

# In the Footsteps of Da Vinci

## A New Class of Camera Systems Simplifies Machine Vision Integration

The use of machine vision solutions is still often severely restricted by the non-trivial integration of individual components. Limited by system integration constraints, these components are no longer capable of performing their full potential. Now, a new class of camera systems – the IVS (Intelligent Vision System) – is to change this situation and to revolutionize machine vision.

Today, Leonardo da Vinci is regarded as one of the greatest geniuses of all times. He worked as a painter, sculptor, architect, engineer, anatomist and nature-philosopher. Many of his works are world-famous, like the portrait of the Mona Lisa or his anatomical studies. He also created

the saying “Simplicity is the Ultimate Sophistication.” Precisely these words have become the mission statement of the company Ximea for their goal to facilitate machine vision systems. The construction of machine vision systems and solutions is still a complex and non-trivial business, limited by system integration constraints. The necessary components, like camera modules, PC based imaging systems, PLC, further accessories such as lighting, shutters or servos, tend to lose their full potential in the system as a whole. As one of the results, systems cannot be miniaturized sufficiently. But how is this translated into Ximea’s products ranging from subminiature USB Cameras, high-end X-ray cameras to low light and multispectral cameras? Which sophisticated design can meet the needs of thousands of imaging and machine vision professionals and defines simplicity?

### Accepting the Challenge

The answer is the Currera camera system family, which was first introduced at the Vision 2009, trade fair for machine vision, by Softhard Technology. At the time, the managing director Maxim Larin pointed out: “Referring Currera simply to a smart camera is misleading, it is much more. This new device is an intelligent vision appliance which by itself is an absolute new class of camera system.” And this new class bears the name IVS, Intelligent Vision System. Ximea’s managing director Dr. Vasant Desai explains the

concept: “Apart from having all imaging components just millimeters apart and all the benefits resulting from that, e.g. fewer cables and connectors, reduced power requirements, no interface hassles, no unnecessary protocol overheads etc., the main difference is really quite a revolution. By actually fusing the components, the whole load of image acquisition requires less than 1% of the embedded CPU’s resources. An FPGA writes the image data directly to PC memory.”

Solution seekers can now interact with solution providers. In addition to offering off-the-shelf applications, both customers and suppliers can enter into remote desktop sessions analyzing, building, tuning, or test-running the problems and respective solutions right on the target machine. Moreover, Ximea aims to establish an open moderated online community. Customers will be encouraged to contribute their cases, solutions and examples, helping each other in this manner so as to implement a robust imaging system within the shortest time possible.

### Complete Package

The camera system integrates a full industrial Intel Atom based PC in a very small housing with a full set of interfaces for external vision applications including GigE, USB, and serial etc. Also pre-installed are the executable code, including ready-to-go demo solutions from various solution providers, an abundance of imaging libraries, preinstalled drivers and a full development environment. It runs standard operating systems like Windows XP or Linux.

### Getting to Know the Founders

To exploit the full potential of this and further new designs, Softhard decided to partner with Delaro and co-founded the company Ximea GmbH in Münster, Ger-



many, in July 2010. Ximea has the full access to all technologies owned by Softhard, personnel, technical know-how and all resources of Delaro. The company will develop, manufacture and distribute components and systems in the field of digital image acquisition, analysis and processing as well as provide services for customer support. Ximea products are distributed directly from the company's website together with transparent order and shipping conditions.

For the realization of the company's targets, Ximea relies on the experiences and achievements of its founders:

Dr. Vasant Desai has been active in the field of image processing since the mid-eighties. He was the founder of the company Soft Imaging System. Desai sold the company with more than 180 employees, four subsidiaries in the US and further branches in Asia and Great Britain successfully to the international operating Olympus Group in 2004. In 2006 he resigned as the CEO of the company and has since been working as an investor and entrepreneur for Delaro; he is also involved in various capacities in other companies and ventures. Desai is highly qualified in creating scalable businesses.

Maxim Larin started his professional career in the early eighties in the development of hardware-controllers and drivers for operating systems for a variety of different computer systems, from PCs to mainframe-supercomput-

ers. He was involved in various hardware and software projects such as crystallographic and electron diffraction based image processing software, USB and Firewire-CCD cameras as well as multi-spectral, DSP-driven surveillance systems. Larin has the edge, when it comes to transforming leading edge technology into products.

Vjaceslav Klimkovic developed his first PC, based on a LSI11-compatible micro processor, in 1981. The equipment of this PC included several peripheral devices such as wireless touch-keyboards and high-resolution monitors. Since then he has created hundreds of hardware devices, like video-frame-grabber, scientific CCD- and X-ray cameras as well as intelligent software algorithms such as real-time FFT and super-resolution-image enhancement. Klimkovic's greatest talents are miniaturizations: pursuing the maximum function on the smallest space at the lowest power consumption.

#### Ambitious Goals

Based on the know-how of these imaging industry veterans with proven track records and high reputation, Ximea is aiming to provide vision system builders and system integrators with a unique tool for solving complex tasks while consuming significantly fewer resources, following da Vinci's lead of "Simplicity is the Ultimate Sophistication."

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