Multimodal Foundation Model Based Siamese Network for Change Detection in Remote Sensing Imagery

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SUMMARY

Change Detection (CD) in remote sensing imagery is one of the most vital techniques for rapidly and effectively identifying changes on the Earth's surface. It finds extensive application in various fields including land use surveys, urban planning, environmental monitoring, and disaster assessment. However, the significant differences in the scene domains of two-phase remote sensing images present substantial challenges to change detection technologies. To address this issue, we have developed a novel Multimodal Foundation Model (MFM) Based Siamese Change Detection Network, which comprises a feature extraction network, an MFM-based domain understanding network, and a change region detection network. Its design leverages a MFM for image understanding, enabling rapid acquisition of domain-specific features from remote sensing imagery. Our framework has undergone extensive experimental analysis and benchmarking against state-of-the-art methods on publicly available datasets. The results demonstrate the exceptional efficacy and logical coherence of our proposed framework and its individual components, validating their applicability in change detection scenarios.