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AI in Space: Ready for Prime Time?

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Exciting advancements in remote sensing, AI, and edge computing are transforming scientific and industrial sectors via in-orbit data processing. This technology enables real-time applications such as environmental monitoring, precision agriculture, disaster detection, and in-orbit anomaly detection from telemetry data. Integrating AI into space-based systems and edge devices swiftly converts raw data, like multi- or hyperspectral images, into actionable insights on board satellites. Challenges remain, including hardware limitations, model validation, and sparse ground-truth datasets. In this talk, we will explore concrete opportunities, challenges and solutions related to deploying AI in space, focusing on Earth observation and anomaly detection from satellite telemetry data. The real satellite missions, including OPS-SAT by European Space Agency and Intuition-1 by KP Labs will serve as real-world examples. Finally, we will discuss the most exciting research and development avenues in on-board and on-ground (quantum) AI for space applications. Fasten your seatbelts, we are ready to take off.

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