

Research group on remote sensing

Keywords: deep learning, remote sensing, image processing, satellite imaging



Research group activities

Recognition in remote sensing images. The group has developed the new techniques for the recognition of objects in remote sensing images. The techniques are based on the use of deep learning and convolutional and transformer neural networks.

Different spacial-temporal image processing. The group has been developing new techniques to deal with the special-temporal images of different satellites and different resolutions. The data fusion is also a topic of interest, especially the fusion of images of hyperspectral and multispectral satellite data.

Creation of new machine learning algorithms. The algorithms based on multi-task, transfer learning problems. The shortage of in-situ data is a problem in remote sensing. The group have proposed new algorithms to estimate the chlorophyll-a concentration and estimate the blooming from multispectral data.

Change Detection in Remote Sensing: The research group focuses on advanced methodologies for detecting temporal and spatial changes in remote sensing imagery. Utilizing hyperspectral and multispectral satellite data, our efforts aim to quantify and characterize dynamic shifts in terrestrial features, enabling precise monitoring of environmental and anthropogenic changes.

Semantic Information Extraction & Agent-Based Modeling: Our research delves into the extraction of semantic information from remote sensing datasets. This extracted data is subsequently integrated into agent-based mathematical models. These models simulate and analyze interactions of distinct entities, such as land use patterns and vegetation dynamics, providing insights into complex system behaviors and potential future trajectories.



Proposal

Remote sensing research group supports:

- Cooperation in joint projects on remote sensing from hyper/multispectral data.
- Creation of novel machine learning algorithms for automatic predictions over in-situ measurements.



Meet our team

Lead researcher: Assoc. Prof. Linas Petkevičius

Research Group:

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Research outcomes

- Fyleris, T., Kriščiūnas, A., Gružasuskas, V., Čalnerytė, D., & Barauskas, R. (2022). Urban change detection from aerial images using convolutional neural networks and transfer learning. *ISPRS International Journal of Geo-Information*, 11(4), 246.
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Resources

Segmentation and detection compute resources, machine learning compute pipelines.



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