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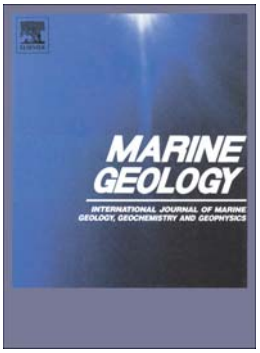

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Automatic Methodology for Mapping of Coastal Zones in Video Sequences

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Keywords: Coastal analysis software, environmental monitoring, beach management, image processing, feature extraction.

1. ABSTRACT

Gathering precise and detailed geomorphological and dynamic information of coastal processes is increasingly required for environmental studies and coastal management policies as well. Traditional methods for *in situ* measurements, or remote sensing monitoring by satellites or airbone imagery, impose limitations and tradeoffs between image quality, operational costs, availability, and negative environmental effects. These limitations and tradeoffs restrict the kind of environmental studies that can be undertaken, specifically when a high spatial and temporal resolution is required over wide geographical areas. In the last decades, video monitoring systems have demonstrated to be a cost-effective alternative for this and other similar purposes. Notwithstanding that, video processing is not fully mature in the context of environmental monitoring in general, and, thus, most of the past and current efforts have been developed in an *ad hoc* basis. This has the drawback that most available solutions are hardly useful in contexts different from their original setup. In this work we develop an autonomous application for geographic feature extraction and recognition in coastal videos. Specifically, we address the classification and feature measurement of multiple beach zones, a topic addressed to a lesser extent by other projects. The system is designed to be deployed in inexpensive, off-the-shelf hardware, and open

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