COGNISIGHT SENSOR

Miniature trainable vision board which can learn and recognize objects in live video. Powered by General Vision's CM1K neuromorphic chip, it can capture video images, learn objects of interest, report known or unknown categories of objects in real-time and trigger configurable IO lines.

CogniSight Sensor connects to a host via USB and is delivered with an Image Knowledge Builder software (Windows only) so you can immediately view live video, adjust the sensor, train the neural network, monitor the recognition and activate selective recording based on what is recognized in the video frames.

APPLICATIONS

Industrial automation
- Counting, Sorting, Alignment verification
- Conformity verification, Anomaly detection
- Surface inspection

Video surveillance
- Event recognition
- Novelty detection
- Face recognition

Robotics
- Object detection
- Target tracking
- Motion control

Target Tracking | Object recognition | Surface classification | Anomaly detection | Template matching | Novelty detection

FEATURES

- High quality monochrome sensor capturing video frames at 60 fps
- Trainable CogniSight image recognition engine configurable on FPGA
- CM1K neuromorphic chip with a network of 1024 neurons
- USB2 port
- I/O lines
- Image Knowledge Builder application
- Optional CogniSight SDKs

The CogniSight engine acts as the glue between the vision sensor and the neurons, extracting feature vectors from regions of interest and broadcasting them to the neurons for learning or recognition. A simple communication controller decodes commands received through the USB port such as Grab, Set Region Position, Learn Region, Recognize Region, Search Objects, Search Anomalies, Report Objects, and more.

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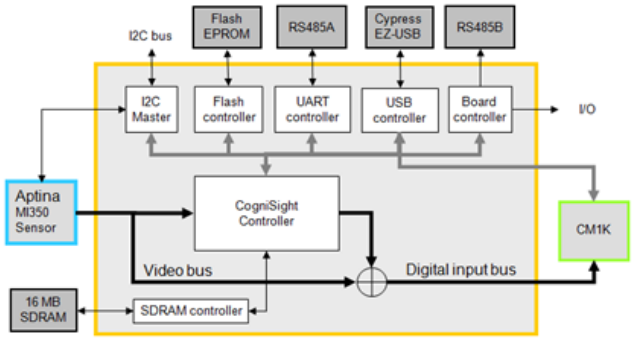
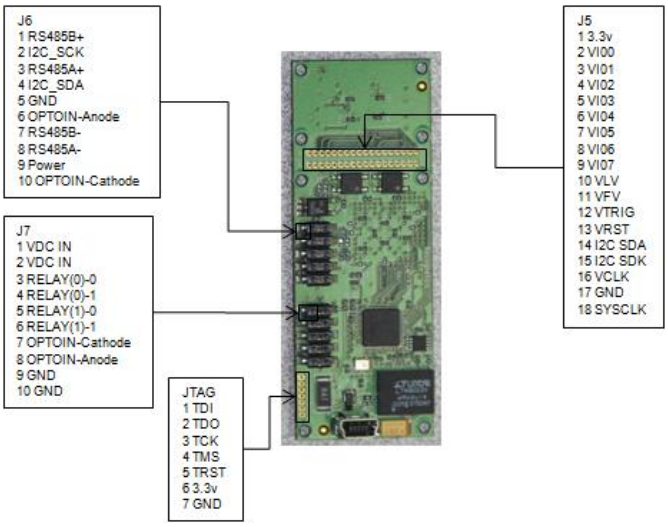
Components	CogniSightSensor
CMOS sensor	Aptina MT9V022, monochrome, 752x480 pixels, 60 fps, global shutter for fast moving objects
FPGA	Actel A3P FPGA with 600k logic elements
SDRAM	8 MB
Flash	4 MB

Electrical and IOs	CBX
Clock frequency	27MHz
Communication	Miniature USB Hi Speed (480 Mbps) 2 RS485 serial output
Opto lines	1 input for external triggering 2 outputs (<60v, 500mA)
Lens	6mm M7 lens w/ holder
Power supply	Via USB or external supply between 6v to 36v
Power consumption	1 Watt
Size	27 x 70 mm, 120 grams

ANN Attributes	CM1K
NN capacity	1024 neurons
Neuron memory	256 bytes
Categories	15 bits
Distances	16 bits
Contexts	7 bits
Recognition status	Identified, Uncertain or Unknown
Classifiers	Radial Basis Function (RBF) K-Nearest Neighbor (KNN)
Distance Norms	L1 (Manhattan) or Lsup

Reco Logic	CogniSight on FPGA
Snapshot	Grab video to memory
Image	Load image file to memory
Region of interest	Learn, recognize
Region of search	Search and report objects
Recognition settings	Identified, Uncertain, either one, or Unknown
Report settings	Distance, categories
Output settings	Optional output to opto-isolated relays





Part Number		
CSS		CogniSightSensor board with M7 lens (7 mm), L-Shaped mount and tripod. Includes Image Knowledge Builder for Windows
CSS_IND		CogniSightSensor , Industrial version with M12 lens (8mm) and aluminum housing with easy clip-on for DIN rails. Includes Image Knowledge Builder for Windows
CS_SDK_WIN		CogniSight Image Recognition API to program your own application in C++, C# or VB
CS_SDK_MATLAB		CogniSight Image Recognition API for Matlab