

# GI\_Salzburg22

Special Forum on Hybrid AI

GI\_Studio 6th July 2022 9:00 - 12:15

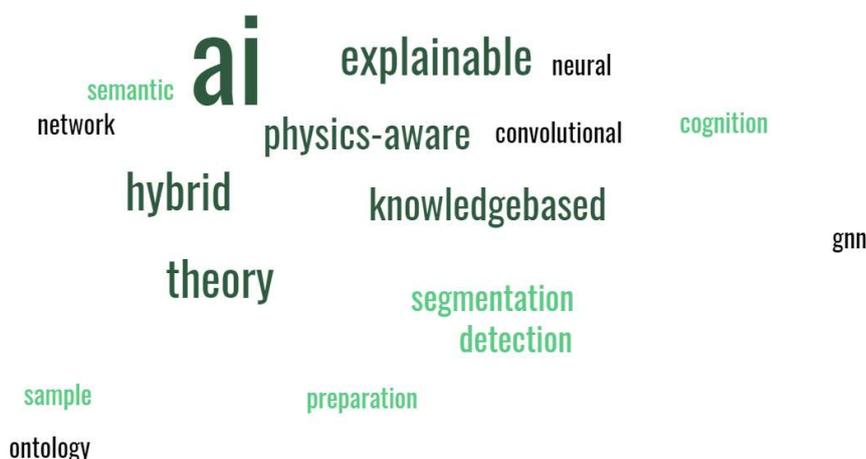
## Why Hybrid AI?

Convolutional neural networks (CNN) have become ubiquitous in remote sensing and close-range image segmentation and classification, but they need many training data, and the inner workings of deep learning approaches are often hidden from the user.

Rule-based classifiers and physical models and simulations on the other hand provide well-explainable results, but often lack adaptability. The synthesis of both data-driven and theory-driven approaches form a new generation of classifiers, sometimes called "Explainable Artificial Intelligence", "Physics-Aware AI" or "Hybrid AI".

## Wait! What exactly is Hybrid AI?

So what are "Explainable Artificial Intelligence", "Physics-Aware AI" and "Hybrid AI"? Or is Knowledge-based AI the better term? Many terms for the same thing? For similar things? Or related concepts? We need to clarify a bit what concepts are around, and how to make the best out of them for Earth observation applications.



What makes satellite or drone image analysis a special case? What specific challenges (timeliness, accuracy, reliability) do we encounter in humanitarian action or other specific domains? What role do classical spatial concepts play in today's automated image analysis? How can we infuse our prior knowledge of a scene, the observation conditions or the quality of the labels into a classifier to deal with poor samples or reduce the need of a multitude of samples? What are best practices? How can we structure our knowledge in a machine-readable and transferable way? Are ontologies the way to go? What are standards or best practices, like STAC, to describe samples? How far are these concepts from being widely used?

**In this Special Forum, we want to develop a common understanding and share both practical and theoretical experience to answer these questions.**

**From thinking to action. Let's challenge our colleagues (and ourselves)!**

We aim to go one step further to draft a data challenge, in which we want to invite researchers from the wider scientific community to showcase their hybrid AI approach on a benchmarking dataset. What are interesting and challenging cases we should set up? How should we prepare the data to conduct and evaluate these challenges?

**The ideal outcome of this Forum is a deeper insight into hybrid AI, and the team building to design, promote, conduct, and evaluate a data challenge.**

Would you like to go with us on this endeavour and contribute with your expertise? Then consider joining this Forum, and contact

Dr. Lorenz Wendt ([lorenz.wendt@plus.ac.at](mailto:lorenz.wendt@plus.ac.at)).

The Forum is organised by the Christian Doppler Laboratory GEOHUM, headed by Prof. Stefan Lang ([stefan.lang@plus.ac.at](mailto:stefan.lang@plus.ac.at)).

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**GEHUM**  
Christian Doppler Laboratory  
for geospatial and EO-based humanitarian technologies



GI\_Salzburg22, formerly AGIT and GI\_Forum, provides a platform for dialogue among geospatial minds, informing the GeoInformation Society, contributing to a more just, ethical and sustainable society.

It is the annual meeting place for innovation, networking and continuing education from all areas of Geoinformatics. Interdisciplinary discussions, forward-looking ideas and a personal atmosphere accompany and shape the exchange of science and research, business and application.

GI\_Salzburg22 will take place in Salzburg, Austria, 5.-7. July 2022, as a physical, on-site event.

