A Benchmark for SAR Learned Data Compression On-Board

Cédric Léonard¹ (cedric.leonard@dlr.de)
Andrés Camero¹ (andres.camerounzueta@dlr.de)
¹: Remote Sensing Technology Institute, German Aerospace Center (DLR), Weßling, Germany

Autoencoder for Data Compression

Baseline
• Traditional on-board: CCSDS 123.0-B-2
• ML on-ground: VAE + GSM [1] and multi-Resblock + GMM [2]

Objectives
• Lowest bits-per-pixel rate + smallest reconstruction error
• Real-time + minimize resource consumption

Metrics
• MSE / PSNR / MS-SSIM

Data
• SARSIM / Sandia National Laboratory / ICEYE

Experiment investigation
• Network footprint Vs. reconstruction performance
• SAR data type format impact on performance

Discussion
• Lossy (ML) Vs. near-lossless (traditional)?
• General SAR Data compression algorithm or scene / band specific?
• Quantization / Entropy Coding / Network Pruning + Fine-tuning, SAR-specific?

Sources