

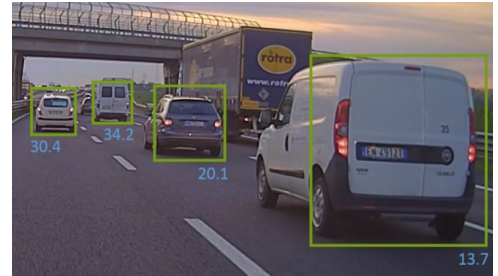
VDET Vehicle Detector

GENERAL DESCRIPTION

VDET is a learning-based vehicle detection IP core, developed for embedded vision applications. The algorithm follows a discriminative approach based on a cascaded classifier using Local Binary Pattern features.

In order to detect vehicles in an arbitrary range, the core accepts in input a pyramid of images.

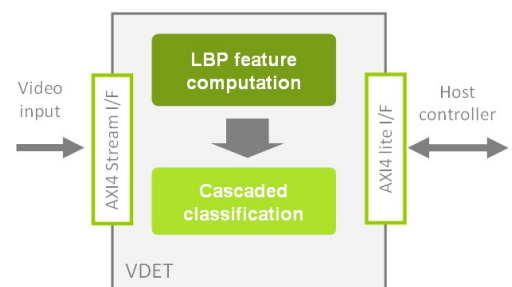
Detection results are stored into an internal buffer, ready for the host controller read-out.



CORE FEATURES

Xilinx® family target	Zynq® -7000 AP SoC
Design file format	Encrypted VHDL (Vivado Core)
Register interface	ARM AMBA AXI4 compliant
Input interface	AXI4 Stream slave
Input format	RGB/YUV Image size up to 4096x4096 Support for image pyramid
Template size	24x24
Built-in-training	The classifier is trained for car and truck recognition on a wide range of automotive scenarios
Input data rate	> 125 Mpixel/sec
Throughput	> 54 GOP/sec
Detection range	5 to 100m with 1 Mpixel camera, 47° FOV
Additional items	SW drivers, API and post processing library available

ARCHITECTURE



APPLICATIONS

- Driving assistance systems such as adaptive cruise control and forward collision warning
- Content based indexing

IMPLEMENTATION STATISTICS FOR XILINX FPGAS

Family (Device)	Fmax (Mhz)	FFs	LUTs	BRAM18	DSP48	Design Tools
Zynq-7000 (XC7Z045-2)	250	4,283	6,671	67	0	Vivado 2016.4

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