

MTVS is a miniature trainable vision sensor ready to be trained and to report the recognition of a region of interest (ROI) at 60 frames per second. MTVS can address many recognition applications in industrial automation, video surveillance, robotics, and more. It can behave as a smart photocell detecting if a part passing on a conveyor is acceptable or should be ejected. If installed in a hallway, it can be trained to detect incoming persons and turn a light on, but to discard a bird passing by the window. If mounted on a motorized platform, MTVS can be trained to recognize the direction of the displacement of a target (center, left, top, right, bottom).

The ROI can cover an area ranging from 16x16 pixels to the full video frame. Because MTVS integrates a neural network chip, it is trained by examples. For the duration of the training, the MTVS is connected to a PC host via its USB port. The Easy Video Trainer software shows the live video coming from the camera and lets the operator select the region of interest graphically with the mouse cursor and classify its contents in up to 8 different categories. As more examples are taught the neurons build a robust knowledge which can be saved to file and also to the camera memory.

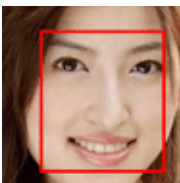
MTVS is equipped with industrial I/O lines, but prior to connecting them, you can validate the accuracy of the recognition on many new examples with the recording utility of the Easy Video Trainer. Indeed the images can be saved into different folders based on the category recognized in the region of interest.



For industrial applications, MTVS has two opto-isolated lines which can be activated for binary classifications such as pass/fail or absence/presence, or for project using only 3 categories (0 for unknown and 1-3 for objects). Another output format, other

than reading the category through the USB port, is a serial RS485 byte transfer at 115200 bauds. Finally, when a validated project (settings and knowledge) is saved to the Flash memory of the camera, the later automatically loads and resumes this project at power up.

For surveillance and video recording applications, the selective recording can be limited to specific categories such as the abnormalities and foreign events only, etc.



# Specifications

## Micron/Aptina CMOS video sensor

- ✓ Monochrome, progressive scan
- ✓ 60 frames per second
- ✓ 752x480 pixels
- ✓ Auto gain and auto exposure
- ✓ Global shutter for fast moving objects
- ✓ Lens with M7 mount and 60° angle (default)

## I/O buses

- ✓ Miniature USB Hi Speed (480 Mbps)
- ✓ 1 opto isolated trigger input line
- ✓ 2 opto isolated output lines

## Mechanical and Electrical

- ✓ Power through USB or external supply (6- 36v)
- ✓ 10 x 50 x 10 mm

## Image Recognition Engine

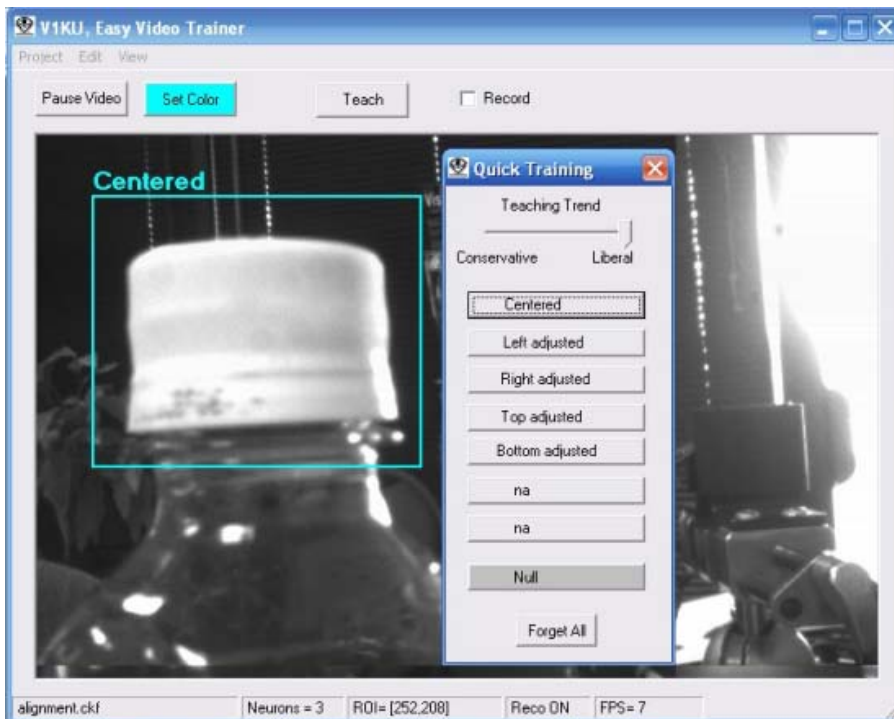
- ✓ Recognize a region of interest at frame rate
- ✓ Report the category with best match
- ✓ Output category to serial bus at 115200 baud
- ✓ Optional output to two opto lines
- ✓ Resume recognition autonomously at reboot

## Training and Monitoring software

- ✓ Learn examples selected in live video images
- ✓ Select a region of 16x16 pixels to full frame
- ✓ Teach up to 8 categories of objects
- ✓ Project files can be saved to file or to camera
- ✓ Adjust sensor settings
- ✓ Save images with optional sorting per category

## Options

- ✓ V1KU SDK for Windows
- ✓ M12 lens mounting
- ✓ Custom CogniSight engines and GUI



## Applications

### Industrial automation

- Presence/Absence
- Pass/Fail
- Part classification and sorting
- Anomaly detection
- Object alignment verification

### Video surveillance

- Selective recording based on image content
- Smart motion, event detection
- Face detection, recognition
- Condition monitoring

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