# Take it easy: From take-off to analysis with a ready-to-use hyperspectral imaging system for DJI Matrice UAVs

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UAV-based imaging spectroscopy has become a powerful approach for high-resolution remote sensing applications, including environmental monitoring, precision agriculture, and ecosystem analysis. However, the operational complexity of hyperspectral UAV missions remains a major challenge. Many existing systems require extensive sensor integration, specialized technical knowledge, external hardware components, and complex workflows, limiting their accessibility for many potential users.

This contribution presents a new approach to overcome these barriers through a fully integrated plug-and-play hyperspectral imaging solution for DJI Matrice UAV platforms. The system is designed to enable efficient UAV-based imaging spectroscopy by combining simplified sensor operation, seamless UAV integration, and an end-to-end data processing workflow.

The payload integrates a VNIR hyperspectral camera covering 500–1000 nm with 100 spectral bands and a 4K RGB camera within a single compact system. Two acquisition modes are supported: single-shot imaging for targeted measurements and continuous line-scan acquisition for airborne mapping applications. Throug integration into the DJI Pilot environment, mission planning, camera control, and data acquisition are directly incorporated into the established UAV workflow, reducing operational complexity and preparation effort.

The generated hyperspectral data can be processed using established workflows including PARGE® for geometric processing and DROACOR® for atmospheric correction (by ReSe Applications LLC), enabling the generation of analysis-ready hyperspectral datasets. The presented approach demonstrates how a user-oriented camera design can lower the entry barriers of UAV imaging spectroscopy without compromising scientific data quality.