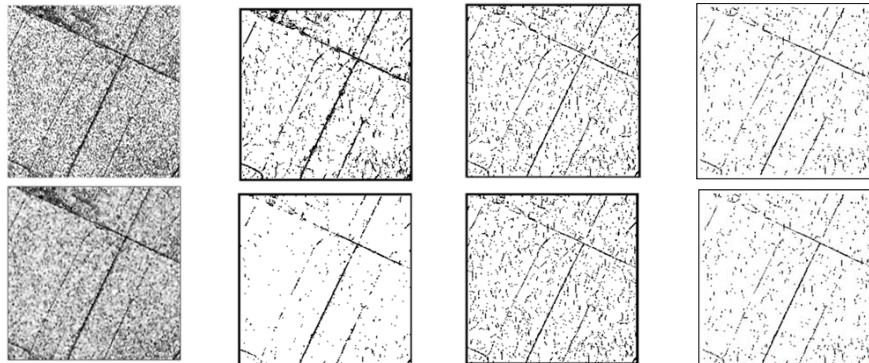
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First obtained results on Costa Rica area



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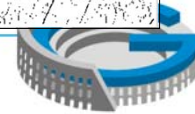




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Conclusion

In this communication, a method has been proposed for detecting the main axes in road networks, as seen in satellite radar images.

The local line detectors deal with speckle images considering their statistical properties and having a constant false-alarm rate, whatever the radiometry.

The results obtained, although still insufficient in hilly areas, are good in flat areas.

In fact, the graph structure proposed is very general and could be adapted to other cases (hydrological or other linear structure detection.)

Improvement could be obtained by looking for the best path between the extremities of the segments we try to connect

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Thank you for your attention

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