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VISION focus

Delivering the latest news from the Imaging and Machine Vision markets

VR vision tool lets viewer see the world through the eyes of a primate

Credit: David Haring.

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Defensive action

Welcome to the latest issue of VISION Focus, the quarterly magazine (and free download from optics.org) that covers all aspects of vision and imaging, produced by the team that brings you optics.org. The editorial focus of this issue is centered on SPIE's Defense + Commercial Sensing 2018 ("DCS"), the #1 global technical conference and exhibition about sensing, imaging, and photonics technologies for defense, security, healthcare, and the environment.

This year, DCS returns to Baltimore, Maryland, having moved up country from last year's Orlando venue. The DCS conference presents an opportunity for the expected 4,500 attendees to learn about the latest technical advancements in sensors, infrared technology, laser systems, spectral imaging, radar, and LIDAR.

The program includes 45 conferences organized into four tracks, which highlight the key technology areas while addressing a wide range of apps.

The associated exhibition highlights the latest technical advances in these technologies, featuring component and systems vendors alongside many universities and technical research institutes. On the show floor there is also a constant program of industry-facing seminars covering applications, case studies and market analyses.

In this issue

A virtual reality system has been developed to simulate big-eyed primate vision, which unifies the concepts of optics and natural selection. Its developers at Dartmouth College, Hanover, NH, say it could also be useful as a teaching tool.

A novel imaging system developed at MIT, Cambridge, MA, can identify biological features, such as early-stage cancers, using fluorescence microscopy looking into complex tissues. This NIR "DOLPHIN" platform promises non-invasive, real-time tracking of fluorophores in living patients at greater tissue depths, leading to earlier detection of cancers.

Flir and the World Wildlife Fund are working together to use a vision system to combat rhino poaching in Kenya. The sensor systems firm is donating $3M in thermal imaging equipment. FLIR has also opened a new office in Washington DC to be closer to the US seat of power

In business, machine vision firm Cognex has impressed with another record sales year, although a dip in demand from consumer electronics sector and China has hit the rate of growth. Sofradir and ULIS are to invest €150M in France's Nano 2022 program to develop next-gen infrared detectors.

Plus we review many of the latest product launches from within the industry.

Each issue of VISION Focus magazine is promoted to more than 25,000 industry professionals. We also publish printed copies at major events and exhibitions, so if you're visiting Defense + Commercial Sensing 2019, make sure to grab a copy of the latest issue – you can visit the optics.org and SPIE team on Booth 923.

Matthew Peach, Editor, VISION focus
matthew.peach@optics.org

This Issue

VR vision system lets users see the world through the eyes of a primate

Cognex impresses with another record year

MIT imaging system spots tiny tumors

Flir and WWF unite to combat rhino poaching in Kenya

Sofradir and ULIS to invest €150M in French Nano 2022 program

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FLIR Systems opens new office in Washington DC

plus the latest product launches from within the industry

Publication and Editorial Schedule 2019/20

June/July Issue 2019

- Bonus Distribution: **Laser World of Photonics, SPIE Optics+Photonics and European Machine Vision Forum**
- **Editorial Focus:** optical components, academic research, software applications.
- Published in advance of Laser World of Photonics, 24th - 27th June 2019

September/October Issue 2019

- Bonus Distribution: **EMVA Embedded Vision Forum Europe,**
- **Editorial Focus:** opto-electronic systems, applications in sensing and manufacturing.
- Published in advance of EMVA Embedded Vision Europe, 24th – 25th October 2019

January/February Issue 2020

- Bonus Distribution: **SPIE BiOS, Photonics West, SPIE Medical Imaging**
- **Editorial Focus:** industrial applications, sensing, biomedical analysis and treatments.
- Published in advance of BiOS, 2nd - 3rd Feb, Photonics West, 4th Feb - 6th Feb, SPIE Medical Imaging, February 2020

April/May Issue 2020

- Bonus Distribution: **SPIE Defense+Commercial Sensing, CONTROL, Stuttgart**
- **Editorial Focus:** aerospace and defense applications, associated research and development
- Published in advance of DCS 2020 *(Defence & Commercial Sensing)*, 28th – 30th April 2020

VR vision tool lets viewer see the world through the eyes of a primate

A virtual reality system that simulates big-eyed primate vision, which unifies the concepts of optics and natural selection, could also be useful as a teaching tool.

By Matthew Peach

A new virtual reality package, Tarsier Goggles, developed at Dartmouth College, simulates the vision of a tarsier, a pint-sized primate with enormous eyes that are roughly the same size as its brain. But this is more than a mere natural history experiment to see how an animal sees the world, say the researchers behind this work, at Dartmouth College, Hanover, NH, USA.

They say that the vision model, the volume of data collected and processing capabilities "illustrate the adaptive advantage of this animal's oversized eyes." Both the virtual reality build and the team's findings have been published recently in the journal Evolution: Education and Outreach, which is available for free online.

Credit: David Haring.

What big eyes you have: a Philippine Tarsier.

Tarsier Goggles was developed by Samuel Gochman, who graduated in 2018, while he was a student at Dartmouth and Nathaniel J. Dominy, the Charles Hansen Professor of Anthropology at Dartmouth, who studies the evolution of primate sensory systems, in collaboration with the Dartmouth Applied Learning and Innovation (DALI) Lab, where students design and build technology.

Gochman approached the DALI Lab with a problem: how could he change the human perception of our world by experiencing the tarsier's unique ocular adaptations. Through an iterative process, the DALI team explored different design solutions upon which Gochman and the team determined that a virtual reality experience would be best, as it is not only immersive but could also be used as a teaching tool in a classroom setting.

The open-access software, Tarsier Goggles, features three virtual learning environments — "Matrix," "Labyrinth" and "Bornean Rainforest," which simulate how a tarsier's vision is different from a human's in terms of acuity, color vision and brightness.

Bornean tarsiers (which inhabit the island of Borneo) have protanopia, a form of red-green color blindness. In the virtual Bornean Rainforest, users can move through the forest, leaping and clinging to trees in "a dark, maze-like space that is practically opaque under human visual conditions but navigable as a tarsier, demonstrating the advantages of tarsier visual sensitivity," as described by the authors.

The Tarsier Goggles website explains, "Tarsier Goggles is a virtual reality project that allows everyone to experience how a tarsier might see. It serves as a tool to engage in hands-on scientific concepts in optics, perceptual science, and evolutionary biology, and also challenges our own thinking about our environment.

"The experience is self-guided and allows users to toggle between human and tarsier in order to explore different realistic environments with both sets of eyes. Built in Unity3D software with SteamVR for the HTC Vive Pro." HTC Vive is a virtual reality headset developed by HTC and Valve Corp.

The description continues, "For various functionalities like teleportation, splash screens, and tooltips for our tutorial, we use Virtual Reality Toolkit (VRTK), an open source library. For many of the visual effects, we used Unity's built-in post-processing stack. Our assets were built in Maya."

Natural selection plus optics

Co-author Dominy added, "Most ninth- and 10th-grade students in the U.S. learn about optics and natural selection, but the two topics are usually treated in isolation. The tarsier is an effective means of unifying both concepts. You have to understand optical principles to understand why natural selection would favor such enormous eyes in such a tiny predator."

At Dartmouth, Gochman focused in biological anthropology and human-centered design, and this project was one of the ways he applied these research interests. "I realized that most students' learning of natural selection was limited to diagrams, slideshows and models," says Gochman, who served as the lead author of the study. "Virtual reality offers an immersive experience for understanding some of the properties of the tarsier's vision, as a result of its adaptations.

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VR vision tool lets viewer see the world through the eyes of a primate

Tarsier Goggles is a science education tool that engages students in hands-on scientific concepts in physics, perceptual science and biology," he adds.

As part of the study, Gochman demonstrated Tarsier Goggles at Dartmouth, at an anthropological society meeting and to a class of sixth-graders visiting the Vermont Institute of Natural Science in Quechee, Vt. He also demonstrated the technology to high school students at Kimball Union Academy in Meriden, N.H., where students in science and anthropology classes watched a brief video on tarsiers' foraging behavior followed by the opportunity to try out this virtual reality technology.

"The Tarsier Goggles project engaged my students first-hand in a learning experience, which could not have been achieved through any other medium," said Marilyn Morano Lord, an anthropology and world history teacher at Kimball Union Academy, who also served as one of the co-authors of the paper.

Credit: Dustin Meltzer, Kimball Union Academy.

A student-user experiences Tarsier Goggles during formal assessment. The student stands in front of a projection of the internal experience for classmates to view.

Tarsier Goggles was built in Unity3D with SteamVR for the HTC VivePro, and was coded in C#. The Virtual Reality Toolkit was used to create functionalities such as teleportation. For many of the visual effects, Unity's built-in post processing stack was utilized, and the assets were built in Maya. All the visual assets and experience was coded from scratch by the DALI team based on the lab's collaborative, human-centered design approach.

Explore further: Decoding of tarsier genome reveals ties to humans

More information is contained in the paper Tarsier Goggles: a Virtual Reality Tool for Experiencing the Optics of a Dark-adapted Primate Visual System, by Samuel R. Gochman et al in the journal *Evolution: Education and Outreach (2019)*. DOI: 10.1186/s12052-019-0101-6

Author:
Matthew Peach, Contributing Editor, optics.org

Cognex impresses with another record year

Sales at machine vision firm up again, but dip in demand from consumer electronics sector and China dampens rate of growth.

Massachusetts-based Cognex, the market leader in machine vision technology, has warned of a slowing outlook as it reported its ninth successive year of sales growth.

The Natick-headquartered company posted annual sales of just over $806 million in 2018, up 5 per cent on the figure of $766 million reported in 2017.

Net income also rose strongly, however that was partly the result of favorable changes to US corporate tax cuts, and the company's annual operating income of $221 million was down around 15 per cent from $259 million a year ago as Cognex continued to invest heavily in technology development.

CEO Robert Willett said in response: "We performed well across most end markets. An exception was consumer electronics - our largest industry vertical - where a few large customers in OLED display and smartphone manufacturing scaled back their spending on machine vision after making substantial investments in 2017. Putting those customers aside, revenue from the rest of our business grew by 18 per cent year-on-year."

Image: nasdaq.com.

After slumping in value towards the end of 2018, Cognex' stock price has rebounded since the start of the new year and rose around 2 per cent after the company's latest results were announced. Trading at around $51 on the Nasdaq on February 18, the machine vision firm commanded a market capitalization of around $8.7 billion.

China slowdown

Willett added that lower spending by customers in China continues to weigh on the company's growth rate, as it did at the end of 2018. Similar effects are now evident in other markets the company serves, most noticeably in the US automotive sector.

Three months ago, Cognex executives had warned that the closing quarter of the 2018 would be hit by the wider economic slowdown in China. With annual sales growth dropping from 44 per cent in 2017 to just 5 per cent in 2018, the impact of that and reduced investments by consumer electronics clients is now evident.

In a conference call to discuss the 2018 results, Willett reported particularly strong growth from clients in the logistics sector, telling investors:

"Our logistics business grew by more than 50 per cent over 2017. With annual revenue surpassing $100 million, it has become a meaningful part of our business."

That momentum looks set to continue, with the CEO claiming that Cognex is now "widely recognized" as the market leader for machine vision in the logistics sector, which includes major retailers such as Amazon.

Demand growth from automotive industry customers came in at just under 10 per cent, but on track with the company's long-term targets for that sector.

"Following two consecutive years of faster growth, the [auto] industry began to slow in the second half of 2018," Willett added.

Flat outlook

For the current quarter, the Cognex team is expecting to post around $170 million in sales – virtually flat with the same period last year.

"Cognex is performing well given current market conditions," summed up the CEO, adding that the outlook remains "uneven" across the company's various and markets and geographic regions. "Logistics, deep learning, and 3D all represent near-term growth drivers for us," he added. "Demand from China is soft after many quarters of out-performance, and that softness is affecting electronics, OEMs, and other Cognex customers who rely on exports to China.

"In addition, we are seeing delayed spending and project push-outs by our customers in the American automotive market."

Author:
Mike Hatcher, Contributing Editor, optics.org
http://optics.org/news/10/2/14

MIT imaging system spots tiny tumors

Near-IR DOLPHIN platform could lead to earlier detection of cancers.

The challenge of spotting biological features, such as early-stage cancers, with fluorescence microscopy in complex tissues remains significant. But a project at MIT could point towards non-invasive real-time tracking of fluorophores in living patients at greater tissue depths than currently possible.

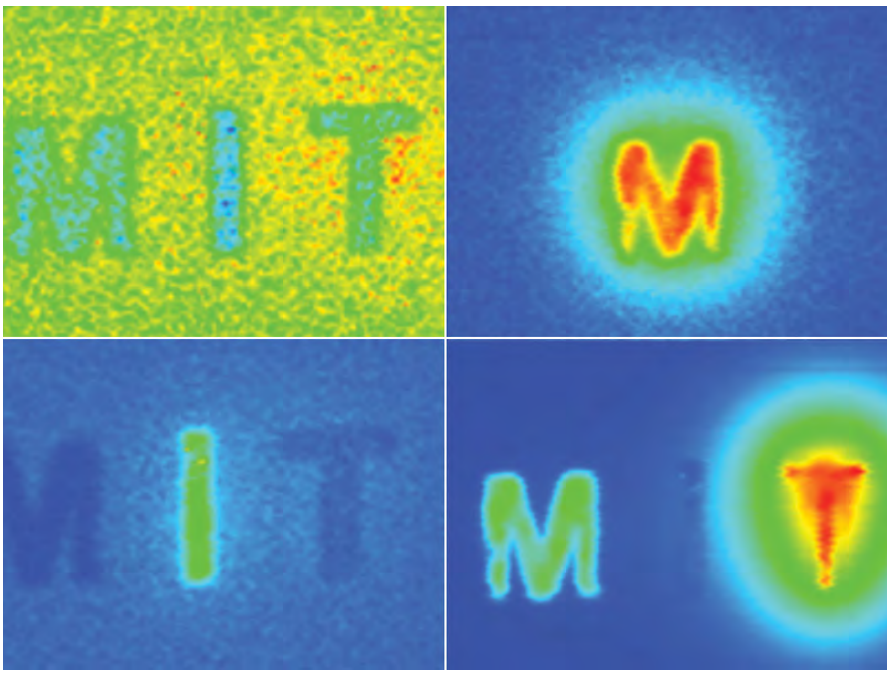
Christened DOLPHIN, for Detection of Optically Luminescent Probes using Hyperspectral and diffuse Imaging in Near-infrared, the imaging platform both excites the fluorescent probe and detects the probe emission in the NIR-II spectral region of 1000 to 1700 nanometers. This band is optimally suited for deep in vivo optical imaging, thanks to a relatively lower degree of tissue absorption, scattering, and autofluorescence.

A bespoke deconvolution algorithm then compensates for the autofluorescence and scattering that persists, without the need for prior knowledge of the optical properties of the tissue of interest.

This combination is said to allow the system to distinguish different NIR-II fluorescent probes from the spectral information available, and find the best spectral band for deep-tissue detection. Post-processing on the diffuse profile for that selected band determines the precise location of the fluorescent probe. The results were published in Scientific Reports.

"We want to be able to find cancer much earlier," said Angela Belcher of MIT. "Our goal is to find tiny tumors, and do so in a noninvasive way."

According to the project's published paper, DOLPHIN combines hyperspectral imaging (HSI) and hyperdiffuse imaging (HDI) modalities, said to be the first implementation of both modes in a trans-illuminated configuration detecting NIR-II fluorescent signals. Previous HSI and HDI platforms have worked in the visible and NIR-I wavelengths, resulting in shallower depths of detection and relying on comparison to reference spectra to identify features of interest, noted the team.



Credit: MIT.

Trials imaging in multiple wavelengths of near-infrared light allowed MIT to determine the depth of particles emitting different wavelengths. Imaging in biological systems is set to benefit.

Small clusters of cells

The trans-illumination configuration could prove to be particularly valuable for translation to the diagnosis of human diseases such as breast cancer, or for real-time fluorescence-guided surgery, where the advantages of low tissue autofluorescence and high sensitivity outweigh the potential disadvantage of a more complicated instrumentation setup.

In trails, the system proved able to resolve large one-millimeter fluorescent probes through up to eight centimeters of a breast-mimic optical phantom, and six centimeters of muscle tissue.

Tests using smaller 100-micron probes, closer to the size of the cellular species of interest, found that DOLPHIN could non-invasively track the probe through the gastrointestinal tract of a living mouse, an achievement which is said to be beyond the detection limit of current imaging modalities.

This could point towards clinical use of the technology to see the very small clusters of tumor cells, also around 100 microns in size, which are known to be important in the development sequence termed the angiogenic switch in cancers.

Detection of ovarian cancer could be one particular area of interest, since the disease is usually diagnosed very late due to the small size of the initial tumors. The team is also working on adapting this type of imaging to detect pancreatic cancer, brain cancer, and melanoma.

"Ovarian cancer is a terrible disease, and it gets diagnosed so late because the symptoms are so nondescript," said Belcher. "We want a way to follow recurrence of the tumors, and eventually a way to find and follow early tumors when they first go down the path to cancer or metastasis. This is one of the first steps along the way in terms of developing this technology."

Author:
Tim Hayes, Contributing Editor, optics.org
http://optics.org/news/10/3/15

Flir and WWF unite to combat rhino poaching in Kenya

Sensor systems giant to donate $3M in thermal imaging equipment and support for deployment across the country.

Flir Systems has announced the Kifaru Rising Project, a multi-year effort in collaboration with World Wildlife Fund to deploy thermal imaging technology to help improve wildlife ranger safety and stop illegal wildlife poaching of rhinos across 10 parks and game reserves in Kenya. Kifaru Rising includes a pledge by Flir of more than $3 million worth of thermal imaging technology, engineering assistance, and training. The goal is eliminating rhino poaching in Kenya by 2021.

Flir and WWF are committing to invest and deploy thermal imaging technology to protect native animal populations, ecosystems, and local communities affected by illegal poachers. In Kiswahili, "Kifaru" means rhino. Kifaru Rising is intended to bolster conservation efforts to specifically grow the wild population of black rhino, which currently number 5,400, making them one of the world's most endangered species. The world's last male northern white rhino died in Kenya in 2017.

The WWF first deployed Flir cameras at the Maasai Mara National Reserve in Kenya in 2016. Poachers often work under cover of darkness, and the technology produced dramatic results when introduced. In Maasai Mara alone, rangers from local partner Mara Conservancy apprehended more than 160 poachers utilizing Flir thermal cameras over the past two and half years.

The 10 parks that will deploy FLIR technology in the Kifaru Rising project include: Lake Nakuru National Park, Solio Game Reserve, Meru National Park, Ol Pejeta Conservancy, Ruma National Park, Nairobi National Park, Ol Jogi Wildlife Conservancy, Maasai Mara National Reserve, and Tsavo East and Tsavo West National Parks.

Partners sought

To continue this momentum and improve the effectiveness of thermal technology in eliminating poaching, Flir and WWF are planning to add more corporate partners that can contribute complementary technology and outdoor gear for wildlife rangers who patrol millions of hectares of wilderness. Additional technology and rquipment needed includes aerial drones, batteries, and solar panels, along with conventional ranger kit such as boots, tents, and raingear.

"Our collaboration with WWF on the Kifaru Rising project signifies the broadest scale deployment of Flir technology for wildlife protection anywhere in the world and represents a vital step to help save these endangered animals," commented Jim Cannon, President and CEO at Flir.

"Rhino poaching is a global issue, and increasing funding, activism, and collaboration amongst governmental and non-governmental organizations must increase. Without FLIR technology deployed in these parks, rangers are at a competitive disadvantage. Flir technology has proven effective with rangers, and together with WWF, our focus shifts to expanding the use of the technology and empowering conservation authorities across Kenya to eliminate poaching activity."

Carter Roberts, President and CEO of WWF, added, "We can't save rhinos if we don't stop poaching. The real heroes in this fight are rangers – men and women who patrol some of the most dangerous wilderness areas on the planet and put their lives at risk to stop those who are often better armed and operating in the dead of night.

"New technologies help change the game; they give rangers a leg-up in deterring criminals and protecting themselves on the front lines of this war. Flir's commitment enables us to scale up efforts to end poaching in Kenya and helps us save more rhinos – and rangers – in the process."

A WWF-produced video *(search "Kifaru Rising Project" on YouTube)* illustrates the aims and approach of the project, supported by Flir and the World Wildlife Fund.

Author:
Matthew Peach, Contributing Editor, optics.org
http://optics.org/news/10/1/22

Sofradir and ULIS to invest €150M in French Nano 2022 program

Five-year investment to develop next-generation infrared detectors; part of EU initiative to strengthen microelectronics.

Sofradir and its subsidiary ULIS have recently announced their participation in the Nano 2022 initiative, which will see the Group invest €150 million ($171 million) over the period 2018-2022.

Sofradir and its subsidiaries ULIS and Sofradir-EC design and manufacture imaging technologies for aerospace, defense and commercial markets; ULIS develops IR components that thermal camera manufacturers can integrate into diverse products.

The announcement follows the European Commission's December 2018 approval of the Important Project of Common European Interest (IPCEI), a joint project by France, Germany, Italy and the UK to invest €1.75 billion in public support for research and innovation in microelectronics.

Nano 2022 is France's initiative within the cross-border program that will support developments in nanotechnology, including applications such as smart sensors. The Auvergne-Rhone-Alpes region, where Sofradir and ULIS have operations, announced it will contribute €35M ($40M) to support Nano 2022.

'Next gen' IR detectors

Sofradir and ULIS, the infrared technologies of which are used in a range of applications from space observation and environmental monitoring to security surveillance and predictive maintenance, will invest €150 million in the Nano 2022 initiative in order to develop next-generation infrared detectors.

Courtesy Sofradir.

Product research and development at Sofradir's plant in Palaiseau, France.

Jean-François Delepau, chairman and CEO of Sofradir and ULIS, commented, "Infrared technologies can offer the necessary solutions for improving assisted living, mobility, energy efficiency, security and environmental monitoring. As a result of our investment, equipment manufacturers will benefit from the ease-of-use and performance these new products will offer."

ULIS believes that the Nano 2022 initiative will enable it to develop the next generations of infrared detectors to address trends in autonomous systems for smart buildings (workspace management, energy savings), road safety and in-cabin comfort of vehicles.

It also enables Sofradir to develop the very large dimension infrared detectors needed for space and astronomy observations as well as compact and light sensors that can be used in portable devices and on drones. The company stated, "Nano 2022 contributes to the funding of the pilot lines required for developing these technologies and products."

Sofradir and ULIS are participating in Nano 2022 alongside other companies based in the Auvergne-Rhone-Alpes region, including ST Microelectronics (Geneva, Switzerland) and Soitec, (Chemin des Franques, France).

The European IPCEI framework is developing key cross-border R&D and infrastructure projects aimed at encouraging member states to channel their public spending into large projects. These are intended to make a clear contribution to economic growth, job creation and the competitiveness of Europe.

Author:
Matthew Peach, Contributing Editor, optics.org
http://optics.org/news/10/1/25

Xperi facial recognition technology comes to LG smartphone

Time-of-flight approach said to offer enhanced security and performance over competitors.

The LG G8 smartphone, which recently debuted at the Mobile World Congress in Barcelona incorporated the FaceSafe 3D face recognition technology from FotoNation, a subsidiary of Xperi.

FaceSafe employs a time-of-flight (ToF) approach to facial recognition, capturing infrared light reflected off the subject, and using bespoke algorithms to calculate an object's distance from the camera lens.

This contrasts with the approach used by Apple in its TrueDepth platform, which illuminates the user's face with up to 30,000 individual infrared dots, and then uses mapping and pattern recognition algorithms to determine whether the user is known to the system.

Advocates of a time-of-flight approach believe that it can be faster and more effective in ambient light, reducing the load on the phone's processor and lowering power consumption. Some analysts expect Apple to move towards ToF depth sensing in future phones, but others believe the company is evaluating alternative options.

"These solutions deliver superior security, protection and customization that address critical needs in mobile markets," commented Geir Skaaden of Xperi about the technology in the new LG handset.

The front-facing camera of the LG G8 ThinQ is known to employ an image senor chip from Infineon, specifically the company's Real3 product, along with technology from Infineon's partner pmdtechnologies, specialists in CMOS ToF computation.

"Infineon is poised to revolutionize the market," commented Infineon's Andreas Urschit about the LG launch. "We have demonstrated service beyond the mere product level, specifically catering to phone OEMs, associated reference design houses and camera module manufacturers. Within five years, we expect 3D cameras to be found in most smartphones, and Infineon will contribute a significant share."

Credit: LG.

Xperi expects its facial recognition system to appear in several consumer devices, starting with the LG smartphone.

Mobile phones and beyond

Xperi, originally founded in 1990, is a technology licensing business that became the home of IP belonging to Tessera, the vendor of camera optics and related MEMS wafer-level platforms including the OptiML Zoom optical zoom module developed a decade ago. Tessera Holding Corporation was renamed Xperi in 2017.

Just before the LG announcement, Xperi posted its full-year 2018 financial results, indicating that company-wide product licensing billings for the final quarter were $54 million, and $219 million for the full year, up by four percent.

Jon Kirchner, Xperi CEO, commented to analysts at the time that "Our 3D facial recognition technology solution FaceSafe will launch in Q1, the first 3D FR solution shipping on a smartphone based on time-of-flight sensors. FaceSafe offers mobile OEMs more cost efficient sensor solutions while delivering best-in-class 3D facial recognition and face unlock functionality."

Asked about the prospects for its technology appearing in other devices, and discussions among the Android ecosystem about ToF solutions being adopted by that platform, Kirchner commented that Xperi's goal was to broadly commercialize in the mobile phone space and beyond.

"The advantages of some kind of a secure face unlock feature could be valuable to many user devices," he said. "So stay tuned."

Author: Tim Hayes, Contributing Editor, optics.org
http://optics.org/news/10/2/33

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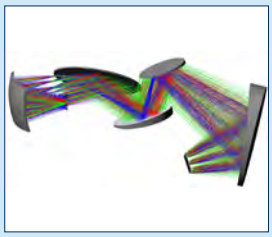

Contact Details
Synopsys, Inc.
Optical Solutions Group
www.synopsys.com/optical-solutions/codev/optical-design.html
optics@synopsys.com
Tel: +1 626-795-9101

Radiant Vision Systems, LLC

NIR Intensity Lens measures near-infrared light sources used for 3D sensing

The Near-Infrared (NIR) Intensity Lens system from Radiant combines a Fourier-optic lens with 16-megapixel CCD imaging radiometer for precise characterization of NIR-emitting light sources used for facial recognition and other 3D sensing applications. The system captures angular data to ±70 degrees in a single image to efficiently measure radiant intensity across the distribution, and analyzes structured light patterns produced by diffractive optical elements (DOE).

- Measure near-IR LEDs and lasers
- Capture light across ±70 degrees
- Output extensive DOE statistics
- Qualify facial and gesture recognition technology

Contact Details
Radiant Vision Systems, LLC
18640 NE 67th Court
Redmond, WA 98052 USA
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BitFlow, Inc.

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Contact Details
BitFlow, Inc.
400 West Cummings Park
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USA
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FLIR Systems opens new office in Washington DC

Plans renovation project for its Wilsonville, Oregon headquarters in Q2 of 2019.

Flir Systems is to open a new headquaters office in Arlington, Va, near Washington D.C. The facility will significantly expand FLIR's presence in the US capital and create a new space to showcase its "lifesaving" technology.

Jim Cannon, President and CEO, commented, "FLIR is a global company serving diverse customers around the world with advanced technologies. Having a greater presence in Washington, D.C. is critical to helping us grow our business, as it creates better proximity for us to support key customers, investors, regulators, and the more than 4,000 FLIR team members around the world."

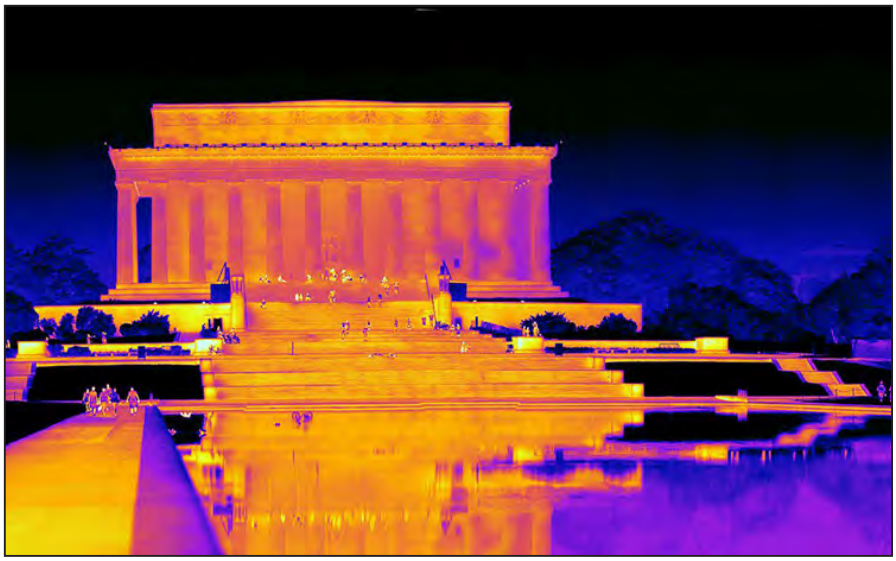

Image: FLIR.

Power base: FLIR is heading to Washington.

Located in Pentagon Row at 1201 South Joyce Street in Arlington, the FLIR facility will house 65 employees and serve as a conference center and gathering space to support the company's largest customer, the United States Government, as well as investors and regulators located on the east coast.

The 30,000 square foot facility will serve as home office for FLIR's Government & Defense Business Unit and for members of the senior executive team, including the company's CEO, CFO, and CHRO. The facility will feature a state-of-the-art technology showroom to demonstrate FLIR sensing solutions for customers.

FLIR employees currently located at the company's Crystal City, Virginia, facility will move to the new Arlington headquarters. FLIR Systems remains incorporated in the state of Oregon and the company plans to begin a renovation project for its Wilsonville, Oregon headquarters in the second quarter of 2019.

FLIR Griffin G510 wins Threat Detection Award

The company has also announced that its Griffin G510 person-portable gas chromatograph mass spectrometer has been awarded the "Threat Detection Award" in the Counter Terror Awards, organized by PSI Media and supported by Counter Terror Business and the Security and Counter Terror Expo.

Photo credit: Counter Terror Awards / PSI Media

The Counter Terror Awards were presented by Lord Reid, former UK Home Secretary.

Presented at the second-annual Counter Terror Awards in London, the G510 was chosen for assisting in the detection and disruption of terrorist threats. The awards were presented by Lord Reid of Cardowan, the former UK Home Secretary.

Image: FLIR.

FLIR's Griffin G510 person-portable gas chromatograph mass spectrometer.

The Counter Terror Awards recognize organizations and individuals for their contributions to reducing the threat of global terrorism. The FLIR Griffin G510 was purpose-built to do just that. The G510 is used by civilian, federal, and military responders to quickly identify chemical hazards at the site of interest.

The G510 GC mass spectrometer is said to "complement presumptive detectors" by enabling responders to analyze all phases of matter including liquid, solid, and vapor. It features a large touchscreen with automated user controls, can be operated while wearing full Personal Protective Equipment (PPE), and is built with an IP65-rated enclosure for harsh environments.

In military missions, for example, the G510 is used to identify trace amounts of explosives and chemical warfare agents. In civilian scenarios, it is used to analyze unknown powders and confirm the presence of opioids like fentanyl, or other illegal drugs.

The device is also used to monitor the environment around industrial areas, in addition to responding to natural disasters. Simply put, the Griffin G510 person-portable GC-MS helps keep people safe and the environment clean.

Author:
Matthew Peach, Contributing Editor, optics.org
http://optics.org/news/10/3/33

Product Announcements

LUCID to Demonstrate Helios™ 3D Time of Flight and 31.4 MP Atlas™ 5GBASE-T PoE Cameras at Automate 2019

LUCID Vision Labs, Inc., a designer and manufacturer of unique and innovative industrial vision cameras, will be demonstrating its latest GigE Vision industrial cameras at Automate in Chicago, IL, from April 8-11th, 2019. Automate is the broadest automation solutions event in North America with over 450 exhibitors showcasing their latest innovations in robotics, vision and motion control.

LUCID's product highlights in booth #8551 will include the new 3D Helios Time of Flight (ToF) camera and the large format, high resolution 5 GigE Atlas cameras. For applications such as robotic navigation, 3D inspection and logistics automation, LUCID will be demonstrating its compact Helios 3D camera featuring Sony's DepthSense™ToF technology. Sony's MX556PLR back-illuminated ToF image sensor offers high NIR sensitivity, 10µm pixel size and a high modulation contrast ratio. The 0.3 MP Helios camera has a 640x480 px resolution running at 60 FPS.

Another exciting product family being demonstrated on the show floor will be the Atlas camera featuring 5GBASE-T Ethernet interface capable of running at 600 MB/s over standard Ethernet cable up to 100 m. The 5 GigE Atlas camera line-up ranges from 5.0 to 31.4 Megapixel. The first models to go into mass production will include the high-resolution Sony Pregius global shutter 31.4 MP IMX342 APS-C, 19.6 MP IMX367 and 16.8 MP IMX387 CMOS sensors.

Don't miss our presentation titled "Advanced Material Handling with Sony DepthSense Time of Flight (ToF) Technology" on Thursday, April 11th at 2 pm, presented by Jenson Chang, Product Marketing Manager at LUCID Vision Labs.

If you would like to schedule an appointment at Automate with our Sales team, please contact our North America Sales or email sales@thinklucid.com. Come and see LUCID's latest camera technology at Automate in booth #8551 and talk to our machine vision experts about your applications and imaging requirements.

About us

LUCID Vision Labs, Inc. designs and manufactures innovative machine vision cameras and components that utilize the latest technologies to deliver exceptional value to customers. Our compact, high-performance GigE Vision cameras are suited for a wide range of industries and applications such as factory automation, medical, life sciences and logistics. We innovate dynamically to create products that meet the demands of machine vision for Industry 4.0. Our expertise combines deep industry experience with a passion for product quality, technology innovation and customer service excellence. LUCID Vision Labs, Inc. was founded in January 2017 and is located in Richmond, BC, Canada with local offices in Germany, Japan, China and Taiwan. For more information, please visit www.thinklucid.com.

LUCID Vision Labs, Inc.

130-13200 Delf Place
Richmond
British Columbia
V6V 2A2
Canada

Tel: 8334658243

Email Us: **sales@thinklucid.com**

Web Site: **www.thinklucid.com**

STEMMER IMAGING well represented at UKIVA MVC

STEMMER IMAGING will be showing the Ricoh SC-10 human assist camera, the CIS CoaXPress colour linescan bar and other cameras at the UKIVA Machine Vision Conference and Exhibition. However visitors will be also be able to see an extensive range of products from many of STEMMER IMAGING's key suppliers who are also exhibiting. These include Intel RealSense, LMI Technologies, JAI, Gardasoft Vision, Optotune, Smart Vision Lights, Teleydyne DALSA, Sony and Allied Vision.

The rich array of camera technology available features the latest image sensors and includes 3D smart sensors, 3D depth sensors, multi-line line scan cameras, 3-chip colour cameras, smart cameras and embedded systems. There will also be a chance to see liquid lenses and their controllers in action as well as a selection of high performance LED controllers. A comprehensive range of LED lighting wil also be on show.

At the Conference, Dr. Jon Vickers will discuss the use of embedded vision systems. He will define the terms used in the technique, discuss the advantages and show where embedded systems can work. Importantly, he will also review situations where they aren't always appropriate, especially where is there no advantage and when they are more difficult and more expensive to implement than a traditional system.

All company and product names mentioned in the text may be trademarks or registered trademarks of the respective companies.

About STEMMER IMAGING

STEMMER IMAGING is one of Europe's leading machine vision technology providers for science and industry. With a perfect combination of innovative products, expert advice and comprehensive service, STEMMER IMAGING helps clients solve their machine vision tasks securely with speed and ease. Experienced specialists can be contacted easily and are available to provide advice locally in 19 European countries.

Clients of STEMMER IMAGING benefit from the combination of an exceptionally wide variety of products from the world's leading manufacturers (e.g. cameras, lenses, illumination products, machine vision systems, software). Expert know-how gathered over many years help customers define the optimum, most cost-effective combination of components. The company attaches particular importance to the provision of solution-oriented services, including feasibility studies, development services, training and customer-focused support.

STEMMER IMAGING

Gutenbergstr. 9-13
82178 Puchheim
Germany

Tel: +49 89 80902-229

Email Us: **info@stemmer-imaging.de**

Web Site: **www.stemmer-imaging.com**

Product Announcements

New industrial cameras from IDS: IMX226 sensor offers excellent image quality

IDS has integrated the high-resolution 12 MP IMX226 rolling shutter sensor into the uEye CP camera family, giving increased resolution, speed and sensitivity. The new models are available with the established GigE or USB3 interfaces and will be available from May 2019.

Thanks to the BSI ("back-side-illumination") technology of the SONY STARVIS series of sensors, the IMX226 is perfect for tasks that require optimal results even in low light conditions. It delivers extremely low-noise images and is therefore ideally suited for applications in areas such as microscopy, medicine, logistics and traffic monitoring.

With a sensor size of 1/1.7", the uEye CP cameras, which are only 29 x 29 x 29 mm in size, also allow for a very large selection of cost-effective lenses. The sensor will be available in either colour or monochrome.

Thanks to the unique IDS software suite, users can also experience practical "plug & play" with these cameras: the models are automatically recognised in the system and are immediately ready for use.

The uEye CP cameras at a glance:

- USB 3.0 and GigE interface
- 12 MP CMOS sensor from the Sony STARVIS series
- 4000 x 3000 px, pixel size 1.85 µm
- Particularly light-sensitive and low-noise
- Available from May 2019

More information

https://en.ids-imaging.com/store/products/cameras/ids-sensor-model/imx226cqj-c.html

IDS Imaging Development Systems
Silke von Gemmingen
Dimbacher Str. 6-8
Obersulm
74182
Germany

Tel: 07134/961 96-155

Fax: 07134/961 96-99

Email Us: **info@ids-imaging.de**

Web Site: **https://en.ids-imaging.com/home.html**

Press Release

European Machine Vision Forum: Call for Papers

Focal topic 2019 is *Photonics and Machine Vision: Going Deep into Integration*

Barcelona/Lyon, 28 March, 2019. The European Machine Vision Forum is an annual event of the European Machine Vision Association (EMVA). The aim is to foster interaction between the machine vision industry and academic research and through this is accelerate innovation by translating new research results faster into practice. Focal topic of the 2019 European Machine Vision Forum taking place 05 - 06 September in the Palais de la Bourse Lyon, is

Photonics and Machine Vision: Going Deep into Integration.

We hereby cordially invite all interested parties to contribute their valuable research or innovation fitting into the above motto and submit the extended abstracts of a contributed talk or poster latest by **Friday, May 24, 2019** using the online **Submission Tool**.

All submissions are openly reviewed by the joint Scientific and Industrial Advisory Board of the forum and everyone, who has submitted a contribution. For the five best rated student contributions, the student speaker will receive a free ticket to the forum.

During the 4th edition of EMVA's **'Where Research Meets Industry'** initiative EMVA Board Member Prof. Dr. Bernd Jähne, Heidelberg Collaboratory for Image Processing (HCI), Heidelberg University, and Chair of the **European Machine Vision Forum** will be pleased to welcome researchers and developers from machine vision, computer vision, machine learning, applied optics and photonics to exchange newest ideas how the deep integration of photonic elements, imaging sensors, computing platforms and machine learning lead to much more capable, smaller, cheaper and less energy consuming vision systems.

For more details visit **www.european-forum-emva.org** or contact us at **info@emva-forum.org**.

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- StreamSync buffer manager maximize DMA channel efficiency
- Triggers and encoders for external control of acquisition
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- Drivers for 3rd party environments (HALCON, LabVIEW, VisionPro, MATLAB, etc.)
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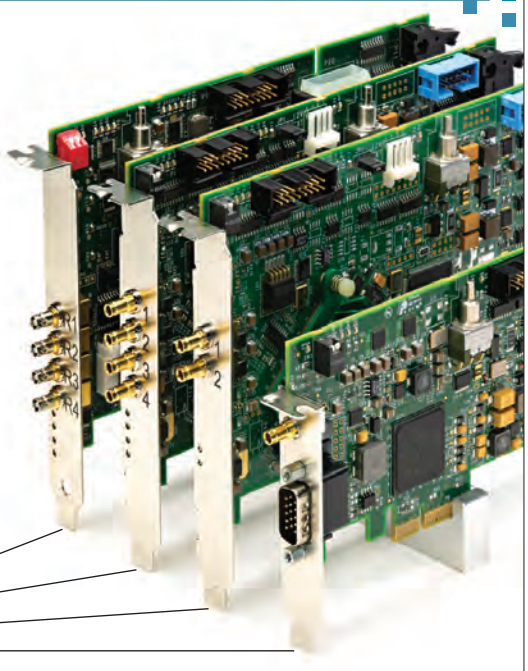

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