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THE SPECTRAL SENSOR OF THE KANYINI MISSION AND THE POTENTIAL SOUTH AUSTRALIAN APPLICATIONS

Abstract

The HyperScout® 2 is the first hyperspectral-thermal camera with artificial intelligence. This advanced remote sensing system has two unique aspects. Firstly, it is equipped with both a spectral channel operating at visible wavelengths and a multispectral channel operating in the thermal infrared. Secondly, it incorporates an hybrid computational system suited for artificial intelligence to perform processing tasks that were previously only possible on the ground.

The HyperScout 2 has been adopted as the hyperspectral imager of choice for Australia's first satellite SASAT1 Kanyini mission.

In this paper we report on

- How HyperScout 2 can be used as in-orbit test-bed and to perform hands-on investigations.

- What is the HyperScout 2 app-like upload environment that allows the user to deploy new algorithms and run them in orbit for demonstration as well as operations.

- How HyperScout-2 enables experimental programs to investigate the use of Artificial Intelligence (AI) for a variety of applications in the field of object detection and data inference.

- What are the different levels of processing and data manipulation on board and on ground to provide the most effective flexibility either by applying full processing or by selecting sub-spatial or sub-spectral regions from the data stored on the large HyperScout® mass memory unit.

- What are the applications that can be exploited with the use of HyperScout 2 that leverage the combination of spectral reflectance and thermal emissions measured at same time through one single optic.