# EASE™

Edge Adaptive Sharpening Engine

The EASE™ IP-core was developed in order to apply sharpening on video material in a conventional manner as well as reducing the effects of boosting noise in homogenous (non-edge) areas. The EASE™ IP core can apply the edge enhancement in an FPGA in real-time with virtually no time-lag. By feeding an image or video stream containing low intensity noise (like power supply crosstalk or EMI) that is existing in the bottom bits of the digital video data, to a conventional sharpening operator the noise will become more existing in homogenous areas of the image or video stream. This is because usually not only edges are boosted, but also non-edges.

Below an example of the application. Left is the raw input, a lot of areas that need sharpening. In the middle conventional sharpening, introducing noise in the rest of the image. On the right sharpening with EASE™. No noise is being introduced while the image is more easy to watch for the operator as well as details being sharper.


ITS has developed EASE™ that on-the-fly determines the amount of sharpening allowed for every single video pixel. Areas with zero detail will not be subject to edge enhancement, but the more detail, the more sharpening will be applied.

Below a blow-up of the image above, notice the details being sharper and the noise being less with EASE™.
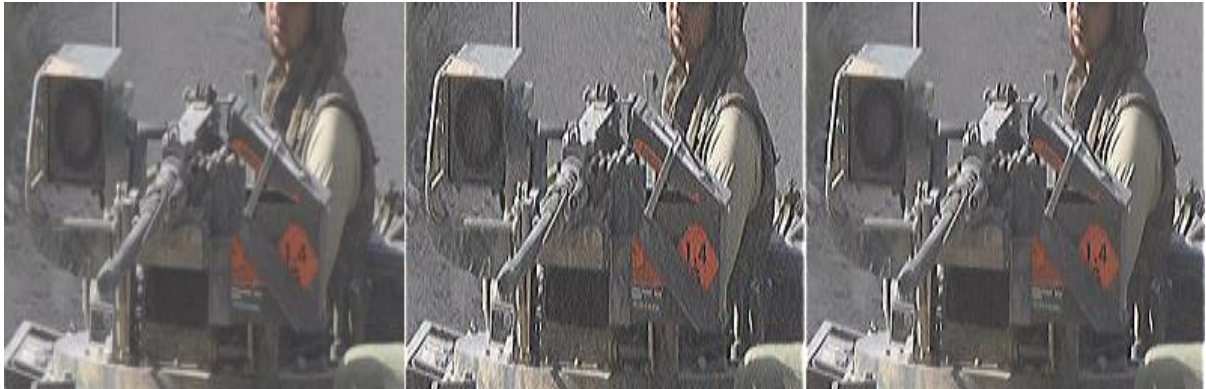
The time lag will be utmost a couple of video lines, depending of the size of the filter kernel used.

In this way, real time sharpening for fast moving objects will be improved dramatically and therefore details for Detecion, Recognition and Identification will improve as well as ease of viewing for the operators.
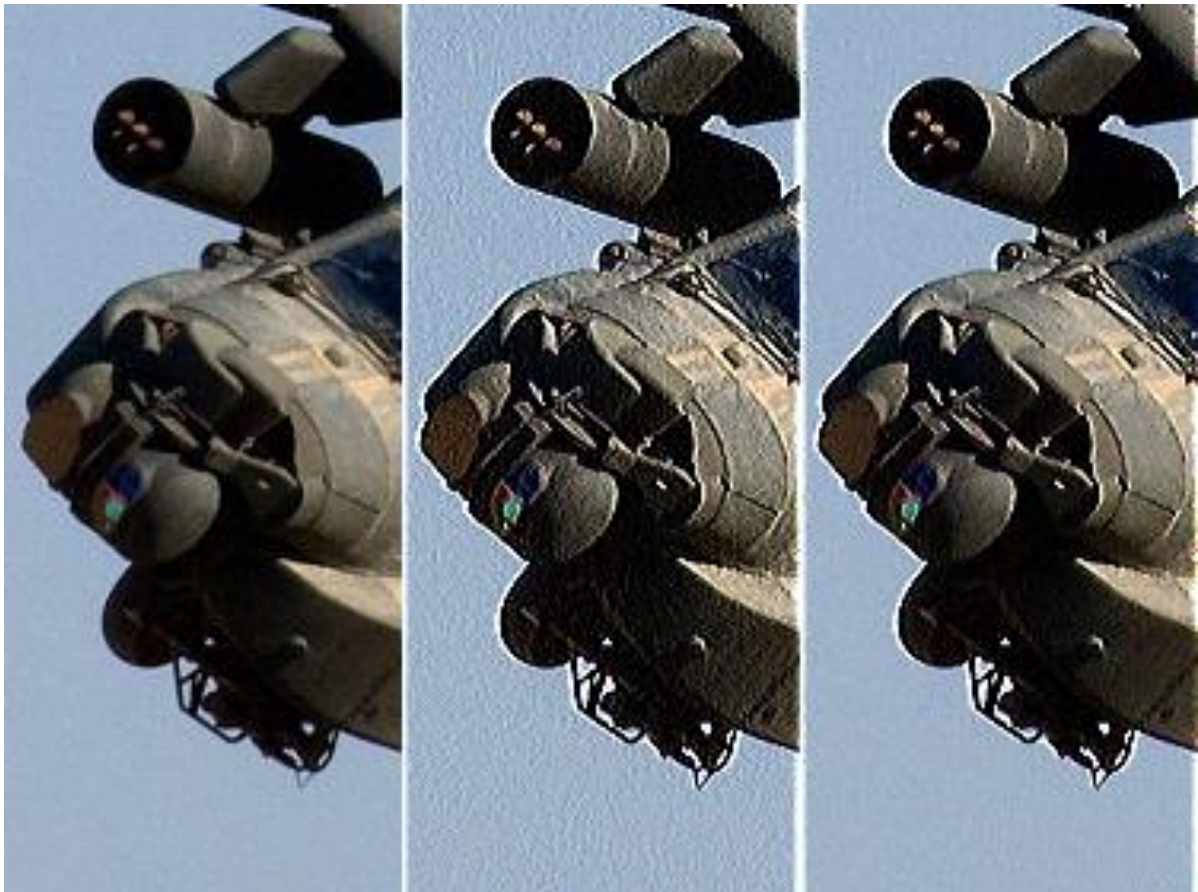
EASE™ can be integrated in ITS cameras but is also available as IP cores, alone or in combination with other ITS IP cores.