

عنوان مقاله:

Enhanced Flood Detection Through Precise Water Segmentation Using Advanced Deep Learning Models

محل انتشار:

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خلاصه مقاله:

Floods are natural disasters that can result in significant social, economic, and environmental impacts. Timely and accurate flood detection is crucial for effective disaster management and mitigation. This paper addresses the importance of water segmentation in flood detection and water engineering applications, emphasizing the need for precise delineation of water areas in flood-hit regions. Accurate water segmentation not only aids in assessing the extent of flooding but also plays a vital role in predicting and preventing potential flood events. This study explores the application of advanced deep learning models, namely SegNet, UNet, and FCN_{v2} for automated flood area segmentation. Leveraging a dataset comprising ۲۹۰ images depicting flood-affected areas, the models are trained to accurately delineate water regions within the images. The experiment results demonstrate the efficacy of these models in effectively segmenting floodwaters. Among the tested models, SegNet emerges as the top performer, achieving an impressive precision rate of ۸۸%. This superior performance underscores the potential of deep learning techniques in enhancing flood detection and response capabilities, paving the way for more efficient and reliable flood prediction systems.

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کلمات کلیدی:

Water segmentation, Deep learning, Flood area detection

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