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INSIGHT4EO - AI-ENABLED ON-BOARD PROCESSING PRODUCTS FOR LOW-LATENCY EARTH OBSERVATION

Abstract

Processing Earth Observation (EO) products onboard-spacecraft introduces novel application possibilities. Techniques for data prioritization can be implemented to eliminate irrelevant data, conserving bandwidth and power. Additionally, emergency management solutions can be utilized to receive timely alerts on the ground before the complete dataset becomes available. However, incorporating such solutions onboard the spacecraft poses two primary challenges. Firstly, EO products often require L1/L2 data, which is not inherently accessible onboard. Secondly, there is a need for an efficient and user-friendly execution environment capable of obtaining EO products with minimal latency.

Deimos Space's AI-enabled Insight4EO line of software products addresses these challenges by offering an optimized L1/L2 product designed for onboard processing of both Synthetic Aperture Radar (SAR) and optical payloads, along with a versatile multi-application processing environment based on Multi-Processor and FPGA technology. The capabilities of Insight4EO are highlighted through two use cases: onboard cloud mask generation and extreme weather detection.