

MACHINE VISION FOR SAFETY & SECURITY

VISION · AUTOMATION · CONTROL
INSPECT

INSPECT's Branch Newsletter for VISION 2011 | October 2011

Dear Readers,

Records are there to be broken. This is something of which the Stuttgart trade fair is well aware – and with regard to the development of this year's VISION exhibition it is on the right path. At least the figures prove that the organizer is right: After the 300 mark was exceeded last year with 323 exhibitors, 340 exhibitors are expected this year. However, the international specialist exhibition not only showcases over 300 exhibitors on an area of 20.000 m² but also shows current trends and developments.

For example, the industry agrees that 3D image processing is one of the key topics of VISION 2011. According to surveys within the industry by the VDMA and the EMVA, „in image processing, the third dimension has turned out to be an innovation driver.“ As both innovations and the companies which exhibit them need space, if there is a further increase in the success of the exhibition, it will be relocating to hall 1 next year. However, this year the exhibition will be held as usual in halls 4 and 6 from November 8 to November 10. In spite of this, there will be a new feature this year: the Medical Discovery Tour. Because a survey revealed that medical technology is highly popular with both visitors and exhibitors, this year there will be a special show on this topic. As you can see, the fields of application for image processing are very varied. You can get a small preview of just how varied they are in this newsletter. Here we present applications in which image processing is the solution for many problems. And now, we hope you have fun on your discovery tour through the world of image processing.

Your INSPECT Team

Fair Play at Las Vegas

IP-Cameras Keep an Eye on Jerry's Nugget Casino

Jerry's Nugget is a well-established Las Vegas casino with various gaming options, live stage entertainment, and dining facilities. In the course of a security technology update, Jerry's Nugget is replacing 220 analog cameras with 200 IP Cameras.



The majority of the cameras are to be installed in the gaming table and slot machine areas. With their megapixel resolution CCD sensors, Basler's BIP2-1300c-dn IP cameras help to identify the smallest image details such as the face of a playing card on a large gaming table. Additional cameras will secure the casino's cage, where chips and tokens can be bought or exchanged for cash and where money is counted. In this area, Basler's new BIP2-640c-dn IP cameras will be used to detect any irregularities that are too fast for the human eye to see.

Certificated by Gaming Commission

For video data storage, Jerry's Nugget relies on a TimeSight video management

software and server solution. TimeSight's video life cycle management (VLM) system periodically compresses all image data depending on its age and event severity, and thus drastically reduces storage costs.

Basler's IP cameras are among the first megapixel network cameras to have ever achieved certification by the Nevada State Gaming Commission. Among the requirements for certification is a camera frame rate of 30 fps, which the Basler's BIP2-1300c-dn delivers using any type of compression (MJPEG, MPEG-4, or H.264). And with its frame rate of 100 fps, the BIP2-640c-dn IP Camera is even three times faster than the Nevada State Gaming Commission's regulations require.

www.baslerweb.com


VISION
2011

Hall 4, Booth B59

Diagnostic System for Finnish Roads

Thermal Imaging Cameras Detect Road Damages

Finnish company Roadscanners developed an efficient road diagnostics system. Recently they added thermal imaging cameras to determine the conditions of Finnish roads.

One of the main causes for road damage is moisture ingress. If moisture passes the surface layer and enters the underlying structure it weakens the structural integrity. As the water freezes it crystallizes and forms ice lenses, becoming bigger in the process. This can cause havoc in the road structure. Temperature is an important factor in road condition diagnostics.

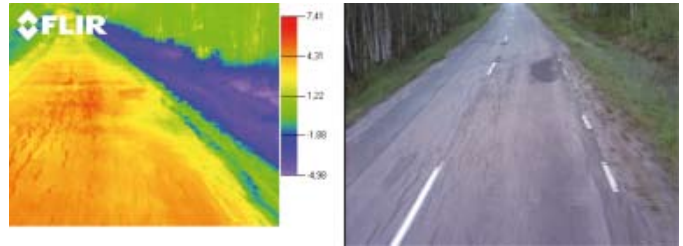
Timo Saarenketo, Managing Director of Roadscanners, has written numerous scientific papers and articles on the deforma-

tion properties of road materials and their testing methods. After having proved in these articles that in theory thermal imaging cameras are very useful for road inspections he set out to put the theory to practice. "With a thermal imaging camera you can find water ingress in the road surface that is invisible to the human eye", explains Saarenketo. "If water has entered the road structure it changes the way the road heats up or cools down. So in the dusk hours of the morning and evening



Hall 4, Booth A55

the patches of road that contain water will show up in the thermal image. This information can be used to predict when that section of road will need repair.



Connectivity and Optics

The thermal imaging camera is mounted on top of the Roadscanners' diagnostic vehicle. Currently an A315 thermal imaging camera with GigE Vision connectivity is being used. To be able to cover the entire road, a wide angle lens with 90° Field of View (FoV) is used. The data collected by the visible light camera, the Ground Penetrating Radar (GPR) and the thermal imaging camera are combined and stamped with the GPS location to enable accurate mapping of the problem areas that will need repair. The reason why Roadscanners has chosen a thermal imaging camera by Flir Systems is on the one hand the connectivity and on the other hand the optics.

www.flir.com

Onshore and in Mid-Air

HD-Camera for Area Monitoring

Cameras care for security – whether on helicopters for area monitoring in mid-air or on robots onshore to assure maximum operational safety from afar. But also in medical technology the fields of application are nearly unlimited.



The HD camera has already mastered the most diverse challenges. It is used for area monitoring as payload on civil drones, helicopters or autonomous vehicles. In stationary applications, for example in the area of microscopy, dermatology, pathology and endoscopy, it replaces stand-alone-video systems. In motorsports, it is mounted in the cockpit and provides brilliant entertainment for spectators as well as additional safety for the driver – proven in 24 hour operation. As camera twins in manipulators and robots the Tauri cameras provide excellent S3D depth effect for safe remote control and assure high-precision process visualization and maximum operational safety for example for air-to-air refueling.



Hall 4, Booth D01

For Harsh Environments

Crystal-clear image quality, HD resolution and true color reproduction are packed into a very small housing with the dimensions 44 x 44 x 53 mm and a weight of 150 g. The Tauri delivers uncompressed images that meet highest standards. Via the HD-SDI-interface full resolution HD-videos are transmitted in real-time directly to the monitor (1,080 p/25 or 1,080 p/30). The Tauri is designed for harsh environments and offers a temperature range of -25°C up to +65°C.

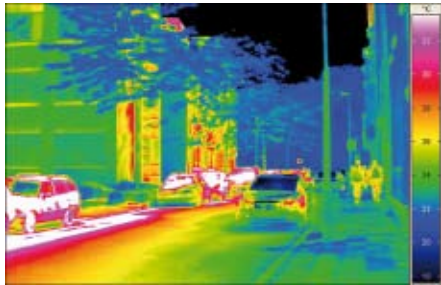
www.kappa.de

Safe en route at **Night**

Uncooled Imagers for the Long-wave Infrared Range

Infrared cameras see more than the naked eye and can make road traffic safer. Cameras for the long-wave infrared range, however, have the disadvantage that the sensor requires constant cooling, which adds to the cost and complexity of the device. Now a new type of detector has been developed which functions at room temperature.

At night on an unlit country road: the bends in the road restrict the view ahead and, to make things worse, it is foggy. The car driver is exercising all due care and yet still does not see the deer on the road



ahead until it is nearly too late. In such situations infrared cameras could provide a better level of safety. Objects at roughly body temperature are luminous in the infrared region at a wavelength of around 10 μm . Detectors in the camera register this thermal radiation and locate the source of heat.

Temperature-Sensitive Detector

Infrared cameras for the wavelength range above 5 μm have to be constantly cooled down to about minus 193°C. Uncooled imagers for the long-wave infra-

red range do already exist today, but they are mainly unavailable on the European market. That's why Research scientists at the Fraunhofer Institute for Microelectronic Circuits and Systems IMS in Duisburg have developed an imaging sensor for the long-wave infrared range that works at room temperature.

At the heart of the IRFPA sensor is a microbolometer – a temperature-sensitive detector that absorbs long-wave infrared light. If the microbolometer absorbs light from a heat source, its interior temperature rises and its electrical resistance changes. A readout chip then converts this resistance value directly into a digital signal. Normally the electrical pulse is first translated into an analog signal and then digitized using an analog/digital converter. As complex and costly cooling is no longer required, further areas of application become feasible beyond the automotive sector. Mobile devices in particular should benefit from the new development. The fact that the cooling mechanism is no longer needed not only saves weight. The battery power available and therefore the operating time of the mobile device increase because no energy is needed for cooling.

www.ims.fraunhofer.de



This Is Where **Trends** Are Set

VISION 2011 from November 8 to 10 in Stuttgart

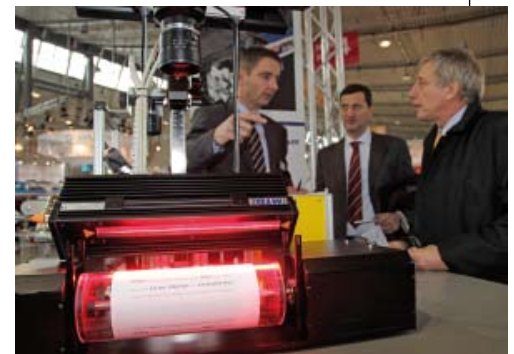
If the Who is Who of image processing gets together, it must be the VISION in Stuttgart.

You can look forward to new products, solutions and systems – and the trends which will be set at this year's Vision.

At last year's VISION, Olaf Munkelt, the chairman of the committee of the VDMA association for industrial image processing and manager of MVTec, defined 3D as the trend which will dominate image processing. The fact that 3D is one of the central topics of this year's VISION shows how fast developments are progressing. In the period from 2008 to 2009, industry surveys by the VDMA in the field of Machine Vision showed a dramatic increase of 10% to 15% in the proportion of 3D measurement applications. Relative to European image processing this was as high as 16%. Because of this, among other things, the more than 300 exhibitors at the VISION 2011 are presenting new 3D im-

age processing products, systems and application solutions. These include new equipment for recording 3D images as well as software tools for the evaluation and display of 3D data.

However, the third dimension is not the only trend which is occupying the image processing industry. Medical technology is just as popular. The Medical Discovery Tour is being initiated for the first time this year as a result of a survey of visitors and exhibitors, which named medical technology as a subject of increasing importance. With the exhibitors, medical technology takes fifth place with regard to relevance to visitors. The special show is a kind of medical technology obstacle



course. This means that products, applications or services concerned with the subject of medical technology are provided with a special logo in order to give visitors a better orientation.

In spite of the new program, visitors will still find familiar features such as the Integration Area or the Application Park. In 2011 the Application Park is starting its fourth round. Here, real-life applications are shown, e.g. how Playmobile figures are inspected, labeled and packaged. The Vision Academy and the special show of international image processing standards will be held once again.

www.vision-messe.de

VISION 2011 – Highlights

Medical Discovery Tour

Image processing is making its way into medical technology, and the Medical Discovery Tour, which is being presented for the first time this year, eases the path to the relevant exhibitors. The companies participating in this special exhibit on the subject of medical technology are indicated with a Medical Discovery Tour logo in both the exhibition catalog and in the exhibition itself and are therefore easy to find.

► Halls 4 + 6

VISION Academy

You never stop learning. There is always something new. Because of this, as in previous years, free seminars will be held on all three days of the exhibition. These will present application knowledge and technological know-how for both beginners and experts. Four seminars will be dedicated to subjects ranging from maintenance to mechanical engineering.

► Entry East/Atrium, opposite to the VIP Lounge

Industrial VISION Days

If you want to know which image processing topics are at the present focus of attention, you should not miss the lecture forum of the VDMA on industrial image processing. In specialized lectures, experts will describe the present state-of-the-art, discuss new camera interfaces and show new solution approaches.

► Hall 6, Booth A81

Integration Area

If you look, you will find. The Integration Area is intended for everyone who is looking for a very special solution. Here you can see at first hand how image processing is used in the car industry, mechanical engineering or in the food industry. However, you do not need to search for the way to the Integration Area – just follow the yellow carpet in Hall 4 and discover how varied image processing solutions can be.

Sponsored by INSPECT

► Hall 4, Booth A74-E31

Application Park

Return to childhood – you can do this in the Application Park, because here, Playmobile figures play a leading role. Here it is explained how image processing, handling technology and automation intermesh in the production of the figures. In 11 modular inspection and processing cells, color detection, inspection for scratches and geometrical measurements are carried out. And as usual, the very best comes at the end: you can take the Playmobile figures home with you as souvenirs.

► Hall 4, Booth A75

Special Presentation of International Image Processing Standards

Whether CameraLink, CoaXPress, CameraLink HS or GigE-Vision – each interface has its own strengths. In this special presentation, you can find out what these are, and which product provides the optimum solution for your application.

► Hall 6, Booth B73

Podium Discussion

As in previous years, INSPECT invites you to attend and investigate the question: What is Embedded Vision? Many questions about new markets, potentials and opportunities for image processing will be answered in the course of this round of discussions.

► Hall 6, Booth A81 (November 9, 14:00)

Venue:
Messe Stuttgart



Entry for navigation system:
Flughafenrandstraße/Flughafen in 70629 Stuttgart

Dates:
November 8-10, 2011

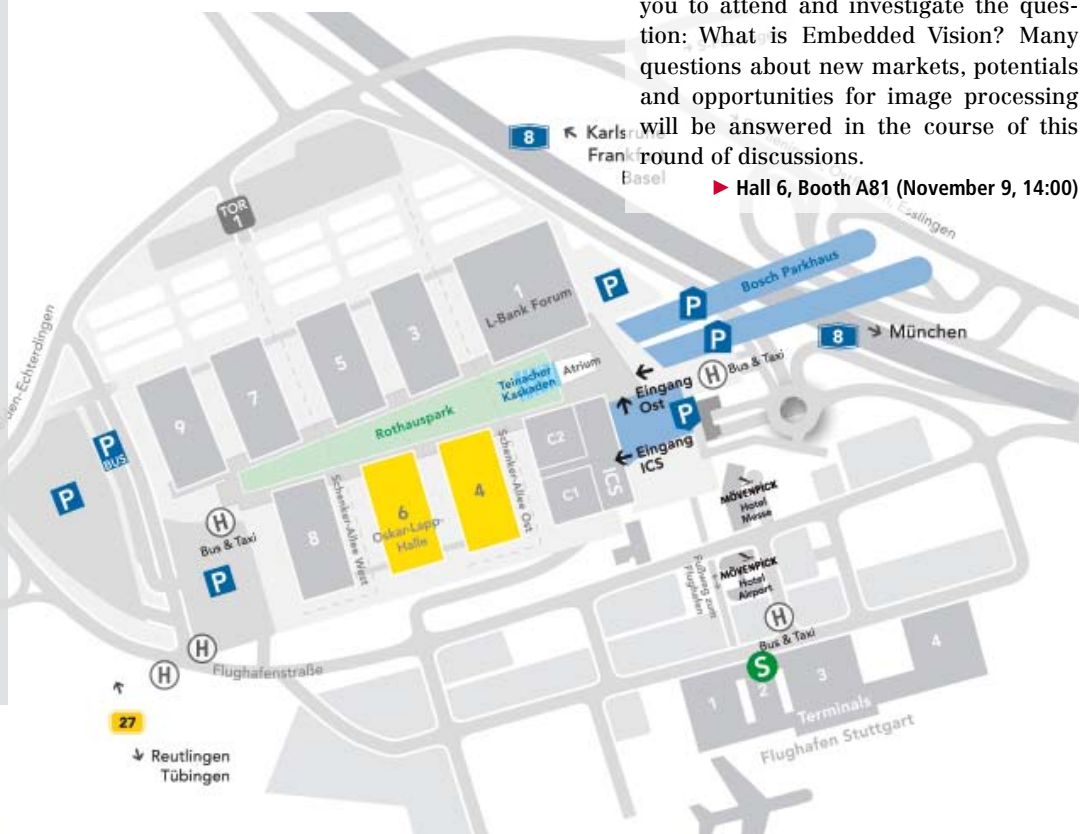
Opening times:
daily from 9:00 to 17:00

Ticket price:
Day ticket (incl. VVS) € 25.00
Reduced day ticket (incl. VVS) € 15.00
Full exhibition ticket € 40.00

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www.vision-messe.de

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