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Nuclear Verification from Space - Change Detection using Machine Learning and Sentinel-2 Imagery

Within the framework of the Nuclear Non-Proliferation Treaty, a system of safeguards was established under the authority of the International Atomic Energy Agency (IAEA) to prevent the proliferation of weapons of mass destruction. Satellite imagery is an integral part of the IAEA's monitoring and verification efforts as it can be used to monitor changes and activities in nuclear facilities worldwide. The EO big data with its sheer volume, its complexity and heterogeneity is accompanied by a number of challenges. Image-processing algorithms based on Data Science methods have achieved stunning achievements leading to a more effective and efficient data exploitation. However, turning EO data into valuable safeguards relevant information is an ongoing challenge due to the lack of labeled training data. In this work, we propose a method based on transfer learning to deploy a CNN that can effectively extract contextual image features, which are in turn used for change detection.

I want to give an oral presentation.

no

I want to present a poster.

yes

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