CNN BASED METHOD FOR SEMANTIC SEGMENTATION OF VNREDSAT-1 SATELLITE IMAGE

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ABSTRACT

Object segmentation on satellite image is one of the most important topics and it can be used to efficiently identify individual land features in greater detail. This paper proposes a Convolutional Neural Networks based method to automatically extract semantic maps of roads from high resolution satellite image – VNREDSAT-1. The predicted low-level pixel classes are then used to improve the high-level segmentation. Various design choices of the convolutional neural network architecture are evaluated and analyzed. We test our method on a collection of VNREDSAT-1 images and achieve promising experimental results, which shows robustness and efficiency of our proposed method.

PROPOSAL FOR DETECTION OF ALGAL BLOOM USING REMOTE SENSING IN COASTAL WATERS OF SOUTHERN VIETNAM

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ABSTRACT

Algal bloom is a natural phenomenon in water bodies under certain eutrophication conditions (over-enrichment with nutrients) and can change water color by algal pigments. Although less than one percent of blooms of algal have been toxins actually and accumulate in the filtering organisms gradually, algal blooms may have negative effects on water environment, economy and human beings in coastal areas. Algal bloom may cause locally hypoxia conditions, diminish the light penetration into water bodies,Due to the complexity, scale, and fast-growing nature of algal bloom, the prediction and determination would need to be fast, real-time, and long-term monitoring to reduce their damage to ecosystems and economy. With the development of remote sensing and satellite systems, algal blooms in marine areas have been identified based on several remote sensing techniques: radiation-based classification, band ratio, and semi-empirical marine bio-optical algorithm. or cause harmful directly to aquatic organisms by preventing them for respiration. By analyzing and evaluating the advantages and the disadvantages of each algorithms for detecting algal blooms in coastal waters, the paper identifies the approach to conduct one of the objectives of our project (Application of remote sensing technology and GIS in monitoring and management of marine environment from Khanh Hoa to Ca Mau provinces Code: VT-UD.12/18-20). By review of the detection of algal bloom in the coastal waters of Southern Vietnam, the combination among in-situ data, modeling and remote sensing techniques with medium resolution (ocean color images), high resolution (Landsat, Sentinel) has increased the ability to monitor algal blooms in the study areas.