

VENPIRE® – VERSATILE EMBEDDED PLATFORM FOR IMAGE RECOGNITION

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VENPIRE® is a versatile embedded platform for image processing applications like object detection, 3D data analysis and image sensor fusion. The generic sensor interface can connect to arbitrary sensor frontends, even any combination of them. The platform provides high computational power along with a flexible interface concept and thus is an appropriate solution for a wide range of applications.

Powerful System Concept

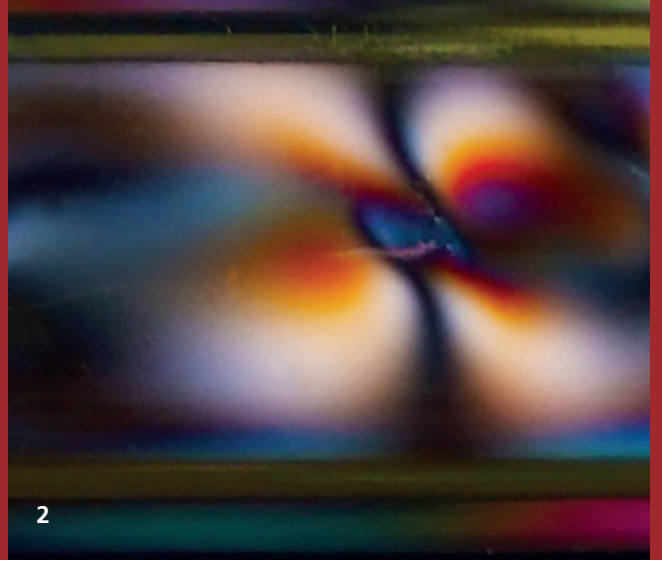
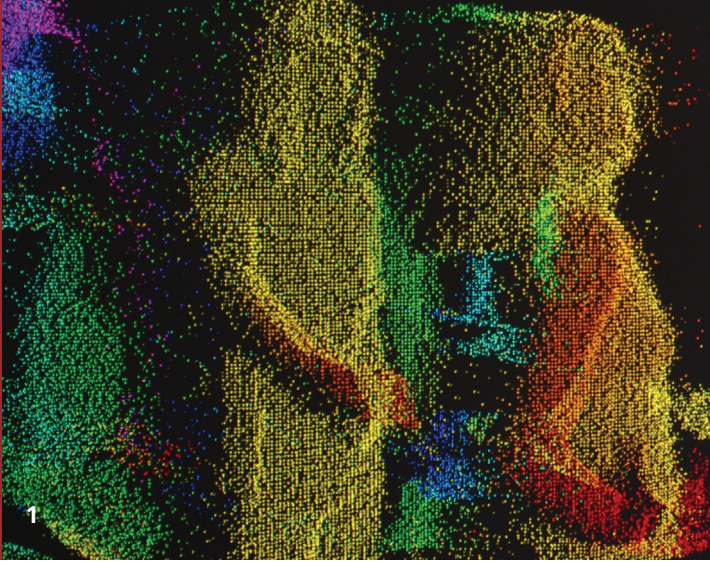
The platform incorporates a multi-core DSP and a high-performance FPGA. Therefore, unlike other commercially available intelligent cameras, VENPIRE® is powerful enough to calculate even complex algorithms without the necessity of an external computational system. The generic FPGA based sensor interface allows for connecting various application

dependent sensor frontends, like time-of-flight or polarization (e.g. the novel polarization sensor by Fraunhofer IIS). Additional non-optical sensors like temperature or inertial sensors make runtime adaption of the image processing algorithms to changing environmental conditions (like real time motion compensation) possible.

Wide Area of Applications

The main aim is, e.g., to provide more precise object detection by using a time-of-flight sensor in combination with an HD sensor and processing the sensor fusion on the VENPIRE® platform without the need for an external PC.

However, versatility and computational capability of the platform make it suitable for many other applications that can



1 3D-image recognition system with a Time-of-Flight (ToF) sensor and an optical image sensor

2 Polarization image of a tension birefringence in a synthetic material

benefit from a large processing power and a flexible system concept.

VEMPIRE® is designed as a basis for the customized development of embedded image processing devices for non-consumer applications.

The system concept enables individual designs from low-power and small size up to highest performance embedded multiprocessor Systems.

Key Features

- Embedded image processing platform running independently of a PC
- Multi-sensor functionality by generic sensor interface
- Compact and energy-efficient even for mobile applications
- Multi-core DSP and a high-performance FPGA ensure high computing power
- Modular sensor frontend for the integration into camera systems
- Concept of the platform as basis for custom specific developments

Application Examples:

- Polarization Camera, Time-of-Flight-Camera
- Traffic guidance system, surveillance technology
- Underwater studies (Autonomous Underwater Vehicles, inspections, scientific applications)

- Industrial image processing (position detection, quality measurement)
- Robotics (autonomous navigation, collision avoidance)

Technical Data

Platform:

- HD Sensors
- HDMI Interface
- Multi-core DSP
- High-end FPGA
- GigE-Vision Interface
- Gigabit Ethernet
- Accelerometer
- Temperature sensor
- Modular Sensor Frontend
- ARM based embedded Linux System