Seeing Beyond the Visible

#HYPERVIEW

Challenge closed

Sections ↓

HYPERVIEW is a part of the IEEE International Conference on Image Processing (ICIP) 2022 conference.

Overview

Solutions, has created an extraordinary challenge, as they will revolutionize the future of farming with the help of in-orbit processing.

Maintaining farm sustainability through **improving the agricultural management practices** by the usage of recent advances in Earth observation and artificial intelligence has become an important issue nowadays. It can not only help farmers face the challenge of **producing food at an affordable price**, but can also be crucial step toward the **planet-friendly agriculture**.

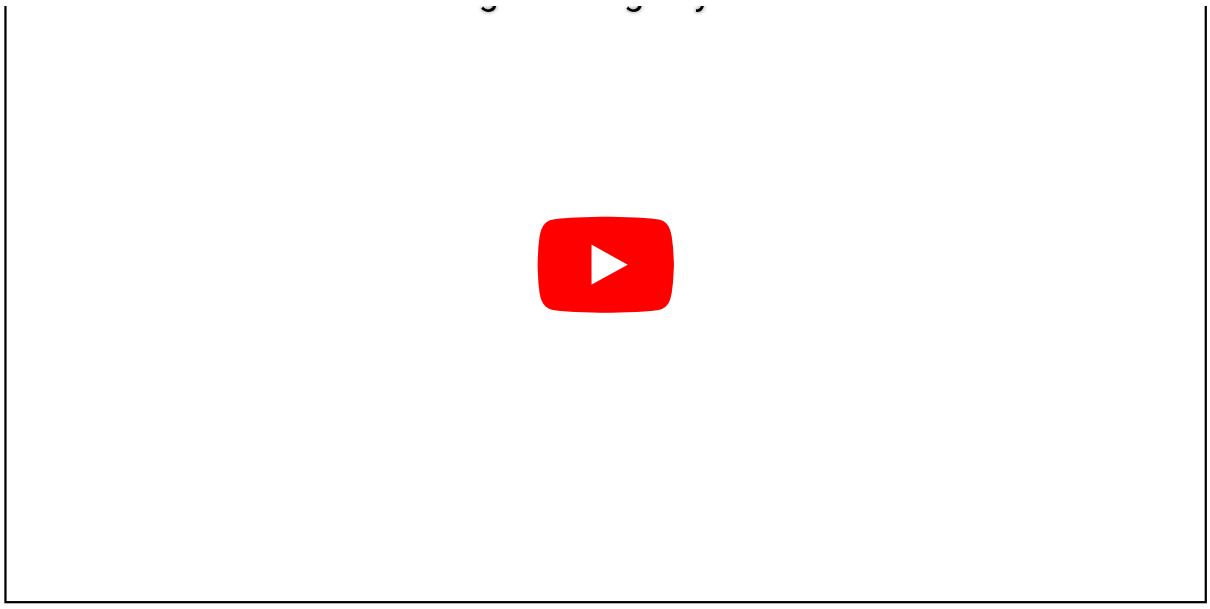
Farmers need timely information about the soil parameters to optimize their fertilization process – this may ultimately lead to selecting a better mix of fertilizers, and to reducing the overall amount of them. The current approach for quantifying soil parameters is very time-consuming, and mostly relying on manual labor– soil samples need to be gathered in the field and mixed, to then be forwarded to specialized labs for further chemical analysis. Also, the number of sampling points in the field is limited and often scattered across large areas, compromising the eventual accuracy of the test results. Overall, the in-situ analysis is not scalable and extremely time-inefficient.

Why not exploit the cutting-edge airborne and satellite hyperspectral imaging technology for more **sustainable agriculture, helping to shape a better future for our planet**?

The objective of this challenge is to advance the state of the art for soil parameter retrieval from hyperspectral data in view of the upcoming Intuition-1 mission. A campaign took place in March 2021 over agricultural areas in Poland with extensive ground samplings collocated with airborne hyperspectral measurements from imagers mounted onboard an airplane. The hyperspectral data contains 150 contiguous hyperspectral bands (462-942 nm, with a spectral resolution of 3.2 nm), which reflects the spectral range of the hyperspectral imaging sensor deployed on-board Intuition-1.

Intuition-1 is a 6U-class satellite mission designed by KP Labs to **observe the Earth using a hyperspectral instrument and an on-board computing unit capable of processing data using artificial intelligence in orbit**. It will be the world's first satellite with a processing power capable of advanced processing of hyperspectral images in orbit. It is due for launch in Q1 2023.

#HYPERVIEW Challenge: Seeing Beyond the Visible



In this challenge, we aim to automatically estimate selected soil parameters, specifically, potassium (K), phosphorus pentoxide (P_2O_5), magnesium (Mg) and pH.

The winner of the challenge will be offered a unique opportunity to run his proposed solution in orbit, on-board the Intuition-1 satellite.

Important dates

- **9 February 2022**: The HYPERVIEW challenge is launched
- **22 April 2022**: Challenge paper submission deadline (optional, for those who want to submit a paper to ICIP)
- **1 July 2022 (4 PM CEST)**: The HYPERVIEW challenge closes
- **11 July 2022**: Final paper/report submission deadline
- **11 July 2022**: Announcement of the Top-performing Teams
- **October 2022**: Announcement of the Winners at IEEE ICIP 2022

Organizers

- Jakub Nalepa, Silesian University of Technology, KP Labs, Poland

- Jakub Nalepa, Silesian University of Technology, KP Labs, Poland
- Bertrand Le Saux, European Space Agency, Φ-lab, Italy
- Nicolas Longépé, European Space Agency, Φ-lab, Italy
- Lukasz Tulczyjew, KP Labs, Silesian University of Technology, Poland
- Michal Myller, KP Labs, Poland
- Michal Kawulok, Silesian University of Technology, KP Labs, Poland
- Krzysztof Smykala, QZ Solutions, Poland
- Michal Gumiela, KP Labs, Poland

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CONTACT

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