





galleon
embedded computing

Recording Sensor Data for Training AI



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 Galleon Embedded Computing



MACHINE LEARNING



AI

"Galleon's customer wanted to collect as much data as possible in as few missions as possible..."

Executive Summary

Applications of Artificial Intelligence (AI) and Machine Learning (ML) are growing rapidly. A critical success factor for these applications is the ability to provide realistic data to train the AI. For applications which rely on video, there are specific challenges, especially if the AI will operate with uncompressed video.

Challenges

This application example relates to an airborne platform recording uncompressed video specifically for training AI which will later be deployed with uncompressed video inputs.

The application requires uncompressed video to be recorded from multiple cameras, along with 10GbE and GbE data. Galleon's reputation for reliable recording of high bandwidth data for long duration missions was an important factor for the integrator.

Galleon's customer wanted to collect as much data as possible in as few missions as possible, so storage density was critical. Data encryption was also a requirement, without reduction in bandwidth.

The small space and weight available in the aircraft combined with the need for at least 40TB of removable storage capacity with encryption excluded many traditional solutions.

How Product Helped



"The AI application is trained with data which exactly matches the signals which it will receive during deployment"

By selecting Galleon's XSR SDI video recorder product, Galleon's customer was able to obtain a single product to meet or exceed all of their requirements.

The XSR provides the ability to record all of the SDI data, without any losses for 8bit encoding or compression artifacts. This allows the AI application to be trained with data which exactly matches the signal precision which it will receive during deployment.

By combining uncompressed SDI recording with Ethernet recording (10GbE and GbE) Galleon's recorder provided 2 functions within a single small form factor system, saving size, weight and power.

The stored data can be moved off a platform by using the easy to remove high capacity data modules. Fast turnaround of the platform was made possible by swapping the removable data modules (RDMs) in between missions. Galleon's products offer tool free removable storage so the data can easily be removed from a deployed system, and a fresh module inserted ready for the next mission.

Results, Return on Investment and Future Plans



"...combining uncompressed video recording with Ethernet recording in a single product..."

Galleon's customer can record the full SDI signal which the AI will experience in deployment without any changes or artifacts common with compression and decoding of video. This saves the risks associated with training AI with unrepresentative data.

By combining uncompressed video recording with Ethernet recording in a single product, Galleon's customer is able to fit the single recorder into the small space available.

Galleon's customer is also certain in the knowledge that the data is secure, with FIPS 140-2 certified encryption being applied to the stored data.

With Galleon's proven track record and wealth of qualification testing this customer is also sure in the knowledge of reliable operation of the recorder even in extreme conditions.

