Reinforcement Learning for Classification of Low-Resolution Satellite Images

Authors : Khadija Bouzaachane, El Mahdi El Guarmah

Abstract : The classification of low-resolution satellite images has been a worthwhile and fertile field that attracts plenty of researchers due to its importance in monitoring geographical areas. It could be used for several purposes such as disaster management, military surveillance, agricultural monitoring. The main objective of this work is to classify efficiently and accurately low-resolution satellite images by using novel technics of deep learning and reinforcement learning. The images include roads, residential areas, industrial areas, rivers, sea lakes, and vegetation. To achieve that goal, we carried out experiments on the sentinel-2 images considering both high accuracy and efficiency classification. Our proposed model achieved a 91% accuracy on the testing dataset besides a good classification for land cover. Focus on the parameter precision; we have obtained 93% for the river, 92% for residential, 97% for residential, 96% for the forest, 87% for annual crop, 84% for herbaceous vegetation, 85% for pasture, 78% highway and 100% for Sea Lake.

Keywords : classification, deep learning, reinforcement learning, satellite imagery

Conference Title : ICMDS 2021 : International Conference on Mathematics for Data Science

Conference Location : Cairo, Egypt

Conference Dates : December 13-14, 2021