

# Data Reduction and Compression Session Wrap-Up

# Compression Wrap Up



## Introduction to CCSDS compression standards and implementations offered by ESA

**Speakers:** Lucana Santos Falcon (ESA), Roberto Camarero (ESA)

## Using CCSDS image compression standard for SAR raw data compression in the H2020 EO-ALERT Project

**Speaker:** Enrico Magli (Politecnico di Torino)

## Preliminary On-board Image Processing Solution for the H2020 EO-ALERT Project

**Speakers:** Dr Aniello Fiengo (Deimos Space), Mr Juan Ignacio Bravo (Deimos Space), Dr Murray Kerr (Deimos Space)



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## Image dequantization for hyperspectral lossy compression with convolutional neural networks

**Speaker:** Dr Diego Valsesia (Politecnico di Torino)

## Solar Wind Analyzer - The Solar Orbiter milestone Towards On-board Intelligent decision making systems

**Speaker:** Dr Vito Fortunato (Planetek Italia s.r.l.)



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## From a hyperspectral/ multispectral on-board compressor to a Knowledge-based on-board processor: spaceOP3C HW/SW evolution

**Speakers:** Dr Leonardo Amoruso (Planetek Italia s.r.l.), Dr Michele Iacobellis (Planetek Italia s.r.l.)

## On-Board Data Reduction Software in CHEOPS

**Speaker:** Dr Roland Ottensamer (University of Vienna)



# Compression Wrap Up



**Universal need of compression** → First complex processing on-board

**Enabler technology** → Leverage for better science and cheaper data

**Active research domain** in tech industry, including Space  
**Space solutions - CCSDS community**

**Machine learning and compression are complementary**

More autonomy on-board

More smart compression (data relevance)

ML → transmit ONLY added-value



# 7th International Workshop on On-Board Payload Data Compression - **OBPDC 2020**



Stay tuned!!

## Applications

- ESA and non-ESA mission
- Standardization activities

## Compression algorithms

- Lossless and lossy compression algorithms
- Multispectral/Hyperspectral data compression
- Synthetic Aperture Radar (SAR) data compression
- On-board video compression and data streaming

## On-board Data selection/Data reduction

- Compressive Sampling
- Pre-processing algorithms, cloud detection

## Deep Learning and Big Data for data compression / data reduction

## High Performance Compression Implementation

- Compressors/algorithms implementation: HW, SW, multi/many-core, ...
- COTS-based implementations
- Compressor boards

