UBOTICA CogniSAT™ TK

Image Processing Toolkit

The CogniSAT-TK Package provide a range of utilities to assist in the pre-processing of images prior to their analysis by the CogniSAT platform

Part of the CogniSAT™ platform of products, the CogniSAT-TK gathers together a number of utilities which are invaluable in the development of efficient AI image processing workflows. From guiding the process of framework conversion to the CogniSAT environment to pre-processing of image sensor data, CogniSAT-TK creates a painless CogniSAT development environment. When combined with the other elements of the CogniSAT family, the CogniSAT-TK enables AI System Developers to bring the power of Computer Vision (CV) and Artificial Intelligence (AI) compute acceleration to their on-orbit applications. Using the power of the CogniSAT-TK, users can:

- Convert and compile standard NN trained model using OpenVINO™
- Integrate compiled network with custom image processing for target hardware
- Tile large images for more efficient image processing
- Normalise image intensity to aid in NN performance
- Convert sensor-proprietary formats to a common structure

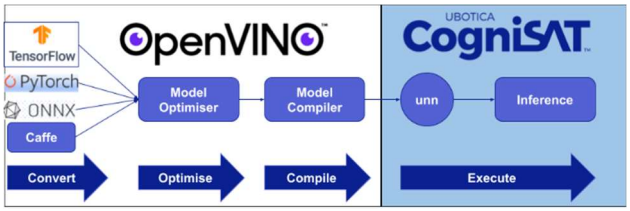
Seamlessly Integrate CogniSAT into Payload Processor Implementation

Sensor Image Pre-Processing

The CogniSAT-TK provides the payload processor software developer with validated modules which allow the sensor output to be structured to optimise the performance of inference generation. These modules are the culmination of many years of experience by Ubotica's team of Neural Network and Vision Processing specialists and deliver significant improvements in throughput and inference/Watt performance.

Neural Network Conversion

The CogniSAT platform can accept Neural Network models developed in most of the common frameworks. CogniSAT leverages the power of the Intel® OpenVino™ toolchain which, though straightforward, may be problematic for someone unfamiliar with OpenVino™.



To ease this burden, the CogniSAT-TK contains templates which guides the user through the process in a purely codeless flow thereby minimising the possibility of error and maximising efficiency.

Codeless Usage Path

The CogniSAT Application, which is contained within the CogniSAT-HCS module, allows the CogniSAT hardware platform to be controlled and managed by the OBC (or payload processor) in a primarily codeless fashion, using a JSON file as the main configuration element. The CogniSAT-TK provides an example JSON file along with documentation on how to configure it for operation.