

Self-supervised BIT Pretraining for Remote Sensing Image Change Detection

*Juan Felipe Giraldo Cardenas*¹, Hsuan Ren¹*

¹ National Central University. CSRSR department.

Image change detection is an important task in remote sensing, aiming to automatically detect changes between two or more images from the same scene taken at different times. For this purpose, a bitemporal image transformer (BIT) is used in this research, able to express the input images into some semantic tokens and model the context in the compact token-based space-time. However, although there is a huge amount of satellite image time series (SITS), the datasets currently available for change detection are not big enough due to labelling processes are expensive and time consuming. This may lead the models to suffer from overfitting, and to deal with this, we used transfer learning techniques in a change detection context, where pretrained models with related tasks based on machine learning, deep learning and transformers, transfer knowledge to BIT by fine-tuning all the model parameters. Our goal is to assess whether the pre-trained scheme can learn more semantic representations than a non-pretrained scheme.

Keywords: Satellite image time series (SITS), semantic tokens, deep learning, transformers, transfer learning