

OCR Applications Using JPEG and Raw Images

The purpose of this document is to present a method of capturing compressed and raw image data for OCR applications with the Lumenera Network camera.

The Lumenera Network camera captures images using Megapixel imagers. These images are initially in a RAW format. Images are then compressed to a JPEG format. The cameras' default mode of operation is to provide JPEG images over local area network. It can also be configured to provide images in a RAW format.

Identifying Objects within Megapixel Images

An LE375 3.0 Megapixel camera has been used to capture a high-resolution image of a parking lot. A third party application has then been used to identify the location of the target license plate within the image.

The imager has been cropped to the specific location of the license plate. The license plate is 136x64 pixels of the original 2048x1536 image.

The camera has been set to the RAW imaging mode to capture uncompressed images. The translated RAW image translated is shown in the top-left corner of the picture in Figure 1.



Figure 1 Parking lot image taken with LE375 3.0 Megapixel CMOS camera using F2.0 16mm lens.

Retrieving Images

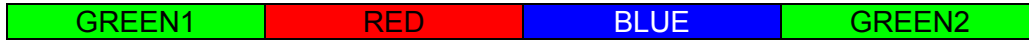
Images can be retrieved from the camera using the *image* command. This can be executed using CGI commands or through multiple different programming languages using XML-RPC as an interface. When the camera is set to RAW mode, compressed images will not be available.

<a href="http://<ip_addr>/cgi-bin/nph-image">http://<ip_addr>/cgi-bin/nph-image	Retrieve a JPEG image.
<a href="http://<ip_addr>/cgi-bin/set?raw_mode=1">http://<ip_addr>/cgi-bin/set?raw_mode=1	Set the camera to RAW mode.
<a href="http://<ip_addr>/cgi-bin/nph-image.raw">http://<ip_addr>/cgi-bin/nph-image.raw	Retrieve a RAW image when the camera is set to RAW mode.

Table 1 – Example Commands to Call Images from the Lumenera Network Camera

RAW Format of Lumenera CMOS Cameras

The Lumenera RAW format uses a Bayer pattern shown below. The RAW image format is uncompressed and has analog and digital gains applied to the image. Eight pixels need to be added to the total width and height to demosaic the image.


Figure 2 – Bayer Data Color Mosaic Order used for LE175, LE275, and LE375 CMOS Imagers

Configuring the Camera

The commands used for the OCR application of the application note are described below. This is a sub-set of the commands listed in the camera API.

X	Sets the horizontal offset of the image.
Y	Sets the vertical offset of the image.
Width	Sets the width of the image.
Height	Sets the height of the image.
raw_mode	Configures the camera to deliver RAW images when set to TRUE
Image	Command used to retrieve images from the camera.

Table 2 –Parameters used to configure the Lumenera Network Camera for OCR Applications

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