

Security Solutions Today

January / February 2018

THE ROBOTIC REVOLUTION

SECURITY MEETS SMARTIFICIAL INTELLIGENCE

Cover Focus

Steve Reinharz
Introduces AI

Security Features

From Nature to Future:
E-motion Butterflies &
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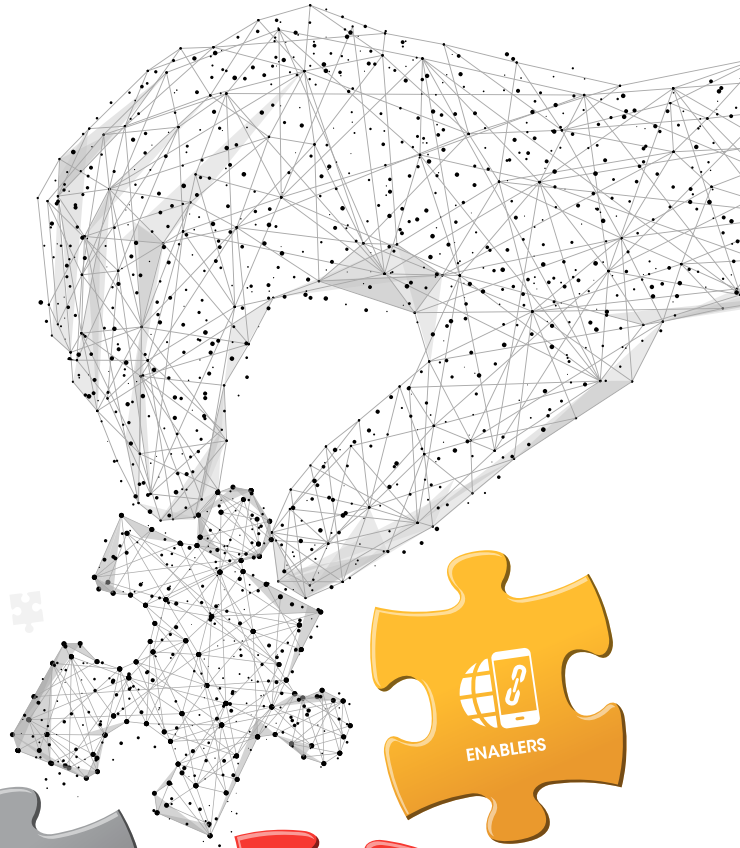
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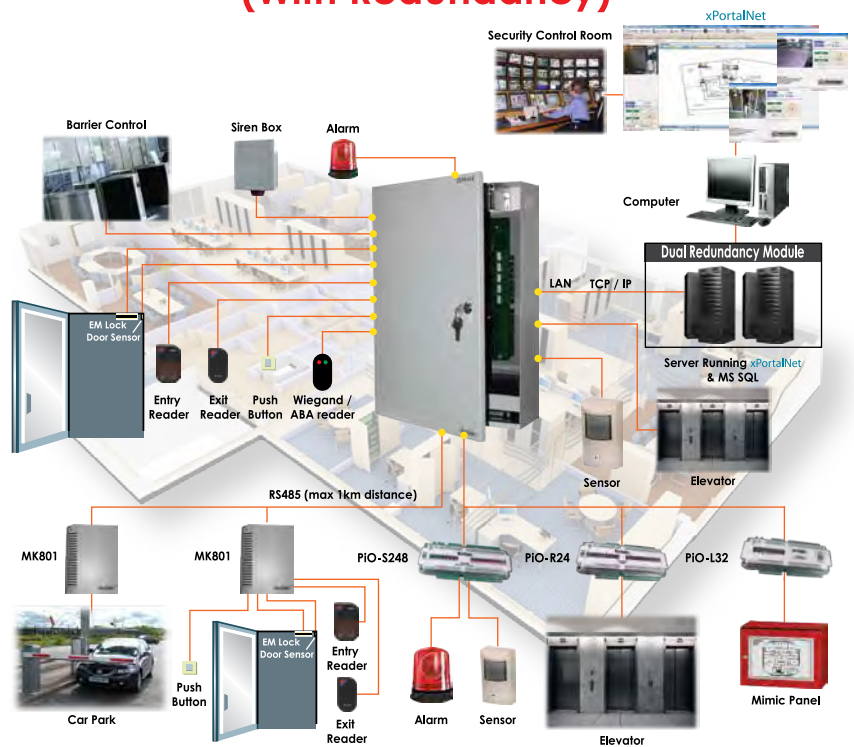
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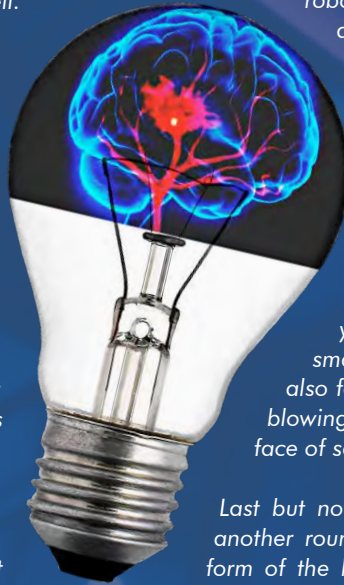
EDITOR'S NOTE

Dear esteemed readers,

Welcome to our first issue of 2018! We would like to thank you for having supported us throughout the years and we certainly look forward to your continued support in the year ahead as well. On that note, we hope you are ready for the robot revolution. In recent months, there has been a monumental buzz about all things SMART and IoT ready. The security industry has also been impacted in a myriad of ways by the internet of basically everything and digitalisation in general. There has been much talk about robots and artificial intelligence enhancing public safety and being utilised more frequently by organisations from law enforcement to hospitality and manufacturing. In this issue, we explore some of the latest stars of the security scene – autonomous patrolling robots, drones and even SMART robots with the ability to not only safeguard but entertain and inspire as well.

In this issue, you will be treated to the wonderful world of robots, specifically robots being utilised by organisations and governments alike to safeguard society. While we are a long way from Hollywood's robo-centric societies as seen in films such as I-Robot and A.I, it is only a matter of time before robots are utilised in every industry imaginable and become an integral part of every day living. While there are worries about robots replacing human employees, several companies have argued that security robots in particular will only complement human personnel as opposed to taking over their jobs. In the age of digitalisation and the rapid burgeoning of technology, it is only natural that humanity is turning to artificial intelligence for assistance. While human instinct, intuition and most importantly integrity remain key to safeguarding society, it is blatant to see that these characteristics serve society more effectively when working hand in hand with a hyper-vigilant super machine that never feels fatigue or becomes brain drained.

The era of robotics has dawned upon us with industry innovators such as Knightscope, Pal robotics, SMP Robotics, OTSAW and more. These are some of the companies we feature in this exciting issue. From patrolling challenging terrain to identifying intruders, the robots created by these companies and others have elevated security and surveillance to another level. In Singapore for example, Security company Ademco has utilised robots by SMP Robotics to patrol parking lots as a means for addressing the shortage of security staff as well as relieving existing security guards of laborious and monotonous patrolling so they can focus on other complex tasks. This is only the beginning with countries such as Dubai looking to double their robotic police force within the next 5 years or so.



Our Inside Look will focus on the usage of drones in the security industry, a trend that has become immensely popular in recent years due to the ability of drones to patrol places inaccessible or dangerous to human personnel. With major players such as Dahua delving into the industry, drones are taking off at the speed of flight. In this issue, we also have a diverse entourage of security features comprising of innovative new surveillance methods such as e-motion butterflies, India's very own biometric access control equipped robot MITRA as well as the impact of deep learning on the security industry.

In our In Focus section this issue, we speak to the CEO of OTSAW – Mr. Ling Ting Ming on the incredible O-R3 which is the world's first ground-aerial outdoor security robot. Equipped with cameras, sensors and augmented intelligence, this outdoor security robot most definitely has what it takes to secure spaces and maintain public safety in the SMART cities of today.

Also included in this issue is an intriguing showcase of products from access control solutions such as Klacci's Facial Recognition Smart Lock which adds an innovative dimension to unlocking your doors, to the world's first levitating smart home camera – Moon by I-Ring. We also feature an entourage of today's most mind-blowing security robots that promise to alter the face of security and surveillance as you know it.

Last but not least, we are pleased to bring you yet another round of informative trinkets, this time in the form of the long terms benefits and short comings of security robots, the impact of Artificial Intelligence on the security industry and even the future security technologies we can look forward to in the next decade.

I certainly hope that you will enjoy this uniquely innovative issue just as much as I have enjoyed curating it for your reading pleasure. 2017 was an exhilarating year for the security industry thanks to the accelerated developments in everything from biometrics to robotics and 2018 is predicted to be better according to industry experts. Rest assured that we will be bringing you the latest and greatest in the brave new world of digitalised security in the internet of everything. To the cloud and beyond!

Wishing all our readers a prosperous Lunar New Year as well as a fabulous 2018 Year of the Dog. Thank you for your unwavering support!

Melissa T
Editor



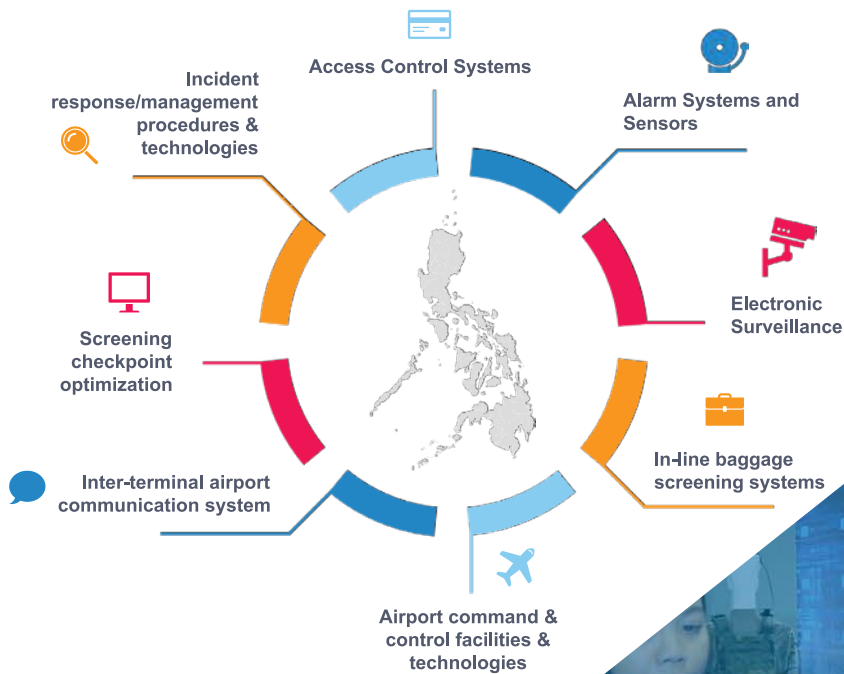
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Smart Cities Need Smart Solutions For Critical Communications And Security Says ETELM

Smart cities are on the rise around the world - an opportunity to integrate advanced Critical Communications infrastructures, says ETELM Director



Berlin, Germany – Safety must not be compromised when developing the smart cities of the future and Critical Communications is the true cornerstone to it, warns Paul Ward, International Sales Director of ETELM, a leading manufacturer of advanced Mission Critical Communications systems. Speaking at Broadband World Forum 2017, Ward put a focus on new and emerging technologies currently facing market testing, and stressed the importance of smart cities having smart communications solutions as part of the infrastructure from the outset.

“We are living through extraordinary times where rapid technological advancements are being accomplished around the globe,” commented Ward. “However, critical communications solution providers need to ensure that legacy and pre-existing infrastructure can keep pace with the new demands being placed on them, while also future-proofing new solutions and infrastructures to guarantee the challenges of today are not replicated in the future.”

Today, critical communications solution providers face increasing demands as smart cities become a reality. The key issue for any technology investment is to avoid obsolescence and choose a technology that has a long-term future based on non-proprietary technology and one which is introducing new and advanced functionality. Ward explained that this marks an opportunity to

integrate advanced critical communications solutions. ETELM believes the ideal approach is to develop a solution based on LTE standards, however the solution must be proven and reliable from inception.

He continued: “The rapid developments we are witnessing are largely being driven by market demand combined with new standards and vendors seeking to gain a competitive advantage. As with all advanced technologies it is essential that users select the most appropriate solution for their specific operational needs - now and in the future. Ideally, technology should be based on open standards which reduce the users’ reliance on single vendors and increase functionality and competition.”

Ward added how interoperability is increasingly important across all technology verticals, with the focus being on TETRA, 4G, and 5G.

“ETELM’s view is that 4G and 5G have a significant role in the future for Mission Critical users and smart services. However, it will take several years for these services be fully tested, reach maturity, and meet all the user requirements. For this reason, our focus is on unifying technologies, which reinvigorate legacy infrastructure while also ensuring it is future-proofed, enabling solutions to be smart city ready, now,” Ward concluded. **SST**

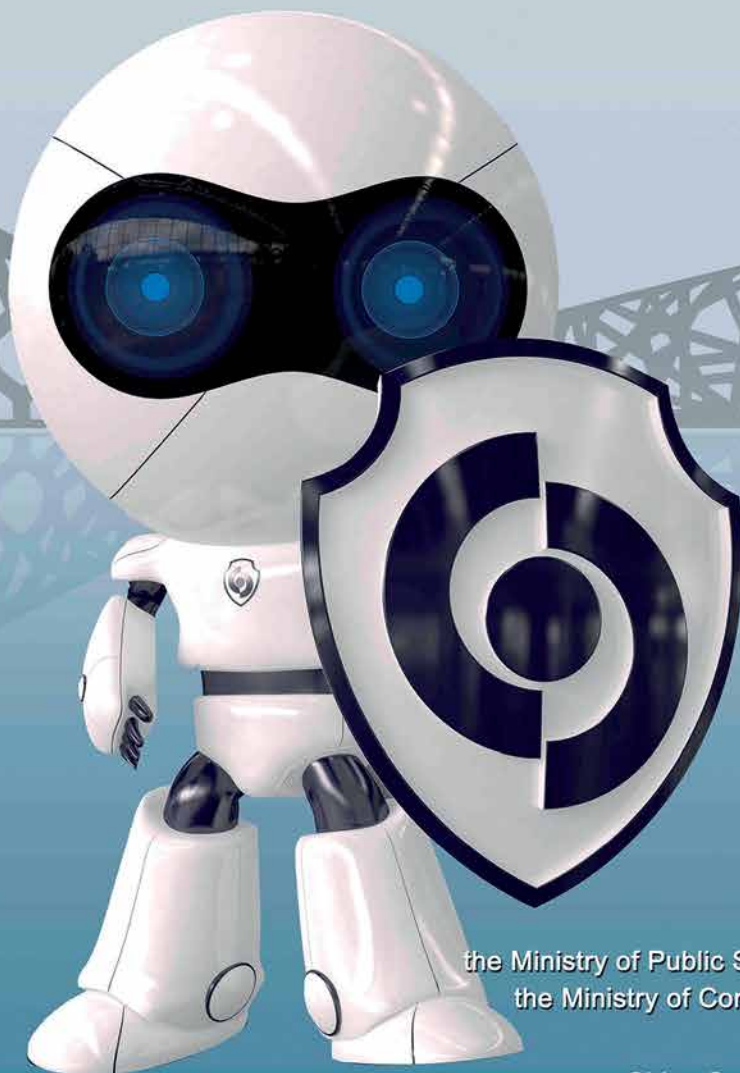


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Gemalto Investment Speeds Development Of New Cogent Biometric Identification Solutions

- Only six months after the 3M Cogent acquisition, Gemalto is launching a major product upgrade
- New version of CABIS (Cogent Automated Biometric Identification System) supports multi-modal identity searches: fingerprint, palm print, face and iris recognition
- New CABIS Core Cloud will accelerate deployment of biometrics services by law enforcement and other government agencies

Amsterdam, Netherlands - Gemalto, the world leader in digital security maintains its track record of investing in acquired business. The company's ambitious development program includes the release of Gemalto CABIS 7, designed to enable law enforcement and other government agencies to perform biometric-based identity searches with an even greater degree of speed, precision and efficiency. In addition, Gemalto has announced the launch of CABIS Core Cloud engine, widening the support scope of Cogent's flagship CABIS portfolio to include flexible and scalable cloud architecture.

Gemalto formally completed the acquisition of 3M's Identity Management Business, 3M Cogent, in May 2017. The introduction of CABIS 7 marks the first major product innovation since the change in ownership. Notable enhancements incorporated in the latest evolution of this industry-leading identification tool include true multi-modal capability, integrating fingerprint, palm print, face, iris and latent images. As a result, operators can utilize an even wider range of biometric input data and database records in pursuit of reliable identification and verification matches. Furthermore, fundamental architecture and platform enhancements enable a

30% reduction in setup time as compared to previous versions, and future proofs a customer's investment. CABIS 7 also features a completely re-designed user interface, improving usability.

Gemalto's additions to the CABIS portfolio also includes CABIS Core Cloud. This new cloud-based backend solution ensures that running costs always reflect actual usage due to the elastic and scalable nature of cloud computing. The need for upfront investment in infrastructure, based on estimated future utilization, is therefore avoided. In addition, on-going pressure on internal IT resources is reduced significantly.



"Gemalto's fresh investment in R&D is building on Cogent's proven ability to deliver outstanding biometric identification solutions," said Dr. Daniel Asraf, Senior Vice President of Biometrics Solutions for Gemalto. "Cogent's AFIS core technology is already hard at work in around 200 applications across 80 countries, and the addition of resources such as multi-modal capability and cloud-based deployment will further enhance its value in the fight to protect borders and communities from a wide range of threats." **SST**

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Huawei Unveils New Generation FusionServer V5 at Cloud Expo Asia 2017

FusionServer V5 is designed to support the enterprise demands for future cloud computing, big data, artificial intelligence (AI) and complex workloads

Singapore - Huawei today introduced its latest innovation, the Huawei FusionServer V5, to business decision-makers and IT professionals at Cloud Expo Asia 2017. The new generation Huawei FusionServer V5, which is recognized as the smartest of the FusionServer family, promises to deliver new levels of performance for computing, storage, network, management, and energy efficiency.

With digital transformation disrupting processes and operations across industries and a tremendous increase in smart terminal connections, Huawei predicts that by 2025, there will be 100 billion connections, 6.5 billion Internet users, and 176 zettabytes of data globally. To drive continuous improvements in computing performance, Huawei announced the Boundless Computing strategy in July 2017 - a new interpretation of the computing industry development, complementing a further endorsement of Huawei to its motto of making computing simple. The new generation FusionServer V5 is the latest result in the first phase of the Boundless Strategy endeavor.

“We are at a turning point amidst the computing development. The rapid rise of AI is driving the computing architecture to continuously evolve. As the smart cloud era unfolds at a larger scale, data center architecture is also evolving. The Internet of Things (IoT) and big video analytics are driving computing to move from data centers to data sources. To meet the demand of our partners and customers, Huawei is introducing the FusionServer V5, coupled with our end-to-end solution, to support our partners from various industries in their digital transformation,” said Wang Feng, Vice President and Chief Technology Officer of



Huawei Southern Pacific Region Telco IT Department. He added, “Industries, enterprises and business owners need to think outside the traditional box today in order to remain competitive in the digital era. This means they have to look beyond the server business, plunge into the depths of data centers, and all the way through to the source of data, thereby shattering the walls that would have previously impeded the evolution and improvement in computing performance.”

Today, organisations are transforming, internally and externally, to derive greater productivity and deliver better services to their customers. To support this multi-fold and rapid transformation, Huawei has continuously sought to collaborate with industry players that will build synergies and drive the growth of the cloud ecosystem, enable more businesses of all sizes and industries to seize the opportunities of cloud technologies, and to accelerate the digital economy transformation in Asia Pacific.

For more information, please visit:
www.huawei.com **ESST**



Huawei Taps into Milestone's Open Platform Video Management Software to Further Complement Safety at Its Chengdu Research Institute

Singapore – Milestone Systems, the leading provider for open platform networked video management software (VMS), today announced that Huawei has selected Milestone's VMS as its choice for their customer showcase center, Huawei Chengdu Research Institute.

Huawei will be using Milestone's XProtect® Corporate video management software to further heighten the safety at their high-profile customer center (Research Institute) and expects to expand the use of Milestone's software to other showcase centers in China. The Milestone software solution was chosen after an extensive evaluation of global and local VMS systems.

Huawei, a leading global information and communications technology (ICT) solutions provider has established a competitive ICT portfolio of end-to-end solutions in telecom and enterprise networks, devices, and cloud technology and services that are used in more than 170 countries and regions, serving over one-third of the world's population.

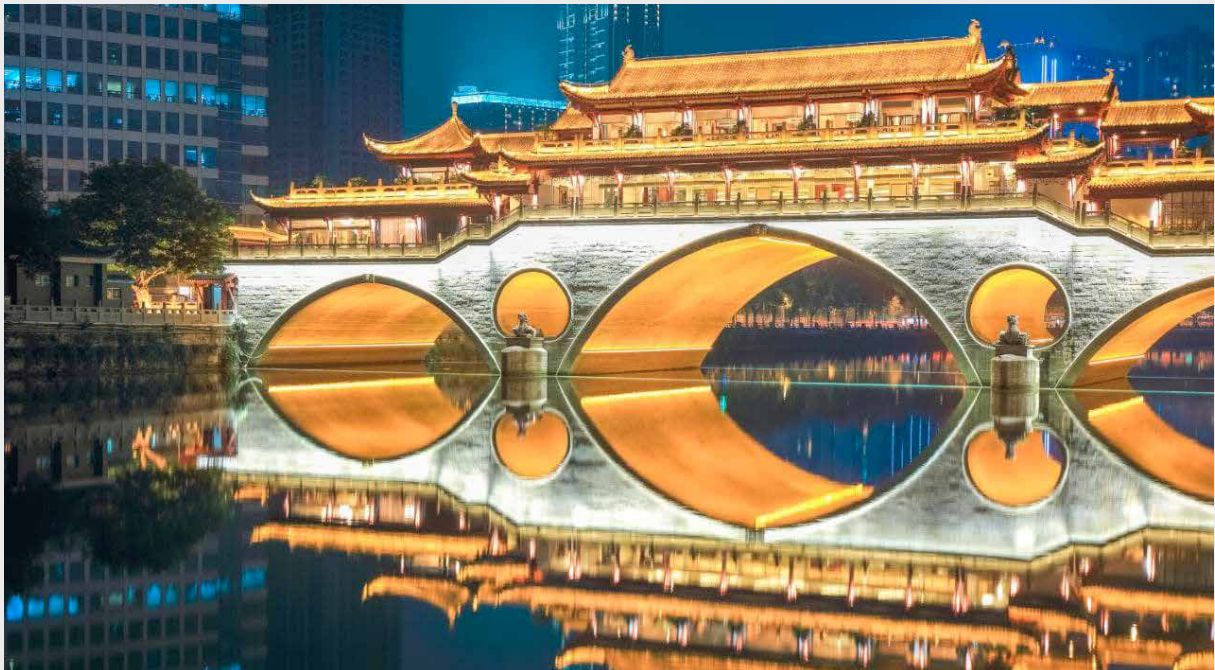
The Milestone open platform technology allows customers to extend their solution with third-party

products and integrations from its community of technology and camera partners, thus giving customers the exact system that their business needs.

Designed for large-scale and high-safety installations, Milestone XProtect Corporate video management software is designed to ensure total flexibility and expandability enabling Huawei to easily upgrade and extend the installation to meet future needs.

"In an extremely competitive China market, we are delighted that Huawei has chosen us as their preferred working partner for their Chengdu Research Institute. We have confidence that Milestone's solutions enable a world-class surveillance system that will help Huawei to best showcase their supporting hardware and software solutions," said Benjamin Low, VP Sales, APAC, Milestone.

"Milestone is our valued VMS partner, their platform provides good experiences on flexibility and stability with Huawei IAAS Cloud products. I firmly believe we can put our resources together to drive the video surveillance industry." said Jiawei Sun, Director, Business Development of IT Product Line, Huawei. **SST**





An Introduction to Artificial Intelligence

►► *By Steve Reinharz, President and CEO of Robotic Assistance Devices*

Artificial intelligence (AI) has become a part of our daily life. Google, Facebook, Microsoft and a growing number of other companies of all sizes rely on AI for their daily operations. Computers' exponential increases in processing power and connectivity to global knowledge bases allow for amazing applications, but adding human elements creates an even more forceful combination. Technological advances in hardware and networks — think computer vision (judging distances, material and texture), hearing (distinguishing noise from speech and words from each other) and creativity (drawing pictures, composing music) — have allowed AI to progress tremendously over the years. And it is these developments, and the blend between robots and


human interaction, that will allow AI to contribute to a variety of sectors, such as food production, government interaction, medical testing and more.

The Assimilation of Automation AI into Society

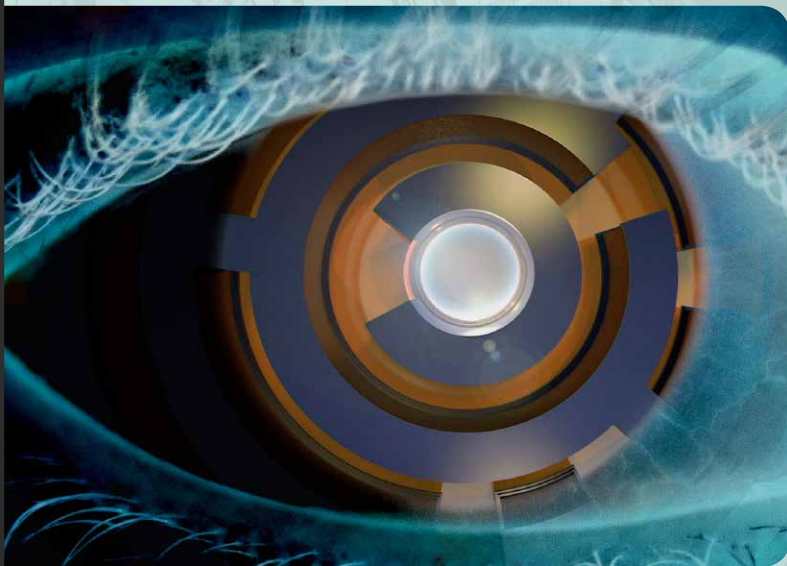
Since the Industrial Revolution more than 200 years ago, the rate of machine and automation implementation has become increasingly important in our society. Look around, they are everywhere: from desktop computers to the machines that produce airplane wings. And now we have AI-enhanced machines improving business efficiency and customer satisfaction in every sphere.

When we go to the airport, we use fully automated self-service check-in kiosks that read our passports and guide us through the bag check and ticketing process. When we land and have to pass machines read our forms, connect to a variety of global databases and make a preliminary evaluation on whether the paperwork checks out. Despite this reliance on automation, only the human border control officer can really tell if someone might look “wrong” and whether their story about where they have been and why makes sense. This is an important point that we'll discuss later on in this piece: people-as-a-premium.

Look at Uber, which has totally disrupted the taxi industry. The Uber app, and its backend services



“These robots – equipped with 360-degree cameras constantly recording video – use a variety of AI-driven navigation systems to patrol and help humans take care of security needs in dangerous environments, or environments where the work is so repetitive and boring that mistakes are common. A security robot doesn’t get bored. It also doesn’t need breaks, is not bothered by weather conditions, doesn’t get sick and can likely patrol for 12 hours at a time without tiring.”



processing, tracks/compares/predicts demand and supply for an inconceivable number of variables that are changing in real time. Efficient artificial intelligence algorithms allow Uber to maximize their customer service and profit opportunities.

I predict the pace of change in this kind of use of expert systems will continue to accelerate. Robotic automation powered by artificial intelligence will play an ever-increasing role in every aspect of human activity. Today, we are seeing a lot of growth in the security and business sectors. For example, companies, utilities and government agencies needing enhanced or expanded layers of security are turning to robots—or unmanned ground vehicles – to work alongside humans. These robots – equipped with 360-degree cameras constantly



recording video – use a variety of AI-driven navigation systems to patrol and help humans take care of security needs in dangerous environments, or environments where the work is so repetitive and boring that mistakes are common. A security robot doesn't get bored. It also doesn't need breaks, is not bothered by weather conditions, doesn't get sick and can likely patrol for 12 hours at a time without tiring.

But this is just the tip of the iceberg. So, what does the future hold?

The Next 100 Years

Employment, and the workforce, is changing. There's no question, for instance, that AI and robotics are continuing the automation trends begun with the Industrial Revolution, albeit at an ever-increasing pace. But that's mostly due to robots being designed for these types of processes. The fact that robots will do mundane tasks, repetitive processes or dangerous jobs hour after hour, month after month without breaks drives productivity across the board. For example, Drake Trailer installed one welding robot in 2008 and it

bumped company productivity by 60 percent. And when Southwest installed check-in kiosks at LAX, the human agents were reassigned to do what humans do better than any machine: interact, engage, smile, listen to problems, be sensitive and sort out complex travel situations.

And that's the key. People-as-a-premium. Humans like interacting with humans, especially if there's a problem or something intricate to resolve. It just works better. And it always will. What we have to do is give people the space to change the kind of work they do. Robots are going to do (almost) all the work. But nothing will ever completely substitute for human help.

Artificial intelligence is set to fundamentally change society and radically improve people's lives. Today, for example, machines trained by deep learning for image recognition can now identify plaque in arteries. Experts at Harvard are using GPUs to simulate blood flow and identify hidden arterial plaque without invasive exploratory surgery. With heart attacks being a leading cause of death worldwide, the potential impact of this technology on our health is huge.

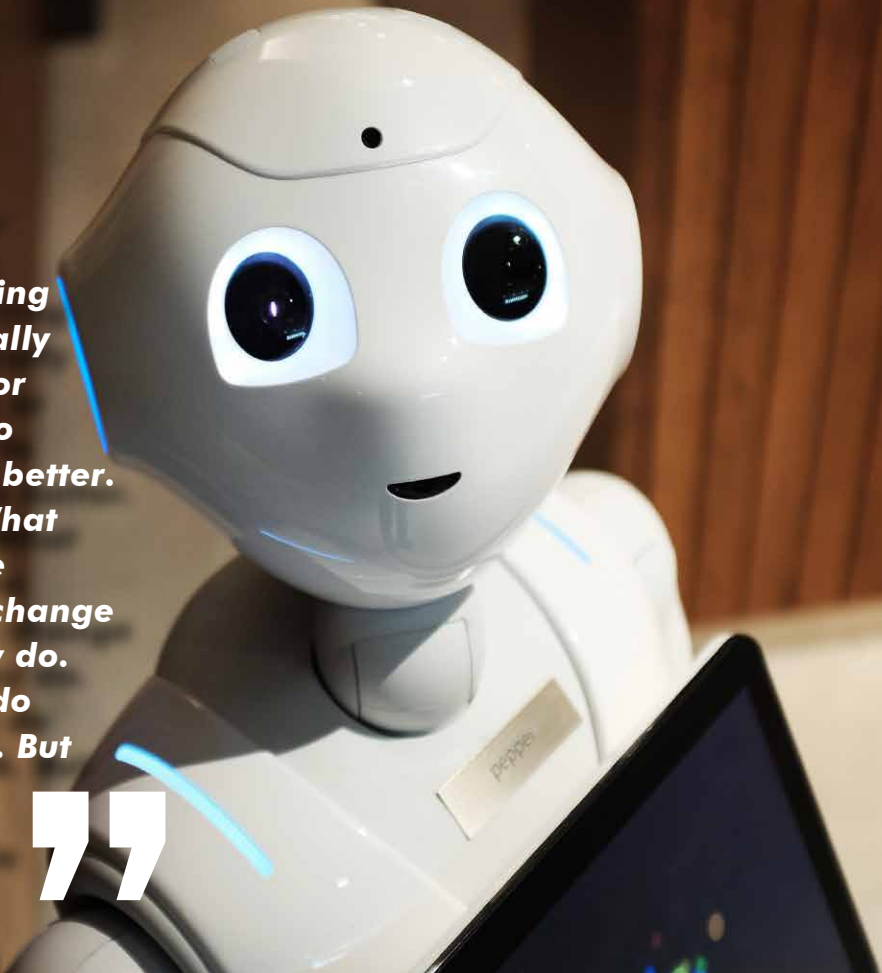
Meanwhile in another completely separate use case, researchers at NASA use GPUs to reduce the analysis time for looking at air traffic flow in computer models from ten minutes to three seconds. And elsewhere, AI is joining the fight against cancer. Image recognition





“People-as-a-premium.

Humans like interacting with humans, especially if there’s a problem or something intricate to resolve. It just works better. And it always will. What we have to do is give people the space to change the kind of work they do. Robots are going to do (almost) all the work. But nothing will ever completely substitute for human help.”



computers can now identify tumors in MRI scans and indicators for cancer in blood.

Overall, AI is going to free us up to move to more satisfying work. The combination of artificial intelligence and people-as-a-premium will not only make us financially richer, but our lives will be richer too. That is the robot dividend.

Nothing can substitute for human-to-human interaction.

Robots will do all kinds of things for us, but when we work together (and play together), nothing beats it. People will always be the premium.

People-as-a-premium is my mantra and my maxim for society as we walk hand-in-hand with artificial intelligence into the future.

Access the complete book, *An Introduction to Artificial Intelligence* by Steve Reinharz, on Amazon. *SST*

Steve Reinharz is the Founder and CEO of Robotic Assistance Devices (RAD), where he oversees the development, sales and marketing, and strategic vision for the company. Reinharz has more than 20 years of experience in various facets of the high-tech industry - as the founder of security integration firm Security Zone, Inc., and a strategic leader at global enterprises. Reinharz has extensive knowledge of a diverse portfolio of technologies, developing practical, effective solutions for end-user customers. As CEO of RAD, Reinharz leverages his extensive knowledge and interest in robotics and artificial intelligence to design and develop robotic solutions that increase business efficiency and deliver cost savings. Reinharz is a native of Toronto, Ontario, Canada, and attended the University of Western Ontario, where he earned dual bachelor of science degrees in political science and commercial studies. *Follow him on Twitter: @SteveReinharz.*





Improving Border Security with Better Technology Solutions: ePassports and Acuant CHIP™

Governments are increasingly turning to advanced technology like ePassports to secure their borders and its about time. Some nations like the Netherlands and Brazil use ePassports throughout their countries, but in many cases, it seems like the technology is far ahead of the adoption. With 328 ports of entry, more than 7,000 miles of borderlands and 95,000 miles of shoreline, the U.S. cannot rely on physical barricades and security checkpoints alone. ePassports that contain biometric information can be used by border security to quickly verify the identities of travelers without sacrificing accuracy.

Biometric passports include microprocessor chips that are embedded into the cover. Currently, facial, fingerprint, and iris recognition are the three types of biometric methods used in e-Passports. The chip contains a digital file of each biometric feature, and a comparison of features is performed at the time of crossing. The International Civil Aviation Organisation (ICAO) has detailed the specifications that machine readable travel documents should have to create standardisation across countries. Public Key Infrastructure (PKI) is used to authenticate the traveler's identity through the passport chip. PKI makes it difficult for identity thieves and other criminals to forge ePassports.

Facial recognition is another component of ePassport technology that can aid with border security. Canada is already planning to use facial recognition technology within their major airports by the end of 2017. This new technology aims to allow passengers to use self-service border kiosks to assist with clearance. As biometric identity verification becomes more reliable and commonplace, consumers can use this technology through their mobile devices or at self-service kiosks in airports.

The omnipresence of biometric technology will enable more thorough screenings in less time. Chip readers can also be used in more commercialised settings, like in the hospitality industry. International travelers can use ePassports at self-service kiosks in hotel lobbies to bypass the language barrier and check into their rooms. ePassports can expedite the check-in process for hotel guests while leaving hospitality staff free to provide more personalised service.



The new partnership with Mount Airey Group, a provider of identity solutions to federal agencies, launches the industry's most comprehensive authentication product that will strengthen border control by minimising the use of fraudulent passports. Acuant CHIPTM –chip reader technology will be a core component integrated with Mount Airey Group's Ozone® ePassport validation product.

The comprehensive ePassport solution is designed to handle a host of issues unique to passports with individualised policies for every country, and complies with all ISO and ICAO standards. Demand for these solutions is expected to grow with the continued proliferation of ePassports and chip technology for border control as well as for commercial use. The convenience of ePassports makes them optimal for airports, where long lines at security checkpoints are common. Mobilising chip reading technology in border environments will also enhance the coverage, responsiveness, and flexibility of field operations. Biometric technology is poised to become a vital component to national security and by converging physical and digital identities through ePassports, border security can improve accuracy and effectiveness.

For more information, please visit:
www.acuantcorp.com SST



Dahua CPSE Press Conference - To Embrace the Era of AI



Hangzhou, China - Dahua Technology, a leading solution provider in the global video surveillance industry, held a new product launch & press conference in Ritz-Carlton Hotel, Shenzhen, one day before the grand opening of the 16th China Public Security Expo (CPSE 2017). At the press conference, Dahua Chairman, Mr. Fu Liquan, together with Dahua CEO, Mr. Li Ke, and Dahua VP, Mr. Michael Chen, Mr. Zhang Xingming, and Mr. Zhang Wei, held an in-depth dialogue with well-known industry experts, business elites and customers represented by Professor Jin Cheng, doctoral supervisor of Fudan University, Mr. Zhang Yu, CTO, IoT Department of Intel China and Deputy Captain Long Haiyong, command police brigade of the Traffic Police Detachment of Liuzhou City Public Security Bureau, Guangxi Province. They discussed about how to capitalise on the rise of artificial

intelligence, which led to the thoughts of industrial ecosystem.

Mr. Fu Liquan expressed that he is thankful for the support of customers and partners which is why Dahua has established core competency in video centric technologies. "Let's strengthen our partnership, focus on Artificial Intelligence and build an Industrial Ecosystem to capitalise on the emerging trend together", said Mr Fu.

Throughout the years, Dahua insists on innovation-driven development. Dahua successfully accomplished transition from analog to digital HD and to intelligent video, from products to solutions then to operating services, Dahua has made remarkable achievements. Facing the unprecedented opportunity presented by the era of smart IoT, Dahua has been building up our core capabilities, exploring

adjacent technologies and business sectors, and integrating the business value chain. Dahua technology, as a leading video centric smart IoT solution and service provider, will pragmatically drive the implementation of new technologies to help customers to take advantage of the market transition.

Dahua will further consolidate and enhance its position in smart city and commercial markets. We will make a full scale entry to consumer market, promote the development of Dahua brand in overseas, establish a global sales and service infrastructure. Dahua will partner with leading companies in the respective territory to form an industrial ecosystem focus on AI technology and the implementation in smart IoT, to meet the technical and business challenges brought by the disruptive innovation in the era of Artificial Intelligence.

"Cloud Ecosystem is tightly coupled to Dahua Video Cloud, which creates value for customers by proactively working with strategic partners to deliver end-to-end total solution. In face of challenges posed by the smart IoT era, Dahua Video Cloud has released its line of smart storage products which integrate intelligence with cloud storage and video surveillance platform technologies into a single product."



From the Experts - Integrated Innovation is a New Frontier in Artificial Intelligence

During the event, Fudan University Professor Jin Cheng indicated that high definition video surveillance is a key source of data used in city security, using the case of security coverage for large-scale international events. Artificial intelligence technology has achieved the automatic recognition and analysis of image data. And this is only the beginning – future artificial intelligence will evolve from sensing and perception to cognition and complete intelligence, finally culminating in the arrival of creative intelligence.

Intel has recently released its newest 10nm chip. Mr. Zhang Yu explained that the security industry is becoming an important field in artificial intelligence industrialisation driven by the development trends in artificial intelligence technology. Based on the strengths of its chip technology, Intel is developing long term partnerships with global security industry leaders, such as Dahua, to collaborate in the enablement of a “thinking” smart city.



Liuzhou city is a national role model for city traffic management. Captain Long Haiyong presented the development and current application of Liuzhou’s intelligent traffic management system, illustrated how innovative Dahua technologies such as automatic capture, smart recognition, and big data, have promoted the informatisation of the police work, which has played an important role in the enhancement of city traffic management capabilities.

Zhang Xingming: Artificial Intelligence Drives the Future



In the new product release session, Mr. Zhang Xingming, Dahua VP, General Manager of Dahua R&D Center, articulated the fundamental changes brought by AI in terms of improving business productivity and transforming business value. Dahua is going to drive the industry transformation by building a “Cloud Ecosystem for Smart Future”

“Cloud Ecosystem” is tightly coupled to Dahua Video Cloud, which creates value for customers by proactively working with strategic partners to deliver end-to-end total solution. In face of challenges posed by the smart IoT era, Dahua Video Cloud has released its line of smart storage products which integrate intelligence with cloud storage and video surveillance platform technologies into a single product. Dahua’s transportation big data platform can predict the status of traffic 15 minutes into the future, achieving traffic status analysis and optimising traffic signal management. Dahua’s multidimensional big data platform merges video, RFID, facial, vehicle, and other types of data, and creates complete individual profiles in real time according to factors such as space and time, social relationship, and other characteristics. Dahua

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“The Aurora camera series adopts SONY 4.63µm starlight big pixel technology and multi-spectral imaging technology. Innovative fusion algorithm is used to calibrate color signal and brightness signal of each spectrum for noise reduction and to perform image fusion processing.”

has also released Magic Cube, which transforms Dahua Video Cloud capabilities into a microservice capable of achieving unified app store publishing, unified management, and unified interface. It enables our partners to develop a complete solution in much shorter time.

“Smart Future” is exerting full power in four factors: computing, intelligence, sensing and ecosystem, to promote industrial upgrading and transformation. Dahua seamlessly integrates cloud and edge computing to redefine “end-to-end computing” in the era of AI. Dahua launches “DeepSense” AI-powered product series based upon the advantages of edge computing, such as narrow bandwidth, low latency, high security, good reliability and low cost. “Sharp eye” all-in-1 camera adopts MOVIDIUS solution, realising full scale capture of details and supporting real-time comparison of 8 face attributes and 8 body characteristics in a database up to 1 million records. “Smart” series of traffic camera is the world’s first to use global shutter CMOS and the industry’s biggest 9 Mega pixel sensor. “DeepSense” series NVR uses NVIDIA TX1 and INTEL FPGA solution to realize fusion analysis, comparison, retrieval and storage, supporting 32-channel real-time video structuring and real-time comparison of 100,000 face database. “DeepSense” series video structure server uses NVIDIA P4 solution, supporting

192 real-time video structuring and 256-channel real-time comparison of 100 million face database.

Dahua launches its first AI-powered smart X-ray detection server, which automatically identifies control items such as knives, umbrellas, batteries, and liquids, realizing a substantial increase in detection rate and reduction in operating costs. Portrait big data is also launched, which uses the time and space information of a target person’s trajectory and face attribute to identify people accompanying the target. Human body posture analysis adopts joint point positioning technology to achieve non-face people detection and search. The newly launched ultra-high-resolution “Guardian” panoramic series has maximum resolution of 32 Mega Pixel. It utilises innovative stitching fusion technology to solve the technical problem of monitoring super large scenes. The Aurora camera series adopts SONY 4.63µm starlight big pixel technology and multi-spectral imaging technology. Innovative fusion algorithm is used to calibrate color signal and brightness signal of each spectrum for noise reduction and to perform image fusion processing. It realizes over 20 times enhancement of the low-light imaging performance, subverting the color imaging visual experience in the lowest illumination. In the field of coaxial HD, Dahua has launched HDCVI 4.0, which supports 4K real-time transmission,

audio high fidelity and integrated IoT sensing technology.

Most importantly, Mr. Zhang introduced Dahua advanced converged architecture X80 product which converges computer, switch, storage, AI computation, business logic into a single box. It supports 130 million person/day face modeling, 800 channels of real time video structuring, 20 billion people/second real time face comparison to meet the needs of metropolitan of up to 10 million population. It reduces power consumption by 40% and space occupation by 60%. It is undoubtedly “the strongest thinking machine” for smart city, smart business and smart living.

Dahua leadership team went on stage to address questions from the press surrounding Dahua’s plan to embrace challenges brought by AI, strategic resources placement, new business development and overseas business target in next year. Dahua will continue to focus on technology innovation to drive growth. With our core competency in “audio, visual, smart, control” to help improve city safety, business productivity and a good experience of smart living for consumers.

The products and technologies mentioned in this article will be in display in CPSE 2017 from October 29th to November 1th. Dahua’s booth is located at Stand 1B07, NO.1 International Hall, China Shenzhen Convention and Exhibition Center. With a mission of “Enabling a safer society and smarter living”, Dahua will continue to focus on “Innovation, Quality, and Service”, to serve partners and customers around the world. **SST**

Note: Some products are not available in all countries and districts at the time of launch.

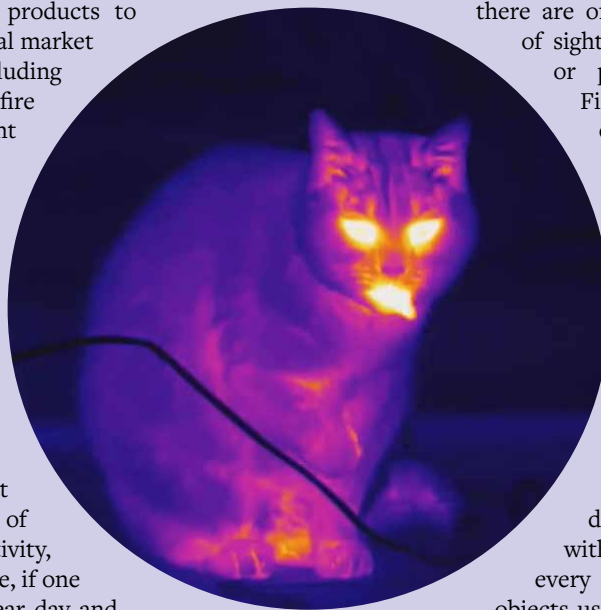


Dahua Thermal Imaging Enables People to See a Safer World

Hangzhou, China - Like many cutting-edge technologies, thermal imaging was first developed for military use in the 1950s and 1960s when the US successfully introduced cooled infrared detectors onto missiles. Infrared detectors eventually evolved into thermal imaging technology, which has made its way into non-military applications, and is now widely used in various areas such as industrial inspections, medical diagnoses, and in satellites. An important milestone in the advancement of this technology was the invention of uncooled infrared detectors, which enabled cheaper and easier to maintain thermal imaging products to make their way to the general market for use in applications including security surveillance, forest fire prevention, and power plant monitoring.

Conventional surveillance cameras are already very capable of capturing video in the daytime or in well-lit areas. However, when faced with poorly lit areas or at night, the video capturing abilities of these cameras begin to diminish as sensors must compensate for the lack of light by increasing sensitivity, thus producing a noisy image, if one is produced at all. Since clear day and night monitoring is an important benchmark in assessing a surveillance system's effectiveness, thermal imaging devices present a clear advantage in their ability to convert heat energy into an image visible to the human eye.

Leveraging its experience in camera image analysis and intelligent algorithms, Dahua Technology has developed thermal imaging devices with innovative functions that balance visible light with infrared, enabling the ability to effectively monitor an area under all lighting conditions. In addition, these functions include advanced capabilities such as intelligent temperature measurement, which further extends the scope of surveillance applications such as in detecting forest fires or quickly checking for passengers with high fevers at international airports.



The following three applications demonstrate the widespread capabilities of thermal imaging:

Border Security

Border security concerns not only the security of the country, but also the safety of citizens and their property. Traditional border monitoring systems still face many imperfections: First, a relatively small amount of patrols are employed to guard large areas, leading to partial gaps in coverage. In areas where cameras are used, there are often blind spots in their line of sight, such as tall grass or brush, or places beyond their range. Finally, when emergencies occur, responses can be slow and inefficient due to the scattered nature of guards and the need for manually sounding alarms.

Dahua has created a comprehensive solution to tackle the challenges of border surveillance. For example, take a 100km section of essentially unlit, wild border terrain. A thermal dome camera (TPC-SD8320) with 30x zoom can be installed every 1km. It can quickly detect objects using thermal imaging and then confirm threats using visible light images. In this way, night monitoring difficulties can be completely overcome with infrared light. In total, just 100 cameras alternately placed on both sides of the border are necessary to provide full coverage.

Now, instead of a number of patrols working alone outside over a large area, a small team of workers can manage the border from a command center, which features advanced automated functions. The center is outfitted with an e-map, which shows the location and current sight line of each camera, allowing border workers to assess surveillance coverage in real-time. When a camera detects someone entering a restricted area, it will automatically trigger an alarm while continuing to track the target. Staff can then alert the

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“Leveraging its experience in camera image analysis and intelligent algorithms, Dahua Technology has developed thermal imaging devices with innovative functions that balance visible light with infrared, enabling the ability to effectively monitor an area under all lighting conditions.”

intruder and warn them with sirens. If needed, a team can then be quickly dispatched to confront the intruder with help from the command center. In addition, intelligent route patrol allows operators to configure cameras to follow a set patrol route according to requirements and the terrain, decreasing the need for manual control.

Forest Fire Prevention

With the potential of having catastrophic consequences, fires are the greatest danger to a forest. Efforts to prevent forest fires have been explored over the years, but several difficulties still exist - The area of the forest is disproportionately large to the limited number of patrols who move relatively slowly and are equipped with only their eyes, from which a fire source is very likely to escape detection, especially when smokeless. To effectively prevent forest fires, new technologies that can function more accurately than humans are needed. Dahua’s intelligent forest fire monitoring system automatically monitors the entire forest area, conducting intelligent patrols. If a blaze begins, the system will automatically trigger an alarm via a high precision

“Dahua thermal imaging devices provide the tools required for ensuring security in a number of applications. With a mission of “Enabling a safer society and smarter living”, Dahua will continue to focus on “Innovation, Quality, and Service” to serve partners and customers around the world.”

intelligent algorithm which uses laser positioning to accurately locate the source of the fire.

Substation Inspection

As power transmission hubs, substations must maintain a safe and stable state at all times. Manual patrol alone is not enough since malfunctions can happen in an instant and may not be immediately detected, or a patrol may not be able to see silent breakdowns waiting to occur. Fortunately, new devices allow us to use technology in order to detect problems. Dahua has developed an intelligent substation monitoring system, which provides intelligent patrol features complete with a report after each round of patrolling. In other words, it provides users with real-time information about substation equipment in a way that is much more efficient, saving time and labor. Furthermore, it allows humans and machines to work together and take advantage of their respective strengths. If the temperature of equipment or part of the station exceeds a preset limit, the system will automatically trigger an alarm alerting management.

Summary

If it is presumed that conventional monitoring methods are sufficient enough in dealing with threats, a tremendous amount of lives and possessions would be put at risk. Cutting-edge technologies are necessary to effectively prevent and respond to threats in the shortest duration possible. Dahua thermal imaging devices provide the tools required for ensuring security in a number of applications. With a mission of “Enabling a safer society and smarter living”, Dahua will continue to focus on “Innovation, Quality, and Service” to serve partners and customers around the world. **SST**



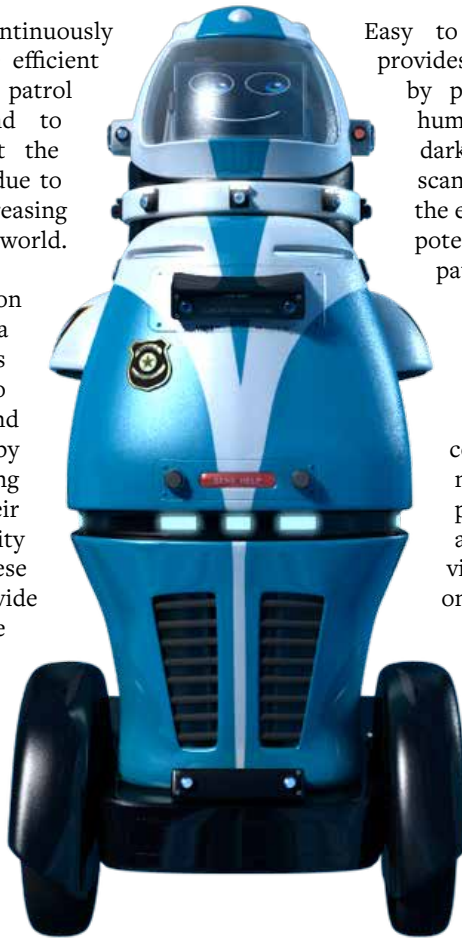
The New Face of Security with Gamma 2 Robotics and Hexagon Safety and Infrastructure

Security teams must continuously find ways to provide more efficient and effective methods to patrol and monitor facilities, respond to alarms, and analyse events. At the same time, they must cut costs, due to limited budgets and the ever-increasing commoditisation of the security world.

The partnership between Hexagon Safety & Infrastructure and Gamma 2 Robotics enables security teams to deploy autonomous robot(s) to augment, and in some cases, extend tasks traditionally performed by humans to cut costs while providing a high level of security to their facilities. Using Hexagon's security and monitoring software, these robots (known as RAMSEE), provide a consistent physical presence and serve as a powerful force multiplier for security teams. RAMSEE can autonomously or manually patrol a facility or site using Hexagon's software, while at the same time delivering real-time data regarding intruders, motion, heat, fire, smoke, gas, and more. Hexagon security suite's common operating picture integrates data streamed from RAMSEE with feeds from other sensors to deliver a live, map-based view of the area.

Patrol

Hexagon's safety and monitoring software and Gamma 2 Robotics' solution integrate to give security teams the ability to design and execute custom patrols, as well as manually control RAMSEE on the fly to investigate target areas. Custom patrols are created using checkpoints where RAMSEE can perform actions like flash lights, use sirens, say phrases, perform image or video analytics and raise or lower platforms.



Easy to set up and deploy, RAMSEE provides a consistent security presence by performing both autonomous and human-guided patrols, even in total darkness. RAMSEE includes a LiDAR scanner to automatically create maps of the environment while ensuring that any potential obstacles are avoided during patrols.

Monitor

Hexagon's safety and security software can combine data collected from RAMSEE with a nearly unlimited number of third-party mobile and stationary sensors and systems. Teams can then view, interpret, analyse, and act on information from multiple data sources in a map-based common operating picture. This solution also enables security teams responsible for managing the security of multiple locations to monitor RAMSEE and other sensors from a centralized monitoring command center.

RAMSEE is equipped with a wide variety of sensors that feed data on intruders, motion, heat, fire, smoke, gas, and more into the Hexagon-based command-and-control environment in real time. Generate custom alarms when sensor thresholds created by your team are exceeded or anomalies detected. RAMSEE can also display real-time video from four discrete cameras, including forward-looking infrared (FLIR), 180-degree forward-facing camera, 180-degree rear-facing camera, and head-mounted PTZ camera.

Respond

Detect and respond to alarms triggered by RAMSEE and/or other third-party sensors and systems

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“RAMSEE is equipped with a wide variety of sensors that feed data on intruders, motion, heat, fire, smoke, gas, and more into the Hexagon-based command-and-control environment in real time. Generate custom alarms when sensor thresholds created by your team are exceeded or anomalies detected. ”

integrated into Hexagon’s safety and monitoring software. The command-and-control interface allows you to ensure your staff follows the correct response procedure by implementing standard operating procedures displayed during an alarm.

With RAMSEE’s video-conferencing and voice capabilities, operators will be capable of interacting with people without endangering themselves.



Analyse

Save time with automated report delivery. Monitor RAMSEE’s daily activities and other sensors with activity reports that allow users to measure performance and gain insight into previous shift activity. Notifications regarding high-priority alarms are e-mailed to the appropriate staff member to ensure immediate response.

Benefits

Gain Visibility

Security officers can monitor and interact with multiple, geographically dispersed locations in real time from anywhere in the world.

Increase Situational Awareness

Data from RAMSEE can be combined with unlimited third-party sensors to provide a map-based common operating picture.

Reduce Costs

Enable security teams to augment tasks traditionally performed by humans, reducing labor and turnover costs.

*For more information, please visit: www.gammarobotics.com and www.hexagonsafetyinfrastructure.com **SSR***



Security and Beyond with Sanbot Robots



Customs GongBei

Customs Gongbei is located in Zhuhai, connected with Macow. It's the biggest land coast with 1.2 billion entry and exit passengers annually. Sanbot is officially used in Gongbei Customs since 1st October, 2016.



Sanbot assisted in Facial recognition for risky passengers and also answered passengers' questions about the Customs. With its knowledge base and ability to converse in multiple languages, passengers were provided with an efficient interactive experience. Passengers also had the option of dialing video call to the call center and enjoyed being entertained with movies and music.

Bank of China

Sanbot played a pivotal role in improving the customer experience and strengthening customer loyalty to the bank and simplifying the business processes between bank staff and customer. Staff were able to focus more on complex work as Sanbot robot patrolled the lobby manager and independently handled primary business processes for customers thus improving the efficiency for the bank and saving on the human cost. Another feature Sanbot provided was the visual identification of a customer's ID and an intelligent alarm system. **SST**

"Sanbot assisted in Facial recognition for risky passengers and also answered passengers' questions about the Customs. With its knowledge base and ability to converse in multiple languages, passengers were provided with an efficient interactive experience."



THE DIGITALISATION OF THE SECURITY INDUSTRY

Stepping up Security with Artificial Intelligence

Sorting out Crime SMARTly

Security systems will have better topic identification so they will be able to understand that a report for example was about theft even if it is not being explicitly mentioned in the sentence. They will be able to classify incidents correctly without any human help and tag them which will allow advanced analytics to give a better understanding of what incidents are most common on a particular property and require the most attention.

Automatic Translation

Security systems will cater to different users with different language capabilities thanks to developments in machine translation. Perhaps there will be systems where a customer gets his or her daily activity report accurately translated into their native language, no matter what language the officers entered data in. This will make security systems truly seamless.



Computer Visions of the Future

Video processing and computer vision are integral to the physical security industry as there are many systems that use facial recognition and even automated license plate recognition. One day soon perhaps, snapping a picture of a license plate or scanning it will provide law enforcement with all prior offences/fines of the driver. This is very conceivable due to the IoT.

Spot the Anomaly

Machines could replace human staff when it comes to anomaly detection. Machines will improve at learning exactly what is “normal” in any situation and give smarter alerts. This will make the job of staff much easier in a sense that they would only need to monitor unusual behaviour. The system will be able to differentiate between false alarms, major and minor incidents.

Danger ,Intruder Alert!

The convergence of monitoring systems such as alarm and video surveillance and workforce management systems like guard tour systems will lead to better command centres.

When sensors become more sophisticated and the machine is context aware, it will start to distinguish between simple and complex threats hence alerting the human staff only when absolutely necessary, when a security breach occurs.

Fixing Physical Potholes with Digital Dynamism

AI has reduced barriers to entry to new markets and it is not surprising that we see numerous start-ups employing AI to solve myriad issues, including security problems. The adoption of IoT capabilities is increasing slowly, which has given the market players the capability to develop connected devices. AI is certainly the future and a major enabler of innovation and competition that will certainly affect security integrators and their end user.

Robots and Drones

Automated security solutions could never fully replace human security guards but they do enhance the level of security provided by reducing the work load via autonomous patrolling especially in difficult to reach areas and rough terrain.

Tech for drones and robots have been developing so rapidly that they may soon be able to operate with no human guidance at all.



AllGoVision Advanced Video Analytics for Singapore City Traffic Surveillance

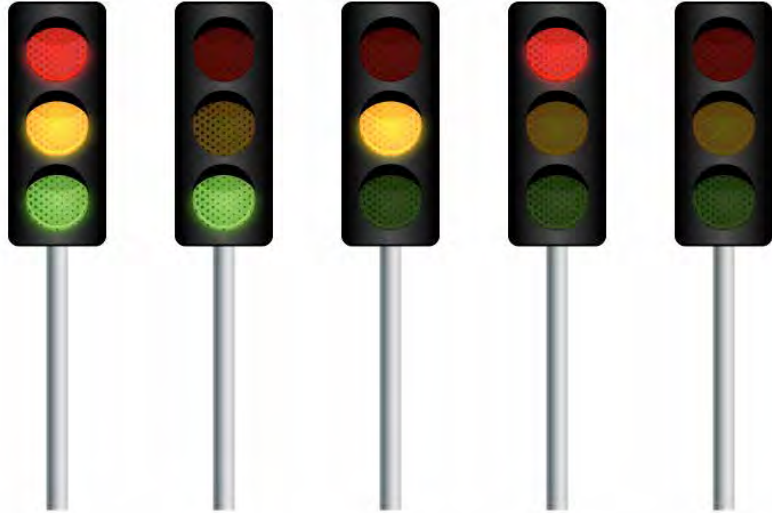
Traffic Surveillance System is a must for modern day cities. Awareness on traffic rule violations enables the traffic authorities to take corrective actions to avoid significant disturbances, from traffic jams to accidents and even loss of life. Video Analytics detects and identifies such breaches and makes the system more effective.

Project Requirement

The Land Transport Authority (LTA) of Singapore wanted to bring the city's roadways under CCTV surveillance. They started with Phase 1 where they tested the system for specific locations and upon positive results implemented the surveillance throughout the island city. Traffic Rule enforcement against illegal parking was the key requirement. However, there was a concern of privacy due to cameras capturing events from public life.

AllGoVision Solution - Illegal Parking Detection

Video Analytics plays an important role by providing real-time alerts against traffic rule violations. In this project the violations are in the



form of illegal parking. AllGoVision has a highly efficient and robust algorithm that detects illegal parking events even in busy roads with continuous traffic. Any vehicle parked or stopped in a specified zone in the camera view would initiate an alarm if it stays there for more than a defined time period.

AllGoVision's advanced video analytics can intelligently differentiate an object by its classification (people or vehicle), and sends alerts only for vehicles.

Privacy Masking

AllGoVision also provides a highly efficient feature which detects and masks human faces so that the privacy is maintained for general public who are subject to video surveillance. The monitoring process shows the masked video whereas the unmasked video is also backed up for forensic analysis requirements which may come eventually.



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“Video Analytics plays an important role by providing real – time alerts against traffic rule violations. In this project the violations are in the form of illegal parking. AllGoVision has a highly efficient and robust algorithm that detects illegal parking event even in busy roads with continuous traffic.”

Benefits

To identify a CCTV monitoring zone, LTA has painted lamp posts or sign posts within CCTV monitoring zones with an orange vertical strip. In these zones any vehicle when parked for more than 2 minutes would raise an alarm for the traffic management personnel to take necessary actions. Compared to a video surveillance with only

cameras, the application of Video Analytics in this case has provided effectiveness and cost efficiency in the process while the accuracy is more than 90%, the general public are assured of their privacy protection in the surveillance process.

For more information, please visit: www.allgovision.com



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VIVOTEK, the Eyes of an Intelligent Robot

Based in Markham, Ontario, Canada, mobile robot development company, Dr Robot Inc., was looking for a high performance IP camera for its new series of mobile robots, i90. i90 robots were developed for applications such as security, remote monitoring, automatic tour guides and academic research and development platforms.

i90 is a fully wireless robot, and operates as an autonomous mobile wireless device providing remote monitoring, control and communication. i90 communicates with off-robot computer(s) via 802.11g. Dr Robot's engineering team was looking for a high resolution wireless (802.11g) IP camera, with a reasonable price tag.

Key Challenges

The remote monitoring task normally requires robot and camera to operate under low illumination in some circumstance and capable of bringing the target close by optical zoom without alerting the subject; the camera has to be reliable and capable of operating on a constantly moving

robot; integration to high level AI software should be flexible.

VIVOTEK cameras were tested along with other suppliers from Japan and Europe. With support from ACC, VIVOTEK's Canadian distributor, the VIVOTEK PZ6114 was finally picked for integration with the i90 robot for its functions including smooth pan tilt operation, plus the 10x optical zoom, two-way audio, low light operation mode, and excellent image quality with reasonable cost.

A variety of mobile robots were then developed based on i90 platforms, and all equipped with VIVOTEK PZ6114 cameras as a standard feature.

i90 robots are deployed for various application including nuclear facilities, advance automotive engineering labs and university research facilities.

High Quality Images - The video quality and resolution of the IP surveillance systems is superior to



that of the analog CCTV solutions.

Real-time Information - IP videos can perform motion detection, event triggers, and alert automation, which make security management more efficient, intelligent, and cost-effective. **SSST**

Did you Know?

Dubai police plan to have robotic officers make up a quarter of the force by 2030. It can speak six languages and is designed to read facial expressions and has a computer touch screen where people can report a crime. The robot is deployed mainly to tourist spots.



AN INTERVIEW WITH

MR. LING TING MING CEO OF ACTIV TECHNOLOGY

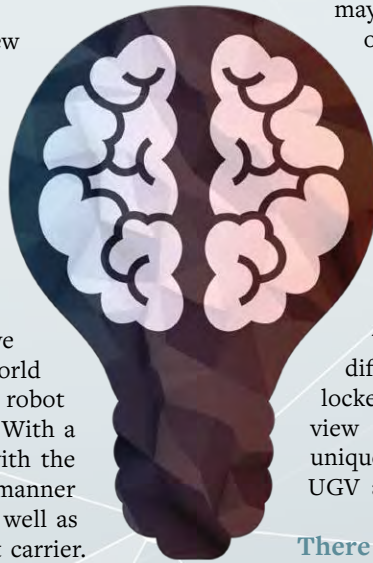
In 2017, the media was abuzz with news about security robots taking over the industry. One unique robot that stood out was the O-r3, which is the first of its kind in the wonderful world of security robots. Combining both aerial and ground abilities. The robot also boasts a myriad of features such as facial recognition technology to follow intruders on and off road and best of all has the ability to be on duty all day everyday with 24-hour operation and recharging capabilities.

We sat down with the ceo of activ technology mr. Ling ting ming to discuss the o-r3 as well as otsaw's future aspirations for this one of a king security robot that is spawned from a mixture of innovation, imagination and top notch tech tailor made for the security needs of today's smart cities.



What was the inspiration behind the creation of the world's first ground-aerial outdoor security robot - O-R3. Tell us more about the need in the security industry that the O-R3 caters to?

Drones are a technology that is not new to us and there has been news of the drones 'developments in the media very frequently in recent times as well as adoption of drones and the evolution of the technology overtime. When we were designing this robot in San Francisco, we started with the Unmanned Ground Vehicle (UGV), which is the ground vehicle concept but on top of that, we wanted to differentiate and tell the world what is so different about OTSAW's robot as compared to other brands' robots. With a little bit of imagination, I came up with the idea of including drone in a hidden manner which adds an element of surprise as well as a concept of a mother ship or aircraft carrier. As it is hidden, the intruder may not know and if the intruder were to climb a fence or hide in an area where the UGV cannot access. The drone can be launched.



Having an aerial view is most definitely more powerful than having a so-called horizontal view. This gives us an elevated view of the entire surroundings especially if the area in question is quite sizeable and fast coverage is needed. This is because on the road, the UGV may not be able to go fast due to moving obstacles. (i.e. humans, bicycles etc.) With an aerial view, there are definitely lesser obstacles which means that one can move faster and capture a wider view of what is happening on the ground.

In cases where there are intruders or some kind of emergency, like an outbreak of fire where someone is trapped in certain areas, it would be difficult to climb over a wall or access a locked gate. In these cases, having an aerial view is definitely an advantage. This is a unique feature and collaboration between the UGV and the drone.

There is currently talk of robots replacing human security guards but the O-R3 seems to complement human personnel. Was this an important factor to OTSAW in designing this robot?



We have to look at two areas being, the breakthrough in technology as well as the fact that a human cannot be replaced. In terms of technology today, I feel it can do first level patrolling and surveillance with regards to indoor and outdoor robots. This eliminates human staff having to do daily routine chores, which I suppose security guards do not really enjoy. This is one aspect that AI can replace. As of today, the human element is still required as critical decision making is needed, which can only be done by humans. This is not purely for human intervention but has a look back effect in which it involves machine learning that is going on in the background so whatever instructions the human gives to the robot will become a databank eventually. All the information will be collected overtime and learned from the machine, which increases the intelligence of the machine with time through the instructions given by the human.

This is a collaborative idea between the human and the machine where the human is still needed where the human oversees decision making which cannot be done by the human at this point in time but perhaps later

“We have to look at two areas being, the breakthrough in technology as well as the fact that a human cannot be replaced. In terms of technology today, I feel it can do first level patrolling and surveillance with regards to indoor and outdoor robots. This eliminates human staff having to do daily routine chores, which I suppose security guards do not really enjoy. This is one aspect that AI can replace. As of today, the human element is still required as critical decision making is needed, which can only be done by humans.”





on robots may be able to make intelligent decisions on their own. However this depends on how technology evolves overtime.

In recent years, there has been a significant rise in terror attacks and current physical security measures have proven to be insufficient. How can the O-R3 assist in securing venues, events and possibly preventing terror attacks (weaponising robots)?

This depends on the application and the use case. For example, we have classified our customers into three categories – law enforcement, outsourced security companies and building owners. In the law enforcement category, there are military and police so this could be a possible category but regulations need to be put in place before something like that can be done.

From a technology angle, this is achievable and can be custom built, for example the robots can be equipped with a Taser gun to suit the needs of the customer but it will require testing and to be approved by law as it is driven by a robot and not a human being. Safety measures will need to be taken when the robot is being deployed. This may be a possibility in the future but it will probably take place in a controlled environment, for example in restricted areas where nobody should be in the area at a certain time of the day and so if the person is found trespassing, he or she will be challenged by the robot. If the intruder begins to run, he or she may risk being tasered by the robot.

This would require a certain amount of imagination but technology progresses with imagination.

O-R3 combines the latest in security tech from drones to augmented intelligence. Are there any future plans to implement biometrics such as facial recognition, voice recognition etc..?

Most definitely. In fact, one of the features of our robots is facial recognition and as time goes by, we will be seeing more and more sophisticated technology being embedded into the high tech robots. With mobile devices like the latest iPhones being equipped with facial recognition, the technology is readily available currently and it is about how we are going to implement



it. However, due to the O-R3 being an outdoor robot, other challenges may be faced such as scanning from a distance. Environmental factors could also affect the accuracy of the scanning.

Yes there are plans to incorporate biometrics into the robots in the future and not just facial recognition.

The possibilities include iris recognition and other forms of technology based on availability and if the technology has been tested and has matured enough. If so, we will definitely embed such technology so the system can be secured and more robust.



Due to its real time alert feature, the O-R3 can assist in crime prevention. I recently read about OTSAW's collaboration with Dubai Police who are actively using robots as part of policing efforts. Could you please describe your experience working with Dubai Law enforcement?

Our collaboration with the Dubai Police is to assist them with outdoor security. What they have currently are indoor robots. We are working hand in hand with them to come up with something for 2018 and this includes a trial. We are unable to share details at this time due to an agreement with the Dubai Police.

There is a long-term vision of the Dubai Police to



“Having an aerial view is most definitely more powerful than having a so-called horizontal view. This gives us an elevated view of the entire surroundings especially if the area in question is quite sizeable and fast coverage is needed. This is because on the road, the UGV may not be able to go fast due to moving obstacles. (i.e. humans, bicycles etc.) With an aerial view, there are definitely lesser obstacles which means that one can move faster and capture a wider view of what is happening on the ground.”

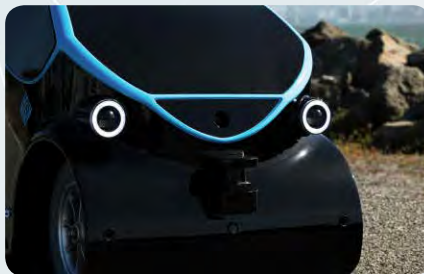
reduce its human police staff by 2030 and they are very forward looking in terms of adopting new technology.

There have been talks of the dangers of security robots getting hacked due to the IoT connected world we are living in currently. What measures are in place to prevent hacking?

We have multiple layers of security or protective measures. These are both physical and digital. For the physical, we have both biometric and 2-factor authentication via SMS. As for the digital, we encrypt data and we do not store a large amount of data in the robot itself. In the event where the robot is hijacked or hacked, the data on the hard disk will not be readable due to the encryption.

What are the future plans for O-R3 and are there any other robots in the making. Also, what other industries would you like for O-R3 to be introduced into?

Security is now on an autonomous platform, which helps security to navigate autonomously which is one use case. The robots can be used by law enforcement, security companies and building owners. When I say building owners, I refer to commercial buildings, shopping malls, airports and so on. These are however most likely going to be in bigger compounds.



Based on our core tech which is autonomous technology, we are also looking into embedding technology into our robots for other uses such as an autonomous road sweeper where we can embed an autopilot system into the road sweeper so there will be no need for a human to drive it.

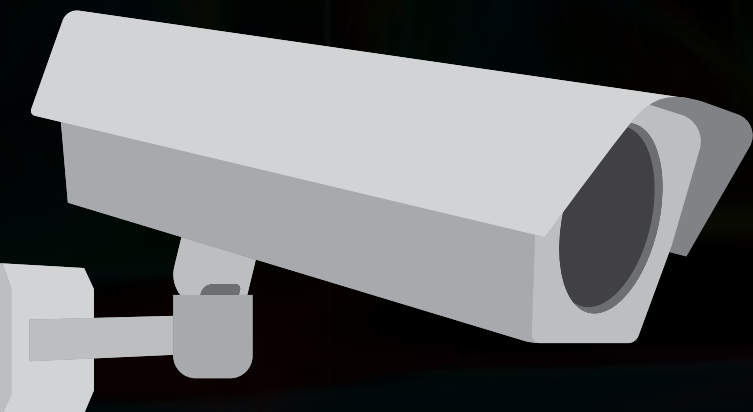
Another use case would be farm delivery vehicles where farmers can load fruits onto the vehicle, which will automatically drive itself back to the farmhouse. These are both examples of how we aim to expand into robotics in the future. **SST**



Excerpts from The Video Surveillance Report 2017

Cybersecurity,
open platforms, 4K,
low-light cameras,
video analytics and
warranties

► By *IFSEC Global*



With end users increasingly prizing integration between disparate systems and the technology becoming more so ware-driven, much of the security industry has embraced open platforms.

This trend mirrors the evolution of other building technologies. In *The smart buildings report 2017* we wrote that “the building control industry, like most other high- tech sectors, was born in a closed source world. Systems were built on proprietary hardware and so ware stacks, leading to a highly fractured, disparate ecosystem of quasi- intelligent systems. The demand for greater interoperability prompted the industry to move away from proprietary systems to a much more open architecture.” The same drivers very much apply to surveillance systems.

Nevertheless, plenty of proprietary systems are still in operation. Indeed, they account for the majority of installed systems at 56%. Yet for those survey respondents whose systems were installed in the last five years, this figure was 14 percentage points lower than for older systems, at 52% against 66%. The direction of travel is clear: growing numbers of vendors are abandoning the proprietary model, so it’s easy to imagine this far-from-overwhelming overall majority being overturned in the coming years.

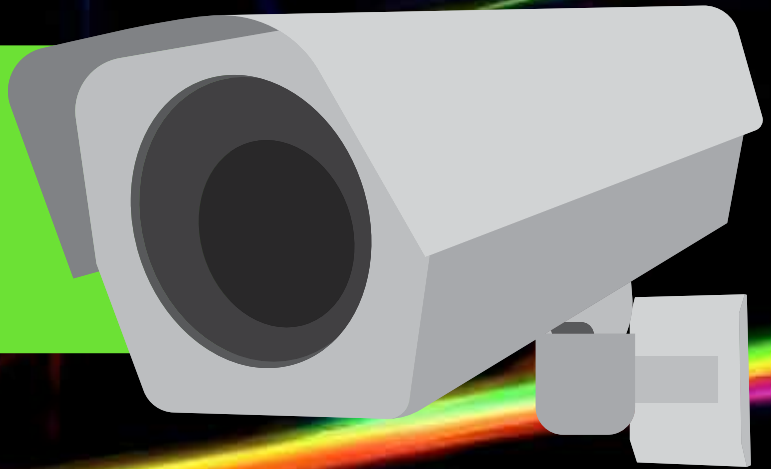
Integration

Nearly half (48%) of security professionals are “integrating – or plan to integrate – CCTV with other systems to generate collective business intelligence from data from numerous systems including IoT sensors etc”.

Respondents with plug-and-play systems were marginally more likely to have such integration plans: 50% against 47% of those with other types of systems.



“The lack of technical knowledge of physical security service providers on IP-based systems and IT platforms provides an ideal opportunity for cyber-attacks.”



This contradicts the assertion posed in last year’s survey – with which one in three agreed – that “plug and play is problematic when integrating CCTV with other security tech.”

“End-to-end systems will always have their place, particularly for smaller surveillance applications. That’s why there’s great demand for DirectIPTM in the SME space as well as in retail, where and organisations might have hundreds of stores up and down the country. End-to-end systems are fast and simple to install and low maintenance and can indeed simply integrate with other security systems such as access control and intruder as well as ONVIF-compliant cameras from other manufacturers.

“At the same IDIS recognised the growth of open platform solutions, particularly for larger deployments and developed our enterprise-level video management software (VMS) IDIS Solution Suite, which is a truly open platform. It allows of the integration of a myriad of ONVIF-compatible cameras as well as legacy analogue cameras and provides the flexibility and scalability to integrate with other security and back-office systems”, said Brian Song the Managing Director of IDIS Europe.

Integrating different building systems onto a single network to collect, share, analyse and automatically respond to data is effectively the definition of the term ‘smart buildings’. Global spending on smart-building technology was forecast to grow from \$7bn in 2015 to \$17.4bn by 2019 by IDC Insights (Business

Strategy: Global Smart Building Technology Spending 2015–2019 Forecast).

In our recent trend report on smart buildings we asked hundreds of security professionals, facilities managers and others involved in building management which of their building functions they would describe as having ‘smart’ functionality. The most commonly chosen option was CCTV, with 67%, which suggests that the industry is at the forefront when it comes to integration and harnessing big data.

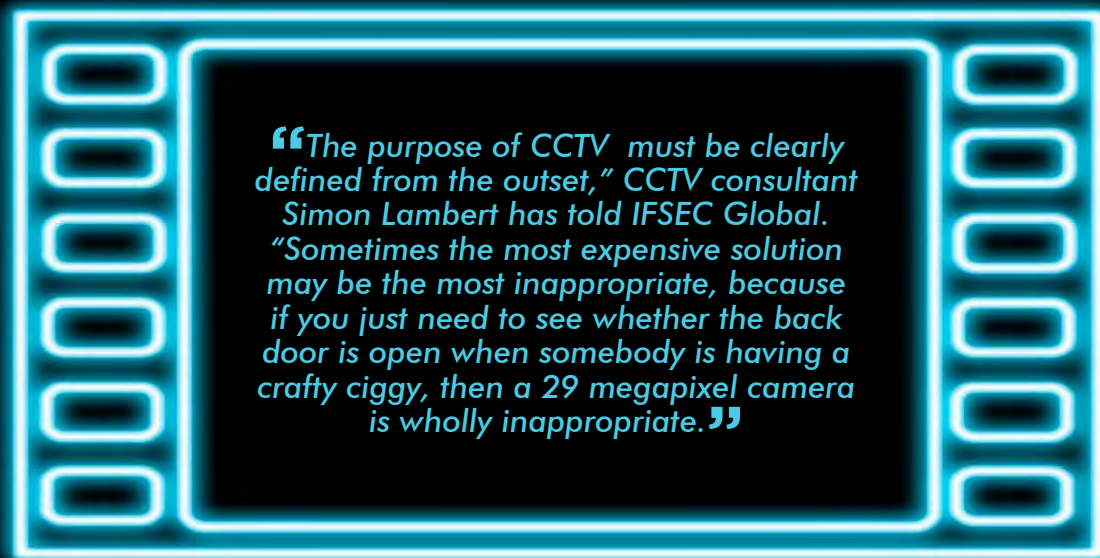


Cybersecurity in the Age of Convergence

As a long-term trend crime rates have fallen steadily in most categories across the western world since the 1970s. Whatever its role as a deterrent in this success story, CCTV has certainly helped to identify and convict criminals – and with growing effectiveness as technology has improved.

But surveillance systems are now potential facilitators for a comparatively low risk, high reward class of crime that is growing exponentially. On October 2016, more than a million security cameras were hijacked and used as a bridgehead to bring down security website KrebsOnSecurity.com with a distributed denial of service (DDoS) attack. Then in January 2017, CCTV cameras in Washington DC were hacked eight days before the presidential inauguration.

Then there’s the General Data Protection Regulation (GDPR). Coming into force across the EU from 25 May



“The purpose of CCTV must be clearly defined from the outset,” CCTV consultant Simon Lambert has told IFSEC Global. “Sometimes the most expensive solution may be the most inappropriate, because if you just need to see whether the back door is open when somebody is having a crafty ciggy, then a 29 megapixel camera is wholly inappropriate.”

2018, the GDPR stiffens penalties for data protection violations – including shortcomings in data security.

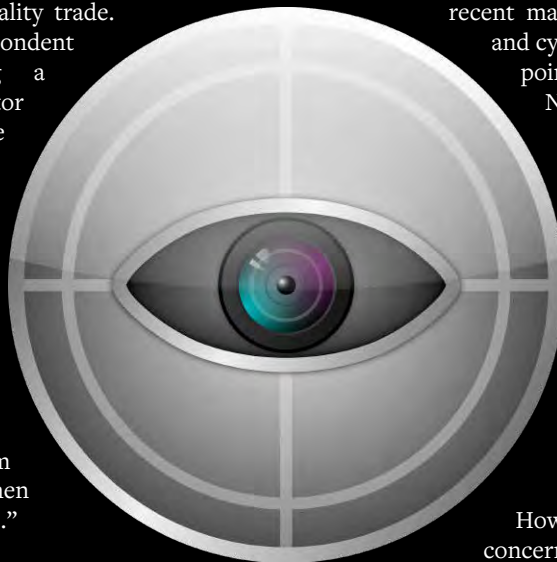
Yet: 41% of those with IP systems professed to not being at all concerned about their CCTV system’s potential vulnerabilities. Are they being complacent? “Our CCTV systems operate on a separate network with no internet/wi access, so we are relatively safe from intrusion,” explained a senior security professional employed in the US hospitality trade. A South-Africa-based respondent charged with protecting a business in the IT/digital sector said they had every confidence in their preparedness: “I have a good grasp of cybersecurity implications and know the system we have is correctly installed with https setups and correct rewalling to avoid DDoS and botnet attacks.” More succinctly, another respondent suggested that “if your protection from cyber-attacks is robust, then there is less to worry [about].”

Research conducted for cloud-based surveillance company Cloudview found that both traditional DVR-based systems and cloud-based systems were vulnerable to malicious breaches. During tests, we routers, DVRs and IP cameras running the latest software were connected to the internet. One device was breached within minutes, while another two fell under the control of an unknown attacker inside 24 hours. A fourth became unstable and completely inoperable.

The research found that both DVR-based and cloud video solutions used port forwarding and Dynamic DNS, creating vulnerabilities, while the former issued too few firmware updates and often left ‘back doors’ open. Other problems included poor use of secure protocols, a lack of encryption, substandard cookie security and insecure user and credential management.

But vendors are waking up to the problem if their recent marketing output is any barometer and cybersecurity is now a major talking point elsewhere in the supply chain. Nearly half (48%) of security professionals polled said they were more concerned about the cybersecurity threat than they were two years ago, with only 19% claiming to be less worried. “With the media coverage of cybersecurity issues and hacking of cheap Chinese imports, I believe there is more concern than there was 18 months ago,” noted one UK-based professional.

How to explain the 19% who were less concerned? The obvious answer is that they’ve recently bolstered their cybersecurity defences. Filter the data to those who installed or substantively upgraded their systems in the last few years and there was indeed less concern about the cybersecurity threat than those with older systems: 14% with newer systems were ‘very’ worried (compared to 16% of those with older systems), 42% were ‘somewhat’ worried (versus 54%) and 44% professed to not be worried at all (versus 30%).





Respondents working for organisations in the IT/digital tech/cybersecurity elds were more likely to “consider reverting to a closed protocol or analogue system from an alternative brand” if they “fell victim to a costly cyber-attack” (46% saying ‘yes’ compared to 30% for all other sectors) but not appreciably more worried about their system’s vulnerabilities than they were two years ago.

Analogue Systems: A More Secure Alternative?

More than a decade since the dawn of the IP age, analogue cameras are still installed as part of a slim majority – 57% – of systems, with 21% of systems having exclusively analogue cameras. However, lter the results to systems installed in the last ve years and the picture is rather di erent; 49% of systems feature analogue systems, of which only 15% are exclusively analogue, against 79% and 33% respectively for older systems.

Given that you can now connect a toaster, a fridge or even a hairbrush to the internet, it might seem quaint to outsiders that the humble analogue camera remains prevalent in the physical security industry and this isn’t just legacy systems that are yet to be upgraded; revenues from global network camera sales only overtook those of analogue cameras in 2014 (IHS Markit). Our 2016 video surveillance report also revealed, it is worth noting, that 56% of security professionals without an HD analogue solution said they would consider switching to one if it were cost-e ective, simple or leveraged existing coaxial cables.

Almost one in three respondents (33%) with IP cameras said they would consider reverting to a closed protocol or analogue system if they fell victim to a costly cyber-attack. Whatever the bene ts of IP cameras – and these

are manifold – many security professionals are clearly concerned about the potential security risk. Simon Lambert, an engineer and CCTV consultant, has suggested that “people who appear to be ‘firmly attached to their analogue counterparts’ are the ones not easily hoodwinked. They know that, in reality, IP cameras are clearly not essential if you want remote viewing.” Speaking to IFSEC Global, he also noted that “pretty much all analogue CCTV has been recorded digitally for years now, so it could easily be connected to the internet.”



“End-to-end systems will always have their place, particularly for smaller surveillance applications. That’s why there’s great demand for DirectIPTM in the SME space as well as in retail, where and organisations might have hundreds of stores up and down the country. End-to-end systems are fast and simple to install and low maintenance and can indeed simply integrate with other security systems such as access control and intruder as well as ONVIF-compliant cameras from other manufacturers.”

Cutting-Edge Technologies 4K Resolution

Just 11% of respondents already enjoy 4K resolution from their network cameras. However, a significant majority (71%) of the rest said they expected to eventually need it, with 49% intending to get 4K only when prices fall low enough. A UK-based security professional involved in procurement decisions said: “4K is the next evolution but costs need to re ect what customers want to pay and invest in their infrastructure.” With prices falling, we can perhaps expect to see that 11% figure rise sharply in the coming years.

Not everyone is so readily swayed by the merits of higher resolutions in

every instance. “At IFSEC [the UK security trade show] there are 30 companies all selling the same systems and claiming theirs is best,” said one sceptical company director. “What actually works? 4K is only any use if people want more than a visual deterrent.”

As ever, whether you need 4K ultimately comes down to your operational requirements. “The purpose of CCTV must be clearly de ned from the outset,” CCTV consultant Simon Lambert has told IFSEC Global. “Sometimes the most expensive solution may be



the most inappropriate, because if you just need to see whether the back door is open when somebody is having a crazy giggy, then a 29 megapixel camera is wholly inappropriate.” Expressing similar sentiments, one South Africa-based security professional who completed the survey said: “It is important to understand what the camera’s job is and how the camera model and megapixel rating affects the required delivery.

In some cases a standard 4CIF analogue camera will do the job just fine.” A senior security professional based in Singapore suggested that buyers must consider “context, relevance and never [upgrade simply] for the sake of [better] technology.”

Lowlight versus thermal cameras

Around a third (32%) of those polled in our survey already use lowlight cameras while a further 42% intend to at some point. One in four (25%) still prefer to use thermal cameras for their particular environment.

Of course, if you need to capture fine details by daytime but also require motion detection capabilities in complete darkness at night – and you have a sizeable budget – you could have the best of both worlds and cover a scene with both thermal and lowlight cameras.

A Grudge Purchase No Longer: Video analytics

“Video surveillance is no longer a ‘grudge purchase’ thanks to video analytics and other cutting-edge

functionality,” according to around a third (34%) of respondents.

When it comes to securing funding for upgrades, it was once impossible to measure the return on investment of CCTV. Heads of security couldn’t present to their board the costs avoided because would-be thieves were deterred or caught by security cameras. It’s impossible to know the outcome of events that didn’t happen or unfold in a different way.

Video analytics, however, was a game-changer. Automating the monitoring process encompassing motion and intrusion detection, people tracking, facial recognition, recognising loitering and raising alerts/alarms, among other things – CCTV software could do the job both more effectively and at a lower cost than security guards. Software got neither tired nor distracted and didn’t demand a salary – a much easier sell when seeking sign-off on a technology upgrade.

Perhaps mindful of the potential for streamlining costs, twice as many respondents agreed that the “total cost of ownership over the system lifecycle is paramount” (36%) as those who thought that “video surveillance is a commodity buy and all about the initial price point” (19%). The trend was less pronounced, at 31% and 23% respectively, for owners of plug-and-play systems (figures being 38% and 16% for other systems).

For more information, please visit:
www.ifsecglobal.com **SST**



Security robots are excellent for patrolling public venues like shopping malls and airports as they remain vigilant when human security personnel grow tired or are not alert due to fatigue.

Security coverage that a robot offers in the case of a shopping mall can be easily overshadowed by the fact that the machines seem to serve to entertain the population. Cuteness on overdose!

Security Robots...

Security can be difficult to achieve in critical infrastructure sites, corporate campuses and educational facilities, where wide, expansive spaces require continuous protection as cost, location and lack of resources make the logistics of deployment difficult. Robots would be ideal here.

Mundane jobs typically associated with remote locations can be reassigned to robots so human abilities can be used in more important tasks, such as within a security operations center, where sensors can be evaluated and possible threats can be more effectively thwarted.





While some argue that robot security guards have a limited capacity for dealing with humans and are lacking in empathy, such robots can rigorously enforce rules programmed into them.

The IoT and rapidly rising occurrence of cyber attacks can render a robot dangerous if hacked. The possibilities or rather risks are endless which could be dangerous to the public. This raises the question of arming autonomous robots with weapons.

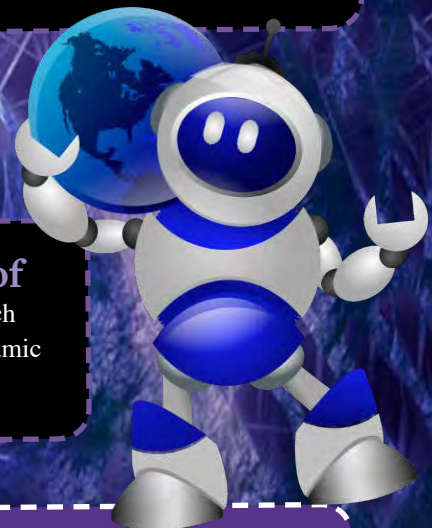
The Risks and Rewards

Dangerous jobs may require humans to be present but many security-related roles can see significant risk to workers reduced by implementing robotic guards in their place. Organisations have to weigh the cost and outcome of implementing this new and innovative technology to meet basic business needs.

Robot vision is not affected by tiredness and object identification software allows robots to recognise humans and interact with them. Images captured by a robotic security guard can be streamed back to a computer and recorded.

Robots can be equipped with a multitude of features ideal for effective surveillance and access control such as advanced video analytics capabilities, biometric scanners and panoramic coverage of a scene. In the long run, they can be very cost effective.

Robots currently cannot physically handle troublemakers or intruders, but the robots can alert human guards and deploy limited weaponry. Although, theoretically, robots can be fitted with guns and guns that fire electrified darts to stun or immobilize a person, this has given rise to ethical dilemmas.





EXCERPTS FROM THE SECURITY DRONES REPORT 2017

The prevalence, growth prospects, applications and regulatory challenges of drones and anti-drone tech in the global security market

► By: **IFSEC Global** in partnership with Aviat Drones

About \$127bn (£98.5bn) worth of labor and business services could be replaced by drones by 2020, a report published in May 2016 by PricewaterhouseCoopers has estimated.

The technology has its origins in common with thermal cameras and many other security technologies in the military. Referred to as UAVs (unmanned aerial aircraft), they have been invaluable in reconnaissance and the surgical dispatch of terror suspects at a fraction of the cost of conventional, manned aircraft for longer than many people probably realise.

In recent years, unmanned aircraft have been repurposed for civilian applications. A kind of successor to the remote-control helicopter, drones are used as toys by children and adults alike – and that in itself creates security risks and organisations in

a growing range of sectors are finding operational efficiencies in a plethora of imaginative ways as prices fall and the technology becomes more sophisticated. Commercial drones are already used in the aerial surveillance of crops, as a much cheaper alternative to helicopters in search and rescue operations and the delivery of medical supplies to remote or inaccessible regions. Less dramatically they are even used by everyday small businesses like estate agents and wedding photographers.



This brings us to anti-drone technology: systems that disable or wrest control of rogue drones, or impede encroachments via physical or virtual barriers. Whatever the method deployed, such systems are eliciting interest in high-security environments like airports, which have reported a number of serious drone-related incidents, and prisons, where drug or weapon-delivering drones have been known to breach the perimeter. Anti-drone tech can also protect organisations against the theft of intellectual property and invasion of personal privacy through unauthorised surveillance.

Extent Of Drone Deployments in the Security Industry

Drones are already more widely used in the security industry than many might have realised. Sixteen percent of respondents, mostly comprising security professionals, heads of

security and other senior executives say they already deploy the technology. Given that a total of 60% either already use drones or can foresee themselves doing so eventually, it doesn't seem hyperbolic to describe the growth trajectory for this market as heading sharply upwards. In fact, a mere 16% indicated that they "probably won't ever need drone technology for any security application", the other 24% admitting that they don't know enough about the technology to commit either way.





How Respondents Deploy Drones

- Critical Infrastructure (substations, ventilation fans for people working underground, remote sites)
- During night-time to view/inspect the area for suspicious activity if an alarm sounds before security checks
- Football ,rugby, rally car events and political functions
- Over populated areas with a lot of vehicular traffic
- Hydroelectric power plant and oil pipeline
- Building surveying security – perimeter patrols
- Numerous locations from city centre to rural
- Bush areas where suspects are hiding after a burglary and when solar equipment theft occurs
- Hospital environment and site including car parks
- Police operations, which can be rural or urban
- For surveying and media
- During big functions like concerts in the parking lot
- For a complex grouping of industrial buildings and services
- To check what's happening across a large mountainous region. The area used by surveillance for is also used by shepherders who not only have to look out for wild predators but also human beings who try to steal their livestock
- Design process can incorporate a vast amount of user observation at the front end of a project. Using a drone in some situations could provide a great deal of vital information. Also metrology (diagnostics, testing and monitoring). Quite often, these products are used in hazardous or difficult-to-access areas, therefore drone involvement could become commonplace

Demand and Growth Potential

Of those who don't already use drones but expect to at some future juncture, 42% considered drones 'important to how we achieve our goals' and wanted to deploy them as soon as practically possible. The other 58% expected to make the investment only when prices fall low enough. Accelerated by low-cost competition from China –

“The age of the drones has arrived and technological leaps are now making what was once impossible not just possible but routine. For example, the areas one drone can cover from a surveillance perspective are now almost limitless. In the past this kind of overview was either impossible or prohibitively expensive. As an example, affixed-wing surveillance drone can provide an eagle-eye view of an area stretching to 10km in all directions. Flexibility is also important. Using the right platform and technology, drone surveillance can provide facial recognition, thermal night-time images and a growing range of exciting options.”

- Rob Kidner, Head of Security Services, Aviat Drones

notably DJI, which dominates the consumer market and is making inroads into the commercial space – this is making security drones and anti-drone tech accessible to a widening 24% range of businesses and sectors.

Drones as a Service

Investment needn't be frontloaded. Replicating a model gaining ground in access control and long dominant in intruder alarms, the provision of drones as a service is likely to suit businesses that only need drones periodically, want the flexibility to scale their operation up or down rapidly, or simply want to test the concept without making a big investment in hardware and training.

Unlike more established security technologies like CCTV, access control and intruder alarms, drone use does not benefit from the accumulation over several decades of guidance, operational methodologies and technical standards. They represent if not uncharted territory, then certainly lightly explored terrain. Few organisations can draw on a wellspring of expertise



“Capable of patrolling more rapidly and extensively than human guards, as well as being unimpeded by physical barriers on the ground, drones are an intriguing option for the 46% of respondents who have manned patrols. Of that segment, 64% said they would consider using security guard tour applications.”

within their organisation or readily find candidates with eclectic skillsets that happen to include expertise in this niche discipline.

Within this context, this observation made by Adam Lisberg, DJI spokesman for North America, to Reuters in 2016, seem perceptive. “Four years ago, it was enough to take something out of a box, you push a button and it flies. The smart money is now in drone services.”

ROI: Making the Case for Investment

Security professionals review the performance of their security systems as tech evolves on a fairly regular basis. This is perhaps understandable given the pace of breathless pace of change in what is now a software driven-market.

When asked how often they review their ‘current security systems with a view to investing in new technologies to boost security and/or cut costs’, 42% said once a year or less. A further 27% did so every 1-3 years and 25%

reviewed things on an ad-hoc basis, the implication being that they would happily consider investing in technologies as and when they become aware of them. That leaves just 6% of respondents who tend to review systems less regularly that every three years.



Such apparently widespread willingness to consider investing in cutting-edge security technology is a real spur to a disruptive sector like commercial drones.

Persuading budget holders to sanction investment in drones becomes a lot easier if the outlay can be recouped and then some through operational efficiencies. Consider the most well-known commercial deployment of drones, by Amazon, during trials in 2016: delivering a 2kg package within a 10km radius would cost the retail giant between \$2-\$8 in ground transport costs, whereas delivery

by drone costs a mere 10 cents – between 20 and 80 times cheaper.

It’s not difficult to imagine how substantial savings



“Whatever the method deployed, such systems are eliciting interest in high-security environments like airports, which have reported a number of serious drone-related incidents, and prisons, where drug or weapon-delivering drones have been known to breach the perimeter. Anti-drone tech can also protect organisations against the theft of intellectual property and invasion of personal privacy through unauthorised surveillance.”

could also be achieved in the security market if drones could be deployed in place of security guards, network cameras or helicopters in certain contexts.

Security Guard Tours

Capable of patrolling more rapidly and extensively than human guards, as well as being unimpeded by physical barriers on the ground, drones are an intriguing option for the 46% of respondents who have manned patrols. Of that segment, 64% said they would consider using security guard tour applications. Perhaps unexpectedly, one in two (50%) who don't deploy manned patrols also expressed an interest in the same functionality suggesting that drones make unmanned patrols a viable, desirable tool for organisations that eschew or cannot afford manned patrols.

Where sensors detect an intrusion at the perimeter, a drone can be dispatched much faster than a person on foot. And once at a scene – perhaps deploying a thermal camera – they can more readily spot, track and report the movements of an intruder than flashlight-wielding security guard. This also removes humans from harm's way.

Offering rapid situational awareness drones can therefore be an invaluable aid to first responders in emergency situations involving casualties. Drones don't get distracted and need neither sleep nor food. That

said, they still need refueling in a way that is much more limiting than a human guard's need for food and water.

Cybersecurity

Designed for easy setup, using numerous open ports and often controlled using unencrypted communications, drones are eminently hackable. McAfee Labs highlighted 'dronejacking' as one of the top cybersecurity threats in its 2017 Threats Predictions Report. "Someone looking to 'dronejack' deliveries could find a location with regular drone traffic and wait for the targets to appear," said McAfee's cybersecurity and privacy director, Bruce Snell. "Once a package delivery drone is overhead, the drone could be sent to the ground, allowing the criminal to steal the package."

He also posited a "highly charged" scenario "like a protest or active shooter situation" in which "a police drone would be a tempting target for someone looking to remain unseen by law enforcement."

McAfee also warned of the emergence of drone exploit toolkits on the internet and dark web. "Once these toolkits start making the rounds, it is just a matter of time before we see stories of hijacked drones showing up in the evening news," said Snell.

Students attending a GCHQ-certified cybersecurity bootcamp launched by the UK government in 2016 will





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learn how to hack into drones. Asked how concerned they are about the cyber security vulnerabilities linked with drone technology, 88% were concerned about the cyber risks, with 36% ‘very’ concerned.

The Future of Drones

A 2016 report from PriceWaterhouseCoopers has highlighted the potential of drones to one day perform myriad tasks now carried out by people, sometimes in hazardous environments, more safely, effectively and cost-efficiently than at present. Clarity from above: PwC global report on the commercial applications of drone technology projects that the security drone market will be worth \$10.5bn (£8bn) by 2020, surpassed only by infrastructure, agriculture and transport.

Equipped with on-board CCTV and mobile in three dimensions, drones are essentially flying cameras that create hitherto undreamed-of possibilities in surveillance, tracking, guarding, crowd control, emergency management and, no doubt, a plethora of applications yet to be conceived. They are a powerful tool for enhancing security and generating operational efficiencies.



However, with novelty and potential comes risk. Such disruptive technologies will not be adopted lightly – not until security departments have conducted risk assessments and are satisfied of strict regulatory compliance by properly trained personnel.

Regulatory matters are complicated by the fact that – unlike, say, intruder alarms, surveillance cameras or security barriers – drones are not just mobile but airborne. They can encroach into airspace or onto private property with ease. They are therefore subject worldwide not just to CCTV codes of practice but aviation regulations as well – and these are still being ne-tuned as aviation authorities puzzle over the best way to promote safe use without stifling innovation.

Driven by improvements in ‘sense and avoid’ technologies, we can expect to see regulations eased in the coming years to permit long-distance autonomous flight, increasingly optimised by machine learning algorithms, opening up a raft of new applications and opportunities.

The security industry is ranked fourth on the list of top commercial drone markets by 2020. *SST*



DIGITALISING HOSPITALS WITH BOSCH



- **Connected solutions for greater safety, convenience, and efficiency in hospitals**
- **Operators, staff, and patients benefit from connected services**
- **Bosch expects smart hospitals to generate sales of 100 million euros**
- **Energy and Building Technology business sector to grow around five percent in 2017**

Cologne / Stuttgart, Germany – Preventing the theft of expensive medical equipment, stopping unauthorised persons from entering restricted areas, and informing the OR of a rescue helicopter’s arrival: with the help of intelligently connected cameras, video technology, and much more, things that used to be impossible at hospitals – or were only possible as stand-alone, non-digital solutions – are now child’s play thanks to Bosch’s internet of things (IoT) expertise. According to the insurance industry, the theft of endoscopic devices results in millions of euros in damages for hospital operators throughout Europe. Sensor-based video technology in corridors and at points of entry and exit can provide crucial evidence for prosecuting criminals.

Prevention is equally important. Intelligently controlled lighting, connected motion detectors on doors and windows, and intrusion alarm systems scare off burglars, prevent theft, and save operators the high cost of having to replace expensive medical equipment. “The internet of things has finally arrived at hospitals,” Dr. Stefan Hartung, the member of the board of management responsible for the Energy and Building Technology business sector at Bosch, said at a press conference. Safety and security are not



Preventing the theft of expensive medical equipment, stopping unauthorised persons from entering restricted areas, and informing the OR of a rescue helicopter's arrival: with the help of intelligently connected cameras, video technology, and much more, things that used to be impossible at hospitals – or were only possible as stand-alone, non-digital solutions – are now child's play thanks to Bosch's internet of things (IoT) expertise.



the only benefits, he added: connected solutions also provide greater convenience and efficiency in hospitals. Bosch plans to generate sales of around 100 million euros with smart hospital projects in the years ahead. For the entire Energy and Building Technology business sector, Bosch expects sales growth of around five percent this year, more than double the sector's growth rate last year.

Contributing to Hospitals' Digitalisation Strategies

According to a study by Roland Berger, almost 90 percent of all hospitals have developed a digitalization strategy to increase their efficiency and economic performance – and infrastructure is no exception. “We would like to benefit from these ambitions, which is why we will expand our business activities in the field of connected products and services for hospitals. Through our intelligent solutions, we want to make a contribution to greater quality of life, safety, and security at hospitals, as well as to greater resource conservation,” Hartung said.

Bosch: A Service Provider for Smart Hospitals

Hospitals are under tremendous pressure. They have to function smoothly 24 hours a day, 365 days a year. Under constantly rising cost pressure, doctors and nurses have to care for patients, people and valuable equipment also have to be protected, and technical infrastructure



has to be managed optimally. With smart hospital solutions, Bosch relieves the burden on hospital operators and staff when it comes to technical and administrative duties. Patients also benefit from new, connected services in their hospital rooms, such as interactive infotainment systems.

Connected Control Center at University Hospital in Munich

At the Rechts der Isar hospital in Munich, one of Germany's largest medical centers, a connected control center ensures an optimal overview of the hospital's safety-relevant processes. From there, employees can monitor gates, intercoms, and the installed video cameras. Four multi-picture-display monitors make it possible to keep an eye on 34 clinics and departments. The system is also used to control safety-relevant access points. In addition, connected cameras and monitors register the landing of rescue helicopters, notify the OR directly of their arrival, and inform the relevant members of staff. To enable these new functions, Bosch has added internet capabilities to existing, non-digital surveillance cameras and networked them to create a single system, saving the cost of having to buy more than 70 cameras, cutting the facility's operating costs, and reducing the burden on employees.

Climatec: a Long-Standing Partner in the U.S.

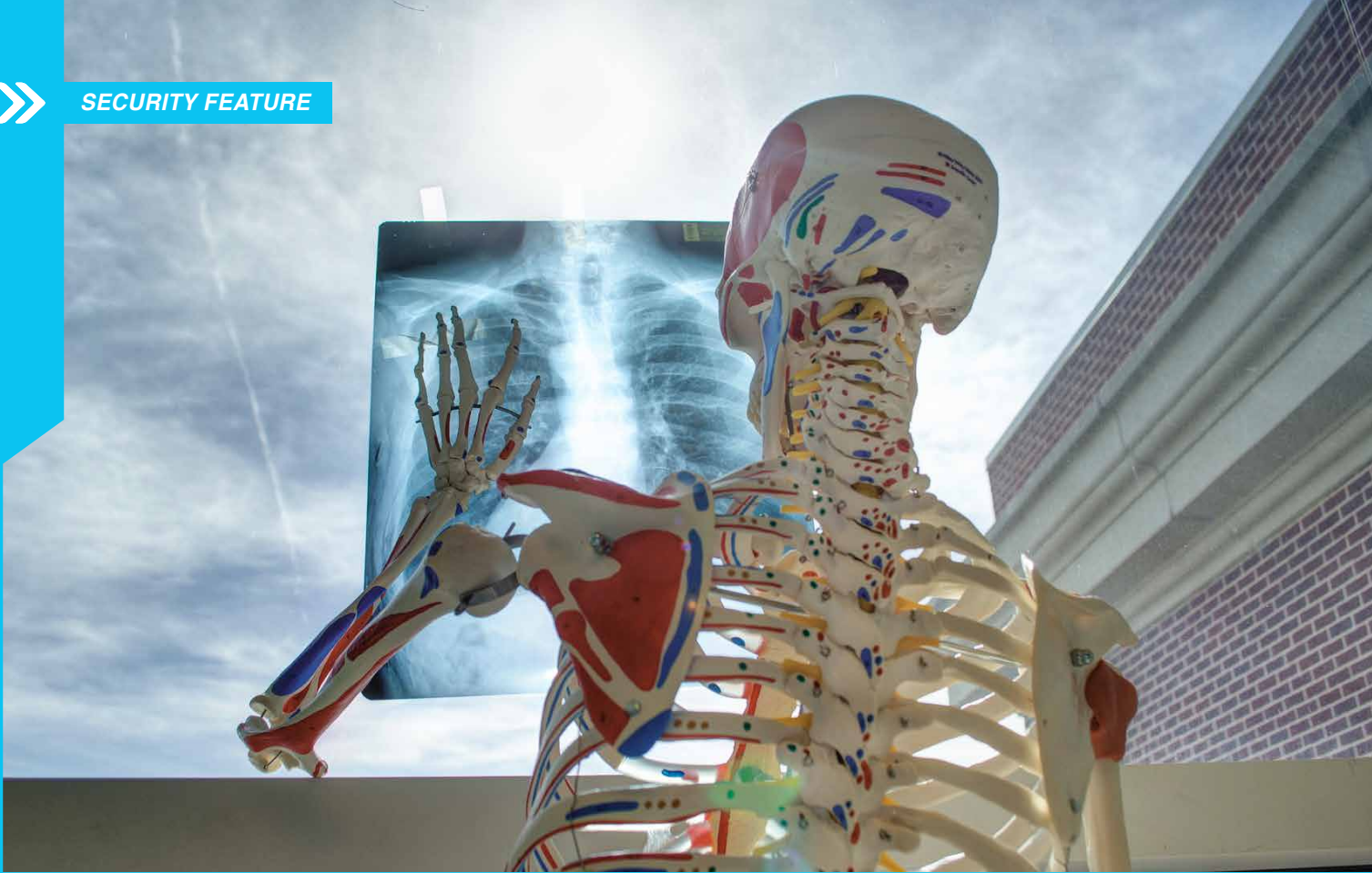
In North America, the Bosch subsidiary Climatec is a long-standing partner of Banner Health. With 29 facilities in seven states, Banner Health is one of the largest non-profit healthcare providers in the U.S. Bosch plans, develops, and integrates solutions in new and retrofitted hospitals for this customer.

At 15 Banner facilities, Bosch provides building automation, air conditioning, and fire detection equipment, as well as nurse-call and infotainment systems for patients – integrated, connected, and from a single source. The goal is to use connected solutions to create comfortable environments for providing medical care to patients that are also economical and reliable.

NH Hospital In Bangalore Benefits From Lower Energy Costs

Since December 2016, Bosch has been an energy partner for a 750-bed cancer treatment





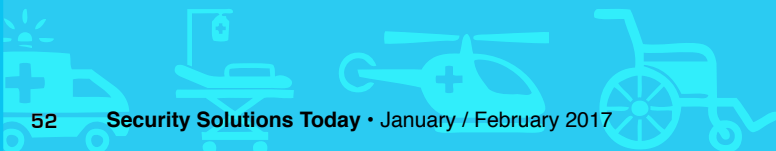
center in Bangalore, India, which handles around 390,000 patients a year. The facility is part of the Narayana Hrudayalaya (NH) chain. With 30 hospitals at 18 locations, NH is one of the largest healthcare providers in India. At the heart of the project is a sensor- and software-based energy solution that will ensure a high degree of energy efficiency in the long term while guaranteeing outstanding convenience and comfort for patients and staff. Bosch is also supporting facility management in its day-to-day work with an innovative energy management and monitoring system, allowing the facility to cut costs by around twelve percent compared to its previous expenses. Staff members can use their smartphones, tablets, and desktop computers to access energy data at any time and react immediately to irregularities.

Indoor Positioning Can Save Lives

Together with other partners, Bosch is dedicated to developing additional IoT- based services for the hospital sector. In emergencies, smart indoor solutions can make it possible to locate urgently needed medical equipment, for example, and transport it to certain areas of a hospital. Indoor positioning works by equipping essential medical equipment or other objects with sensors. Using sensor technology, they transmit their position or condition (such as their battery status) in real time via an internal network or a cloud to doctors and nursing staff. Such solutions speed up processes at hospitals and can even save lives – because in an emergency, every second counts.

For more information, please visit: www.bosch.com. SST

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DAHUA CAMERAS

TOUGH TEST STANDARDS FOR ULTIMATE RELIABILITY

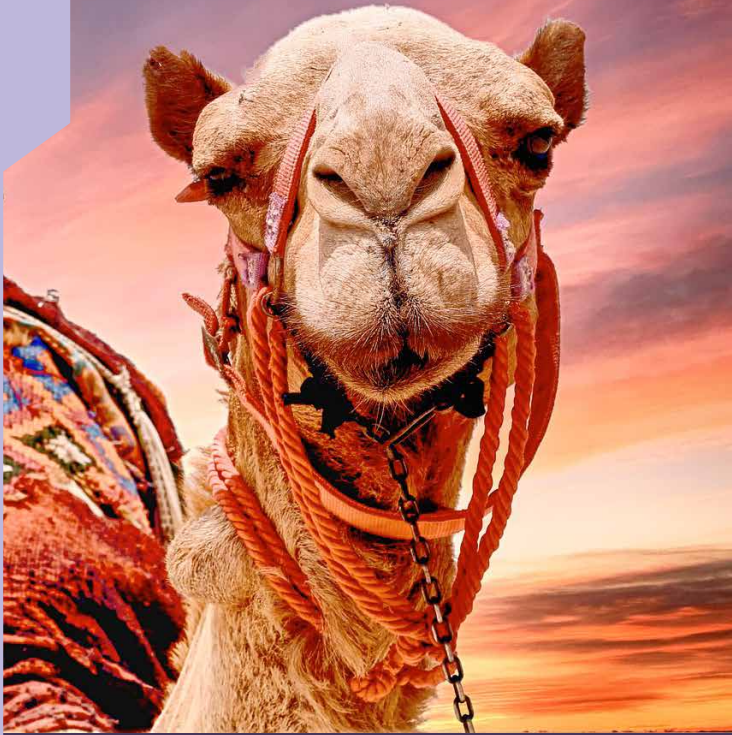
Widely used in over 180 countries and regions around the world, Dahua's products and solutions must be able to meet the demands of tough environments such as snowy mountains, plateaus, deserts, wetlands, rainforests and coastal regions. In order to achieve robust performance in the environment for which they were designed, Dahua's products have undergone rigorous tests to meet very tough standards, which in most cases exceed the normal industry practice and the datasheet specifications. The purpose is to provide sufficient margins to ensure the product provides the utmost reliability expected of Dahua products when performing in the field.

Toughness

Withstanding Most Physical Impact whether Natural or Man Made

Dahua video surveillance solutions, such as Smart City and Intelligent Building, are widely applied in many countries worldwide. Installed everywhere in our life, Dahua cameras may be exposed to physical impact. For example, when installed outdoors, the cameras are exposed to numerous risks, ranging from being hit by a basketball, small stones blowing in strong wind, to getting scratched by tree branches. Indoor cameras





When installed outdoors, the cameras are exposed to numerous risks, ranging from being hit by a basketball, small stones blowing in strong wind, to getting scratched by tree branches. Indoor cameras may be damaged by daily use or people intentionally throwing things at them. As shown by the test results, Dahua vandal proof cameras, withstand the challenges in these scenarios, thereby reducing the cost of maintenance.



may be damaged by daily use or people intentionally throwing things at them. As shown by the test results, Dahua vandal proof cameras, withstand the challenges in these scenarios, thereby reducing the cost of maintenance.

Product Validation

Outdoor cameras have passed IK10 test (standard IEC62262) in which a steel ball weighing 5 kg is dropped from 40 cm above generating 20 joules of impact energy on five separated spots on every exposed surface (including 3 impacts to the lens). For indoor cameras, the test level ranges from IK06 to IK10 (both standard IEC62262), which covers most possible scenarios.

Vibration: Life Span is Unaffected

In some cases, Dahua cameras are required to work somewhere with high frequency vibration. For instance, places near railways, bridges with fast driving cars and strong crosswinds, or construction sites with piling. Dahua cameras, not only guarantee smooth operation, but also able to maintain the same lifespan. Even in extreme circumstances such as car accidents, earthquakes or hurricanes, cameras will remain safely attached to the poles. Due to their strong structures, the possibility of accidents caused by falling cameras is eliminated.

Product Validation

All cameras are tested against a frequency of up to 200 Hz with 1G acceleration from X, Y, Z axes for 4.5 hours, ensuring they can function as usual. When it comes to hanging dome cameras, in order to make sure they won't fall down in even some extreme cases, an extra test which triples the vibration rate is conducted whereby Dahua's cameras can endure several times longer than the standard average.

Temperature

Reliability 10 Degrees Beyond the Standard Range

Inevitably, Dahua cameras are sometimes installed in extreme heat and freezing environments, be it factories that are hot during processing, or chilled-storage warehouses that are maintained cold, or deserts that are scorching hot during the day and freezing cold at night. Coldness and heat will cause shrinkage, which may very likely to shorten a camera's lifespan. In addition to long hours of usage, the cameras are also designed to enjoy long working lifespans against these tough temperatures, saving the costs of repairing and replacing. One case as shown below is a Dahua dome camera DHI-SD6AE230F-HNI that operates smoothly on Mount Everest 5000m above sea level.



Product Validation

All Dahua cameras have been through Low and High Temperature continuous operation test for no less than 16 hours (standard IEC62599-1) with spec temperature to guarantee product performance. Besides, all Dahua cameras have gone through intensified HALT (High Accelerated Life Test) and ALT (Accelerated Life Test) tests, to ensure that the cameras can properly work in -50 to 80 ,10 degrees beyond the standard range (-40 to 70). This aims to trigger potential product failures from increased extreme environmental stress, helping to locate and improve the weaknesses and identify potential defects of our cameras at the earliest possible stage. No less than 3 cold starts were required in each of the tests. Via these unique tests, Dahua's cameras come out as extra tough when used in practice.

Humidity is Not a Hindrance

Extreme temperature and humidity are major threats to the smooth day-to-day functioning of intricate devices but this is not the case for Dahua cameras even when they are installed in the most extreme environments imaginable, a snow mountain like Mount Everest, a

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tropic rainforest like Amazon Rainforest, or a desert like the Hobq Desert, where there are dramatic weather shifts, exacerbating humidity issues, they bring along smooth and condensation-free operation.

Product Validation

For fully enclosed cameras such as PTZ cameras, Eye Ball cameras, and Bullet cameras, Alternating Temperature and Humidity Tests (Damp heat cyclic) with temperatures varying between 25 and 55 and relative humidity reaching a maximum of 100% (camera surface allow condensation) were conducted for two cycles lasting a total of 48 hours. For cameras not fully enclosed, Steady Damp-heat Tests at 40 and 93% humidity (no condensation) were conducted for 96 hours. Both tests have been developed on the basis of International IEC Standards, ensuring that all cameras are capable of working with the humidity varying from 0 to 100%.

Waterproof

Working in regions and countries like northeast Indian, Burma and Sierra Leone which are known for abundant rainfall, or Asian cities that experience weeklong plum rains, Dahua cameras are able to resist long time waterfall as well as intentional or accidental manmade sprays.

Product Validation

Outdoor cameras are required to go through IPX6 or IPX7 tests. Standard IEC62262 IPX6 test requires camera surface to be sprayed by 100 ± 5 L/min of water for 3 minutes. It is worth mentioning that Dahua cameras are tested for at least 10 minutes in the same conditions, 3 times tougher than the standard one.

In addition, Dahua has developed its own standards which include tests where, 5 ± 0.5 L/min of water (equivalent of middle rain in plum rain season) was sprayed to cameras for 192 hours from above. On top of the water ingress tests, every Dahua camera needs to go through an airtightness test, too, to make sure that it is sufficiently water-proof.

Corrosion Protection: Quadruple of International IEC Standards

Dahua Port Solution and airport solution require the cameras to be installed in seaports and airports where it's highly likely to be wet and salty. Salt spray and electrochemical effects may result in serious corrosion on metal surfaces, which may cause the fall of the cameras. However, Dahua cameras won't be bothered by this problem.



Product Validation

A salt water solution of 5% NaCl and pH 6.5 to 7.2 was sprayed for 2 hours, then a 40 and 93% damp heat test for 166 hours per cycle for 4 cycles over a period of 28 days, a remarkable performance of quadruple the International IEC Standards. It was in an effort to simulate the cyclic salt spray environment in coastal cities and to identify the likelihood of a camera falling following possible metal corrosion.

Conclusion

In addition to the tests above, Dahua cameras have also passed a Drop Test that decreases the risks of damage during transportation; a Life-span Test that promises a life of at least 4 years in normal conditions; and a Dust Resistance Test ensuring a performance undisturbed by dust. Together, all of these tests ensure Dahua to deliver lasting performance for customers all over the globe. Demonstrating the mission to enable a Safer Society and Smarter Living, Dahua will continue to focus on “Innovation, Quality, and Service” to serve partners and customers around the world. SST

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DRONES, PHONES AND AUTOMATION

The Future Of Home Security

►► *By Simon Davies writing for tech.co*

It flies around inside your house, ready to respond to any emergency, to ward off any intruder, and even to feed your pets when you're away. No, it's not your own overly-attentive superhero. It's an Avena Aire drone, a milestone of the future of home security. Dubbed a "flying security guard", Avena's latest sky-bound security device is like one of those automated robot vacuum cleaners, but instead of cleaning up dust, it cleans up security risks.

This indoor drone is just one of the latest developments in the smart home security world, which is increasingly blurring the lines between the real world and Hollywood Sci-Fi. But with so many DIY home security products on the market, is there a risk we could end up less safe than we were in the days of the simple lock and key?



Security experts Banham specifically take issue with DIY-installed wireless burglar alarms, pointing out that while laymen can install burglar alarm systems themselves, they are very likely to make mistakes, and these mistakes could endanger the property.

Safety From Above

Aevena's Aire has not yet hit the market. It launched on Kickstarter in September, with a tentative release date of December 2018. The drone has proven popular on the crowdfunding platform, reaching its funding goal of \$50,000 in just four days. Four users have even ordered the "Triple Pack", which gives backers three drones for a cool \$1,950.

At this stage, it is difficult to say how popular these devices will be with the everyday public, but integration with Amazon Echo's Alexa is sure to attract many safety-conscious technophiles.

Alexa, Please Protect My House

Amazon themselves have had their eye on the burgeoning smart security market for a while now, as an inside source leaked to the Financial Times that the online retail giant is working on security accessories for the Amazon Echo home assistant. These accessories reportedly include CCTV cameras, the feeds of which users would be able to view remotely.

Since Alexa is slated to be a \$10 million 'mega-hit' in just a few years, its security accessories may prove to be the most successful bits of smart security kit in time.

Lock, Lock. Who's there?

It's not just the inside of the home that is experiencing a smart security upheaval. Smart locks can use sensors to inform owners whether their doors are locked, unlocked, open or closed. They can also "auto unlock" for anyone carrying smart keys.



August has a smart doorbell on the way, too. Equipped with a tiny camera, the Doorbell Cam Pro will send a live feed of the outside of an owner's home to a mobile phone app, allowing them to keep tabs on their porch, wherever they are, and use the information to decide whether to let callers in. There is also Ring that is designing a complete security "ring" around your home.

Convenience Over Care

All of these home security innovations sound exciting, and buying them will no doubt make homeowners feel more protected. But as nearly all of them are intended to be DIY-installed, there is a risk that they might be less effective than they seem.

Security experts Banham specifically take issue with DIY-installed wireless burglar alarms, pointing out that while laymen can install burglar alarm systems themselves, they are very likely to make mistakes, and these mistakes could endanger the property. Even when buying futuristic high-end smart security products, it's important to get confirmation from an expert that your home as safe as it can be.

Investing in Security

Another downside of these new smart security developments is their cost. Most products at the moment cost more than the average household would want to spend on home security, which could have dire consequences.

Unless prices come down, there is a risk that we could end up in a world where the houses of the rich are protected by high-end drones and smart alarms, while the houses of the poor are left relatively unguarded.



A smart doorbell may be able to show you exactly who is outside your door, but it won't stop them from bashing it down if it's not made of strong material. A home drone may be able to fly in a burglar's face and trigger your home alarms, but it won't do much more than a traditional alarm system already can.

The Future

Finally, while these drones, apps, and doorbells are impressive from a gadget geek's standpoint, there is the possibility that they may not be as effective as their technical superiority suggests.

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The most effective solution to our security tech worries is a combination of the traditional and the futuristic. Strong doors and strong locks monitored by CCTV cameras that stream to mobile phones. Grounded human security teams working with their airborne drone counterparts.

This new home security technology is exciting, but we will have to use it wisely for it to work. *SST*

Source: <https://tech.co/drones-phones-automation-future-home-security-2017-10>



**Inspired by Nature
and Engineered
for the Future
- Introducing
eMotionButterflies
Surveillance Via
Synchronised Flight**

Based on information by Festo AG & Co. KG



The markers are not permanently lit in this case, but instead flash for only a millisecond. This makes them extremely long-lasting and energy-efficient. Synchronised with the flashing, the cameras record an image that they send to the master computer.

Flying is not only one of mankind's oldest dreams, but also a recurring theme in the Bionic Learning Network. Together with universities, institutes and development firms, for years now Festo has been developing research platforms whose basic technical principles are derived from nature.

While early bionic flying objects developed by Festo were filled with helium, the SmartBird, with its beating wings, was able to provide the necessary uplift by itself. As a result, the developers technically implemented the flight of the dragonfly with the BionicOpter and, with the eMotionSpheres, showed how several autonomous flying objects can move in an enclosed space without colliding. With the eMotionButterflies, Festo now combines ultralight construction of artificial insects with coordinated flying behaviour in a collective.

In order to replicate their natural role model as

closely as possible, the artificial butterflies feature highly integrated on-board electronics. They are able to activate the wings individually with precision and thereby implement the fast movements.

To enable the butterflies to make the different flying manoeuvres with process reliability and stability, permanent communication is necessary. The localisation of the individual flying objects is ensured by the radio and sensor technology on board in combination with the installed guidance and monitoring system. An important part of the indoor GPS is a camera system, as could also be used in the factory of the future. Ten infrared cameras installed in the space record the butterflies using two active markers (infrared LEDs). The cameras transmit the position data to a central master computer, which acts like an air traffic controller and coordinates the butterflies from outside.



Clear Behaviour Patterns for Collision-Free Movement

No human pilot is required to control the eMotion-Butterflies. Preprogrammed routes, which specify the flight paths for the butterflies during their manoeuvres, are stored on the central computer. With the aid of additionally stored behaviour patterns, however, they can also move autonomously through the space. No direct communication takes place between the bionic flying objects.

Each butterfly receives its flight path wirelessly from the central master computer and tries to implement this as best it can. The wing movements necessary to do this are calculated on board the flying objects. If a butterfly leaves its path, this is corrected immediately. To do so, the camera system measures the exact actual position of all flying objects 160 times per second, upon which the computer readjusts each deviation. The planning of the flight paths is therefore constantly updated and the risk of collision is detected in good time.

In order to prevent collision, the computer develops appropriate avoidance strategies based on defined rules.

Exact Positioning Via Infrared Technology


The ten cameras are positioned so that they map out the space as a whole, and each butterfly is recorded by at least two cameras. Due to their special filters, they only capture infrared light and are not sensitive to other light. By means of the two infrared LEDs on the butterflies' torsos, they detect their position and orientation in the space and can also tell the optically identical flying objects apart.

Large Spatial Coverage Due to Active Markers

Whilst passive reflectors first have to be illuminated, the two LEDs emit an infrared signal by themselves. The light only has to cover the distance between the butterfly and camera, meaning that the active markers help to record a larger space with the same number of cameras. The markers are not permanently lit in this case, but instead flash for only a millisecond. This makes them extremely long-lasting and energy-efficient. Synchronised with the flashing, the cameras record an image that they send to the master computer.

Fast Calibration of the System

In order for the central master computer to know where the butterflies are located in the space, it must first know the positions of the cameras. The necessary calibration of the system can be carried out quickly



With the eMotionButterflies, Festo is already showing how several objects can be coordinated without colliding in a three-dimensional space thanks to multifaceted networking. The central computer controls the communication. It gathers all the information together, processes it and forwards it in real time to the individual participants.

and easily. To do so, an additional flying object with a measuring cross flies through the space freely for about 15 minutes and is recorded by the cameras whilst doing so. By means of the recorded flight data, the computer is able to determine the exact locations and alignments of all the cameras in the coordinate system. The developers channelled their knowledge gained from the projects on the BionicOpter and the eMotionSpheres into the controls of the artificial butterflies. The indoor GPS was already used for the hovering balls and was developed further for the eMotion Butterflies. The improved frame rate of the cameras gives the system an even higher level of precision, which was a basic requirement for exactly tracking the position of the eMotionButterflies.

The artificial butterflies are very agile and always on the move. Not only does that mean their autonomous behaviour is more complex, but also their coordination from outside.

Technical Benefits

With the eMotionButterflies, Festo has now technically implemented their extremely graceful and agile flight. So that the ultralight flying objects do not collide with each other, they are coordinated by an indoor GPS, which could also be used as a guidance and monitoring system in the future.



New Approaches for Implementation in the Future

Within the framework of the Bionic Learning Network, however, Festo is not only concerned with the technical implementation of natural principles. The bionic projects also act as research platforms for technologies, applications and solutions in the production of the future. As a result, Festo has been testing the collective behaviour of networked components for several years already.

Yet the eMotionButterflies will not fly through the factory of tomorrow. Instead, the integrated technologies and the networked overall system are, in principle, possible solutions for future industrial logistics applications.

Merging Of the Real and Virtual World

The real and virtual worlds are continuing to grow together. The systems envisaged will consist of closely networked components and subsystems. The constant

information exchange here guarantees the operational safety of the individual participants and hence the process stability of the entire system.

With the eMotionButterflies, Festo is already showing how several objects can be coordinated without colliding in a three-dimensional space thanks to multifaceted networking. The central computer controls the communication. It gathers all the information together, processes it and forwards it in real time to the individual participants.



The camera technology used enables large spatial coverage and impresses by precisely localising the extremely agile objects. The energy-efficient

operating method of the markers and the fast start-up complete the indoor GPS, making it a graphic example for a potential guidance and monitoring system in the factory of the future.

For more information, please visit: www.festo.com/bionics. SST



HOW DEEP LEARNING BENEFITS THE INDUSTRY

►► By Hikvision Digital Technology

Data storage devices across the security industry are routinely required to handle an enormous amount and many layers of raw data. As Safe City projects in varying sizes become more prevalent, the number of surveillance nodes has reached the hundreds of thousands. And due to the widespread use of high-definition monitoring, the amount of data involved in security surveillance has increased dramatically in a short time. Efficient collection, analysis, and application of data and the intelligent use of it are becoming ever more critical in this industry. Thus, improving video intelligence appears to be an inevitable, industry-wide goal.

Security users hope that their investment in new products will bring even more benefits beyond simply tracing and tracking persons of interest and evidence collection after a security event. Some examples of added benefits include using the latest technologies to replace the large amount of man-power previously required for searching surveillance footage, detecting anomalous data, and finding ever more efficient ways to allow surveillance to shift from post-incident tracing to alerts during incidents—or even pre-incident alerts. In order to satisfy these demands, new technologies are required. Intelligent video surveillance has been available for many years. However, the outcomes of its



“Some examples of added benefits include using the latest technologies to replace the large amount of man-power previously required for searching surveillance footage, detecting anomalous data, and finding ever more efficient ways to allow surveillance to shift from post-incident tracing to alerts during incidents—or even pre-incident alerts.”

application have not been ideal. The emergence of deep learning has enabled these demands to become reality.

The Insufficiency of Traditional Intelligent Algorithms
Traditional intelligent video surveillance has especially strict requirements for a scene’s background. The accuracy of intelligent recognition and analysis in comparable scenarios remains inconsistent. This is primarily due to the fact that traditional intelligent video analysis algorithms still have many flaws.

In an intelligent recognition and analysis process, such as human facial recognition, two key steps are required: First, features are extracted, and second, “classification learning” is performed.

The degree of accuracy in this first step directly determines the accuracy of the algorithm. In fact, most of the system’s calculation and testing workload is consumed in this part. The features in traditional intelligent algorithms are designed by humans and have always been heavily subjective. More abstract features—those that humans have difficulty comprehending or describing—are inevitably missed. With shifting angles and lighting, and especially when the sample size is enormous, many features can be too difficult to detect. Therefore, while traditional intelligent algorithms perform well in very specific environments, subtle changes (image quality, environment, etc.) yield significant challenges to accuracy.

The second step—classification learning—mainly involves target detection and attribute recognition. As the number of available categories for classification rises, so does the difficulty level. Hence, traditional intelligent analysis technologies are highly accurate in vehicle analysis but not in human and object analysis. For example, in vehicle detection, a distinction is made between a vehicle and a non-vehicle, so the classification

is simple and the level of difficulty is low. To recognize vehicle attributes requires recognition of different vehicle designs, logos, and so on. However, there are relatively few of these, making the classification results generally accurate. On the other hand, if recognition is to be performed on human faces, each person is a classification of its own, and the corresponding categories will be extremely numerous—naturally leading to a very high level of difficulty.

Traditional intelligent algorithms generally use shallow learning models to handle situations with large amounts of data in complex classifications. The analysis results are far from ideal. Furthermore, these results directly restrict the breadth and depth of intelligent applications and further development. Hence the need for increasing the “depth” of intelligence in big data for the security industry is arising.



The Advantages of Deep Learning and its Algorithms

Traditional intelligent algorithms are designed by humans. Whether or not they are designed well depends greatly on experience and even luck, and this process requires a lot of time. So, is it even possible to get machines to automatically learn some of the features? Yes! This is actually the objective of Artificial Intelligence (AI).

The inspiration for deep learning comes from a human brain’s neural networks. Our brains can be seen as a very complex deep learning model. Brain neural networks are comprised of billions of interconnected neurons; deep learning simulates this structure. These multi-layer networks can collect information and perform corresponding actions. They also possess the ability for object abstraction and recreation.

Deep learning is intrinsically different from other



algorithms. The way it solves the insufficiencies of traditional algorithms is encompassed in the following aspects.

First, From “Shallow” to “Deep”

The algorithmic model for deep learning has a much deeper structure than the two 3-layered structures of traditional algorithms. Sometimes, the number of layers can reach over a hundred, enabling it to process large amounts of data in complex classifications. Deep learning is very similar to the human learning process, and has a layer-by-layer feature-abstraction process. Each layer will have different “weighting,” and this weighting reflects on what was learned about the images’ “components.” The higher the layer level, the more specific the components. Simulating the human brain, an original signal in deep learning passes through layers of processing; next, it takes a partial understanding (shallow) to an overall abstraction (deep) where we can perceive the object.

Second, From “Artificial Features” to “Feature Learning”

Deep learning does not require manual intervention but relies on a computer to extract features by itself. This way it is able to extract as many features from the target as possible, including abstract features that are difficult or impossible to describe. The more features there are, the more accurate the recognition and classification will be. Some of the most direct benefits that deep learning algorithms can bring include achieving comparable or even better-than-human pattern recognition accuracy, strong anti-interference capabilities, and the ability to classify and recognize thousands of features.

Key Factors of Deep Learning

In total, there are three main reasons why deep learning only became popular in recent years and not earlier: the scale of data involved, computing power, and network architecture.

Improvements in data-driven algorithm performance have accelerated deep learning in various intelligent applications in a short amount of time. Specifically, with the increase in data scale, algorithmic performance improved as well. Accordingly, user experience

has improved and more users are involved, further facilitating a larger scale of data.

Video surveillance data makes up 60% of big data, and the amount is rising at 20% annually. The speed and scale of this achievement is due to the popularization of high definition video surveillance—HD 1080p is becoming more common, and 4K and higher resolutions are gradually being applied in many important applications.

Hikvision has operated in the security industry for many years with its own research and development capabilities, employing large amounts of real video and image data as training samples. With a large amount of good quality data, and over a hundred team members to label the video images, sample data with millions of categories have been accumulated. With this large amount of quality training data, human, vehicle, and object pattern recognition models will become more and more accurate for video surveillance use.

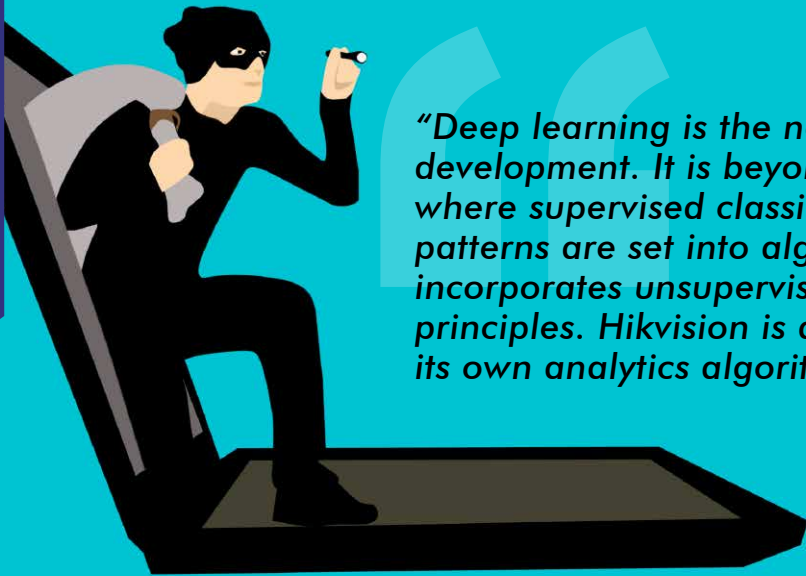
Furthermore, high performance hardware platforms enable higher computational power. The deep learning model requires a large amount of samples, making a large amount of calculations inevitable. In the past, hardware devices were incapable of processing

complex deep learning models with over a hundred layers. In 2011, Google’s DeepMind used 1,000 devices with 16,000 CPUs to simulate a neural network with approximately 1 billion neurons. Today, only a few GPUs are required to achieve the same sort of computational power with even faster iteration. The rapid development of GPUs, supercomputers, cloud computing, and other high performance hardware platforms has allowed deep learning to become possible.

Finally, the network architecture plays its own role in advancing deep learning. Through constant optimization of deep learning algorithms, better target-object recognition can be achieved. For more complex applications such as facial recognition or in scenarios with different lighting, angles, postures, expressions, accessories, resolutions, etc., network architecture will impact the accuracy of recognition, i.e., the more layers in deep learning algorithms, the better the performance.

In 2016, Hikvision achieved the number one position

“The inspiration for deep learning comes from a human brain’s neural networks. Our brains can be seen as a very complex deep learning model. Brain neural networks are comprised of billions of interconnected neurons; deep learning simulates this structure.”



“Deep learning is the next level of AI development. It is beyond machine learning where supervised classification of features and patterns are set into algorithms. Deep learning incorporates unsupervised or “self-learning” principles. Hikvision is developing this concept in its own analytics algorithms.”

in the Scene Classification category at the ImageNet Large Scale Visual Recognition Challenge 2016. The team from Hikvision Research Institute used inception-style networks and not-so-deep residual networks that perform better in considerably less training time, according to Hikvision’s experiments for training and testing. Furthermore, Hikvision’s Optical Character Recognition (OCR) Technology, based on Deep Learning and led by the company’s Research Institute, also won the first prize in the ICDAR 2016 Robust Reading Competition. The Hikvision team substantially surpassed both strong domestic and foreign competitors in three word-recognition challenges, including born-digital images, focused scene text, and incidental scene text, demonstrating that the word recognition technology by Hikvision reached the world’s top level.

Application of Deep Learning Products

In the past two years, deep learning technology has excelled in speech recognition, computer vision, voice translation, and much more. It has even surpassed human capabilities in the areas of facial verification and image classification; hence, it has been highly regarded in the field of video surveillance for the security industry.

In the application of intelligent video in target detection, tracking, and recognition, the rise of deep learning has had a profound influence. When applying those three functions, deep learning potentially touches upon every aspect of the security video surveillance industry: facial detection, vehicle detection, non-motor vehicle detection, facial recognition, vehicle brand recognition, pedestrian detection, human body feature detection, abnormal facial detection, crowd behavior analysis, multiple target tracking, and so on.

These types of intelligent functions require a series

of front-end surveillance cameras, back-end servers and other products which support deep learning algorithms. In small scale applications, front-end cameras can directly operate structured human and vehicle feature extraction, and tens of thousands of human facial images can be stored within the front-end devices to implement direct facial comparison, so as to reduce costs of communicating with a server. In large scale applications, front-end cameras can work with back-end servers. Specifically, the structured video task is handled by front-end devices, reducing the workload for back-end devices; matching and searching efficiency of back-end servers improve as well.

This year, Hikvision will soon introduce a series of products with deep learning technology, such as the DeepInview Series cameras which can accurately detect, recognize, and analyze human, vehicle, and object features and behavior, and can be widely used in indoor and outdoor scenarios. Another of products worth mentioning is Hikvision’s DeepInmind Series of NVRs which incorporate advanced deep learning algorithms and imitate human thoughts and memory. The DeepInmind products feature an innovative NVR+GPU mode, retaining the advantages of traditional NVRs and additional structured video analysis functions, which together greatly improve the value of video.

Deep learning is the next level of AI development. It is beyond machine learning where supervised classification of features and patterns are set into algorithms. Deep learning incorporates unsupervised or “self-learning” principles. Hikvision is developing this concept in its own analytics algorithms. Enhanced accuracy is the result of multi-layer learning and extensive data collection. Application of this algorithm into face recognition, vehicle recognition, human recognition, and other platforms will significantly advance the performance of analytics. **SST**



INDIA TAKES ON THE WORLD OF ROBOTS WITH MITRA

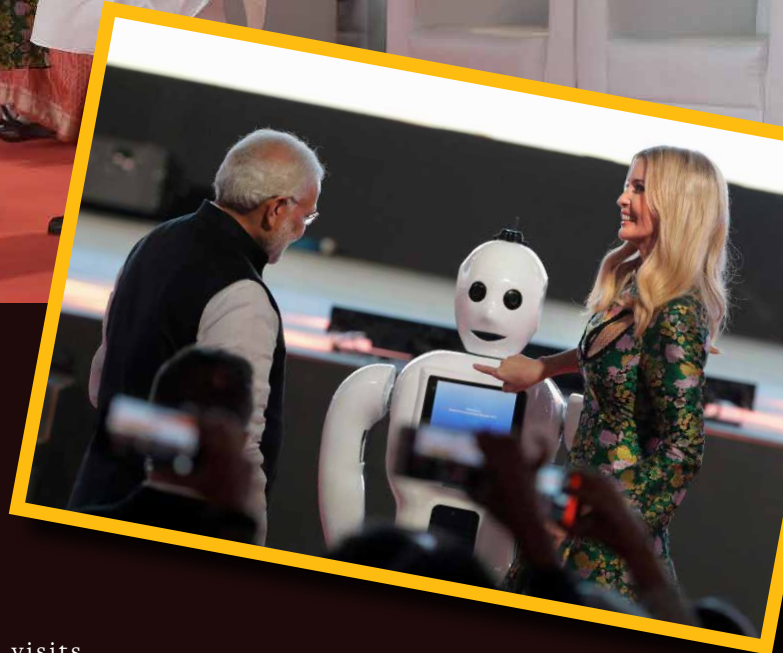
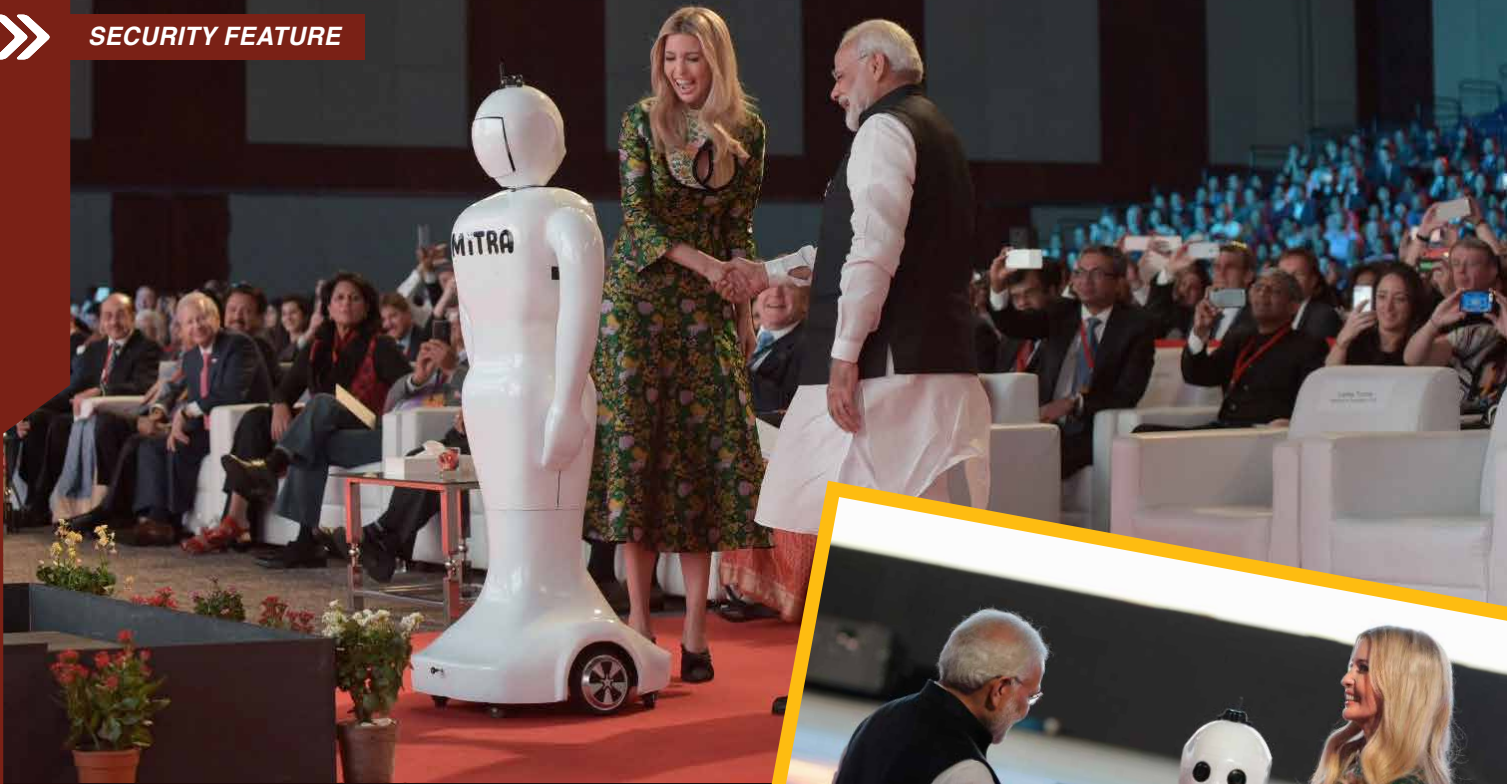


The Beginning

Invento Robotics was formed in October 2016 after the founders pivoted from their educational startup named Invento Makerspaces. According to the company's website, they build humanoid robots that use face recognition, speech recognition and speech synthesis to substantially improve customer interaction in big chains. Already utilised in various retail outlets, the founders envisioned creating a robot that could not only act as a security access control agent but a friendly interactive assistant to customers as well that could also assist in marketing by offering help based on the customers past buying habits. A SMART robot for a SMART nation in the IoT connected society.

The Founders

The company was founded by Balaji Viswanathan creator of the Be Limitless plugin, Engineer Bharath Kumar and Mahalakshmi Radhakrushnun, a woman in a male dominated industry who has successfully run various fintech businesses amongst other industries. Together with a talented team, they plan to put India on the map when it comes to



robots which are the new stars of the security industry.

Meeting Mitra

As an emodiment of indian engineering at its best, what better way is there to market Mitra than by presenting her to the Ivanka Trump the daughter of current American President Donald Trump. On 28 November at the 2017 Global Entrepreneurship Summit, Ms Trump and Prime Minister Narendra Modi were welcomed by Mitra who is one of Invento's two robots. The 5-foot-tall Mitra robot is currently serving humans in a few Canara Bank branches as well as PVR Cinema outlets in Bengaluru. Invento Robotics also allows Mitra robot for rent for interactive sessions at offices, hotels and even private birthday parties.

“What Google does for the online world, we do for the offline world. The robot speaks to the customers, gets to know them and their preferences and on subsequent

“What Google does for the online world, we do for the offline world. The robot speaks to the customers, gets to know them and their preferences and on subsequent visits makes contextual suggestions. Mitra can help businesses do better customer targeting.”

visits makes contextual suggestions. Mitra can help businesses do better customer targeting. For instance, in supermarkets, Mitra is capable of collecting relevant data on your first visit and not only make suggestions on your corresponding visits, but also take you to that particular aisle,” explained Vishwanathan.

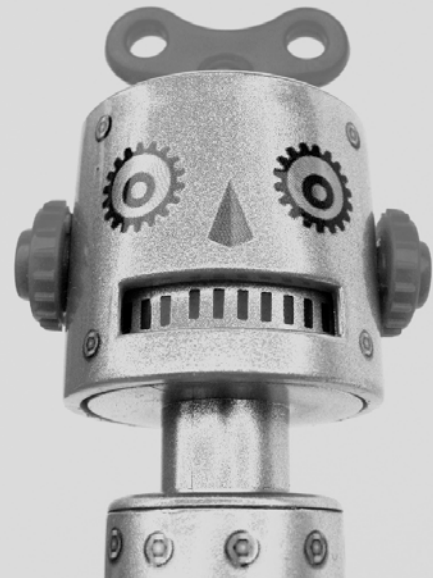
“Mitra can be used as a customer service agent in multiple domains like banks, hospitals, airports and hotels added”, Vishwanathan. Six months after getting their first Mitra, Vishwanathan claims that Canara Bank is already in the process of getting the robot working for them in 500 of their branches.

Entertainment in the Internet of Everything

Apart from being used for operations, security and interaction in retail and financial business spaces, Mitra also knows how to party with features such as a jukebox to play songs, camera for selfies and even the ability to share these pictures via social media platforms such as twitter. The company rents Mitra out for birthday parties, weddings and other events making this the all new multi faceted entertainment system for the SMART era.



“As with all security robots on the market today, the level of autonomy is paramount to the efficiency of a robot. This refers to its ability to operate in an unmanned manner. Mitra is fully capable of moving around the office, store or mall to provide personal assistance and security to various facilities.”



Making Mitra

Mitra is truly a multi faceted robot with a myriad of features ranging from facial recognition to interactive features.

Facial Recognition

Security is key for any business and in retail spaces where shoppers come and go, it can be difficult to keep track of individuals. Mitra addresses this with its facial recognition capabilities. Mitra utilises biometrics so retailers can know who their customers are based on their facial complexities.

Natural Conversations Over Voice

Voice recognition is another ability that Mitra possesses. Not only can Mitra recognise and read voices in a multitude of languages but also engage customers with smart conversations to provide better customer engagement and increase sales thus acting as a marketing tool as well. The novelty factor also perhaps goes a long way in enticing customers.

Autonomous Navigation

As with all security robots on the market today, the level of autonomy is paramount to the efficiency of a robot. This refers to its ability to operate in an unmanned manner. Mitra is fully capable

of moving around the office, store or mall to provide personal assistance and security to various facilities.

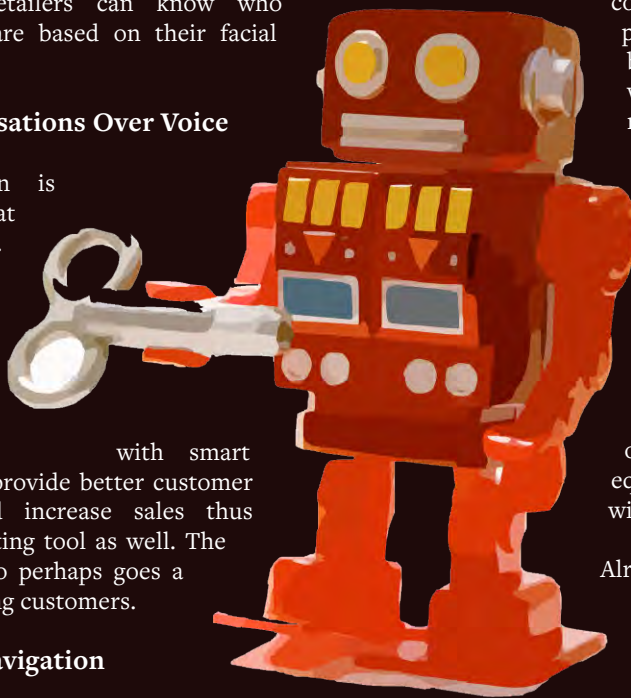
Industry Flexible

Mitra can work in spectrum of diverse industries from retail to banking to hospitality. In retail, it can understand the retailer's demographics and provide contextual product recommendations and customer support. In corporate offices, Mitra can conduct visitor check-ins easily with face recognition services and engage them with interesting conversations. In hotels, Mitra can provide superior customer service both at the reception and in rooms with an autonomously navigating robot.

The Future

Every adam needs his eve and in the world of robotics, this applies sometimes. Invento Robotics plans to launch a “female” version of Mitra, to be known by the name of ‘Mitri’ with the only difference being the body of the robot. While Mitra comes equipped with a tablet, Mitri has been will be handed a tray.

Already travelling the world, Mitra made its way to Helsinki, Finland for Slush 2017, The world's leading startup event connecting start-ups and tech talent with top-tier investors, executives and media.



For more information, please visit:
www.mitrarobot.com SST



HOW FACIAL RECOGNITION MADE THE ICE AWARDS CHECK-IN 5 TIMES FASTER

Lines and queuing don't create a great impression at event entrances. Lets explores how organisers at the ICE Awards used facial recognition technology for a fast and cutting edge check-in experience for their guests.

The Event

The International Corporate Event Awards, known as the ICE Awards, exclusively recognises in-house corporate event teams and departments. The 2017 event was held on 6th July at the Saatchi Gallery in London and brought together global corporations and national organisations to the winners' rostrum.

The ICE Awards launched in 2015 and the 2017 awards attracted over 75 entries, evaluated by 28 judges – senior events professionals from a wide range of industry disciplines. 250 guests attended the awards evening. 70% were in-house event organisers, representing 60 companies, across 15 industry sectors.

In recognition of their hard work, the award sponsors and partners wanted to ensure that the corporate event planners present could sit back and enjoy being a guest for a change. The ICE Awards are deliberately designed to focus on informal networking at an impactful venue, with lots of time to network.

Founder and producer Anita Howard said: "Now in our third year the ICE Awards have proved conclusively the quality of work being delivered by in-



house event teams, who are often overlooked within their own organisations and perceived to play a back-room role. We hope the ICE Awards will help them receive the recognition they deserve.”

The Issue

The organisers of the ICE Awards were keen to look after their guests right from the very first moment. The venue presented challenges as the entrance was narrow and the organiser wanted to provide attendees with badges. This combination was expected to make check-in slow and create long lines. Moreover, security is an important component of corporate events and the client wanted to make sure that only registered attendees would be allowed into the event.

Why Face Recognition Software?

Taking into account the challenges of the venue, the client opted to use facial recognition technology. Zenus facial recognition software allows event planners to identify attendees by searching a database of faces in real-time. The aim was to make the check-in process faster, ensure higher security and showcase technology of interest to corporate event planners.

The Zenus API integrates into existing event management platforms, so that the event planner doesn't have to switch providers or migrate any data. The ICE Awards used the Ya-Ya Regie online event registration platform. RegieFACE is integrated with Zenus facial recognition capability. Attendees were able to register before the event using their social media profiles. Alternatively, they could upload a picture of their choosing or take a selfie with their own device.

On the day of the event, the organiser set up a tablet or smartphone facing the crowd, running the facial recognition program and connected to WiFi, as it is a

cloud-based service. The attendees were automatically identified using live video when they stand in front of the camera. If a match was found they were authorised for access into the event. The face recognition works with any tablet or smartphone device, which can reduce hire and installation costs.



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No personal data is ever transferred to Zenus. The registration platform anonymises the images and sends them to a cloud-based service. The de-identified images are processed and instantly deleted. Metadata is also discarded after the event.

Facial recognition technology is being implemented by corporate planners, exhibition organisers, associations and professional conference planners, who need speed of check-in and greater security checks. Facial recognition technology is not meant to eradicate the human factor but it can enhance existing processes by improving efficiency, identification and convenience.

The Event Objectives

- To recognise the achievements of corporate event planners
- To provide a first class event experience for guests
- To overcome the venue limitations and implement a fast event check in
- To increase security checks and verify attendees so that only invited guests can access the event
- To showcase innovative facial recognition technology to in-house corporate planners
- To facilitate networking and connections

How Were the Objectives Achieved?

Originally the client was planning to have two check-in facilities on giant screens at the event. However, due to major traffic congestion outside the venue the giant screen supplier was late for a short build up period.



Even though the supplier missed the limited two-hour set up window, the client was able to set up the system on the devices they already had available and used one Mac Computer as the primary point for facial recognition so that everything was ready in time.

The Results

The client was relieved about the quick set up of an emergency laptop, instead of worrying about the absence of the big screen supplier. Having a system that can work on different devices meant that it was easy to move to a plan B.

The biggest success the organisers noticed though was the speed of the queue – it was five times quicker than the barcode or QR code checking systems used previously. The narrow entrance caused no issues as queues didn't have time to build up.

The technology impressed the attendees and the fast check-in helped them to enter the event in a positive mindset. Specifically, they enjoyed testing the robustness of the system and were surprised when it recognised them even when they were making funny faces and trying to confuse it. In some cases, attendees

“The technology impressed the attendees and the fast check-in helped them to enter the event in a positive mindset. Specifically, they enjoyed testing the robustness of the system and were surprised when it recognised them even when they were making funny faces and trying to confuse it. In some cases, attendees were taking pictures of other people using the system to check-in and engaged in conversations with other event professionals, which acted as an icebreaker and talking point.”



“A challenge of using facial recognition is that some people will never give permission for it, even if the data security measures are well communicated in advance. However, the organiser can still use the traditional barcode/QR code check-in or search by name within the same platform. If a good number of attendees do opt in to the facial recognition it will still have a significant effect on queue times. ”

were taking pictures of other people using the system to check-in and engaged in conversations with other event professionals, which acted as an icebreaker and talking point.

Anita Howard added “It’s been an amazing privilege to gather so many in-house event planners under one roof. They’ve clearly enjoyed engaging with each other and relaxing at an event they haven’t had to organise themselves! The atmosphere has been phenomenal.”

A record number of inquiries were also received from event planners in the seven days following the ICE Awards.

Takeaways for Event Planners

Communicate Clearly about Data Security

Some guests were concerned about how their face and data would be stored. Even though the images are anonymised and deleted, this was not communicated enough to attendees before the event to put their minds at rest. Nevertheless, more than a third of the attendees opted-in which significantly decongested the check-in. Explaining how seriously data security is taken ahead of the event will encourage a greater number of delegates to opt in.

Enable Opt Out

A challenge of using facial recognition is that some people will never give permission for it, even if the data security measures are well communicated in advance. However, the organiser can still use the traditional barcode/QR code check-in or search by name within the

same platform. If a good number of attendees do opt in to the facial recognition it will still have a significant effect on queue times.

Efficiency for Large Numbers

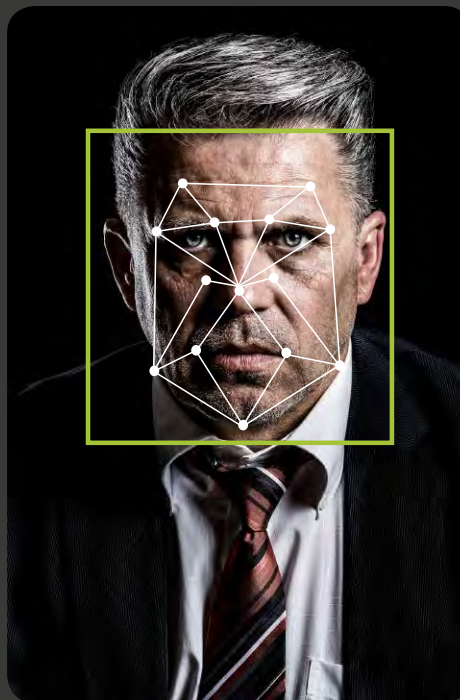
Face recognition can speed up check-in time over other methods, even barcode and QR scanning. It could be an ideal solution for larger, busy and time-pressurised events, for instance, events with a short registration period and also venues with logistical challenges, such as small registration areas.

WiFi and Back Up Plans

Access to WiFi is important; the organiser should have their own internet access point for the facial recognition system to work smoothly. Having spare tablets or laptops available is recommended to give you a back up plan and enable you to quickly set up or swap devices if necessary, as happened with the ICE Awards.

In Conclusion

As the ICE Awards demonstrated, facial recognition can be a fast and security-focused check in solution. This cutting edge technology is something that we can expect to implement into more events as it can be a cost-effective option to effectively process large numbers of attendees.



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SECURITY ON THE WINGS OF A RO-BAT

In the era of SMART cities, robots will go where humans cannot just as bats soar to heights that human beings cannot. While technology often borrows from nature as we see in everything from helicopters to drones, robots of today are not only based on the intelligence of humans but on the abilities of animals as well. Introducing the robotic bat that could potentially out perform security drones of today.

Building robots based on biological models is a relatively new technique — some of the first prototypes of such robots used basic models of movements starting as early as the 1970s, said Kaushik Jayaram, a postdoctoral fellow at Harvard. Known as bio-inspired robotics, this area of study has become increasingly popular, he added.

In December 2017, researchers at Brown University unleashed the Bat Bot which has potential to be one of the drones of the future. Bat wings have bones supporting each wing that is covered with a thin membrane. This structure is what makes bat wings superior to that of birds. This complex structure however requires complicated engineering partly due to the fact that bat wings have more than 40 joints. Researches have brought this down to nine, five of which are

controlled by mini motors and the other four are passive.

If it is equipped with the right sensors and autonomy, a bat bot could search through rubble for trapped humans which is something a quadcopter could never do. Drones are limited in the sense that if they hit a wall, the operation is over. However with the maneuvering abilities of a bat bot's flexible wings, collisions are not major obstacles at all. Agility is the key here and agility could save lives.

The main goal for the creation of the Ro-Bat is rescue operations. The bat's light weight and agility is another factor that contributes to its ability to be used in rescue operations. With the proper sensors, a bat bot could search through rubble and look for buried humans.

With silicone stretched over its carbon fibre skeleton, a head filled with on board computer and sensors and five micro sized motors on its backbone, the ro-bat is capable of autonomous and flapping flight. Designed by three roboticists, the team led by Soon-Jo Chung, this innovative creation borrows from nature to improve security in the future.

In the research paper written by the team, the ro-bat is perhaps the most sophisticated powered flight mechanism among animals. Another amazing feature of the ro-bat is that it is not remote controlled. Sensors and computers make flight possible.

Professor Seth Hutchinson of the University of Illinois commented that the ro-bats could prove to be helpful in rescuing survivors in disaster zones such as the



“An aerial robot equipped with a radiation detector, 3D camera system, and temperature and humidity sensors could inspect something like the Fukushima nuclear reactors, where the radiation level is too high for humans, or fly into tight crawlspaces such as mines or collapsed buildings. Such highly maneuverable aerial robots, with longer flight endurance, will also make advances in the monitoring and recovery of critical infrastructures such as nuclear reactors, power grids, bridges, and borders.”

Fukushima reactor where it was not really possible to send humans in due to the high levels of radioactivity. The destruction also means that ground robots would not be of any help in the situation so the only viable option would be ro-bats.

“In addition to construction applications, we envision robotic flapping-wing robots operating in tight quarters with humans and beyond where humans can go,” Soon-Jo Chung noted. For example, an aerial robot equipped with a radiation detector, 3D camera system, and temperature and humidity sensors could inspect something like the Fukushima nuclear reactors, where the radiation level is too high for humans, or fly into tight crawlspaces such as mines or collapsed buildings. Such highly maneuverable aerial robots,

with longer flight endurance, will also make advances in the monitoring and recovery of critical infrastructures such as nuclear reactors, power grids, bridges, and borders.

Currently the bat-bot is just a prototype but it is the most sophisticated flying machine to date. Its flexibility and agility is like no other drone on the current market and so the possible security

and safety functions for this robot are endless.

The team will continue to run tests, and hope that future technological advances will allow further degrees of freedom to be added. We’re a long way off a world populated by bat drones, then, but the research could help the team and others to develop and refine new and novel ways of flight. **SST**



AUTOMATED KEY CONTROL SYSTEMS SECURE CASINOS AND GAMING PROPERTIES

►► *By Fernando Pires, VP, Sales and Marketing of Morse Watchmans*

Key Management Offers Control, Reporting and Compliance and Convenience

Casinos and gaming facilities have a great number of security challenges, including large crowds, huge sums of cash on gaming floors and in cashier's cages, strict compliance regulations and extensive physical property and assets. It is necessary to dedicate significant resources to protecting people and material goods, reducing casino liability and creating an effective security management program, which includes key control.

In addition, as with many private enterprises, casinos must protect themselves from their own personnel. With so much temptation, it is to be expected that employees will attempt to steal, or commit fraud and other crimes.





“Systems can be configurable to manage several levels of security for returning highly sensitive keys as well. Alarms can also be triggered for certain predetermined circumstances such as the use of force to gain access or remove a key, invalid user codes, a door left open for more than 10 seconds after use, power failure, a key missing or not returned on time or a key returned by the wrong user.”

In most gaming organisations, physical keys are still used to access all of the most sensitive and highly secured areas, including counting rooms and drop boxes. But with so much at stake, casinos that are still using manual logs for key control are at high risk. There are myriad inaccuracies inherent in a manual system, starting with signatures that are missing or illegible. The manual sign-out process for keys is time consuming and error-prone. Analysis, reporting and investigation are highly labor intensive as they involve digging through piles and boxes of log sheets, making it difficult to keep an accurate accounting of key use. This also has a negative impact on compliance.

Without question, casinos and gaming facilities can benefit from a comprehensive key control solution to minimise risk, loss and fraud.


For this reason, many of the largest and some of the smallest casinos and gaming properties in Las Vegas and around the world rely on key management. The systems can provide more control for highly sensitive keys, more reporting and compliance, and more convenience. A well-run key management program takes conventional keys and

turns them into smart keys, helping control access to critical assets while tracking key usage and compiling comprehensive management information.

Key management systems help casinos maintain compliance. For certain keys or key sets that are highly sensitive, regulations require signatures from three individuals, one each from three separate departments. These may include keys to drop boxes and counting rooms. Typically the three individuals would include a drop team member, a cage cashier and security officer. A secure key management system is programmable and can recognise these keys or key sets and only open the cabinet door and release them once the three required logins are complete and the credentials verified.



Systems can be configurable to manage several levels of security for returning highly sensitive keys as well. Alarms can also be triggered for certain predetermined circumstances such as the use of force to gain access or remove a key, invalid user codes, a door left open for more than 10 seconds after use, power failure, a key missing or not returned on time or a key returned by the wrong user. A key management system can also limit



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access to drop box keys to specific authorised individuals and alert management if they are returned to the key cabinet by anyone other than the people who removed them.

In addition, key management software enables set-up of many types of reports, including many required by state and tribal gaming agencies, which can run and be delivered automatically to management on a regular basis. The robust reporting system will help to track and improve processes, assure employee honesty and minimise security risks.

Electronic key control systems also provide convenience of key access. Solutions for key security can be tailored to the varied needs of a casino/hotel/entertainment property, including the flexibility to have differing levels of security (i.e. dual or triple authentication) in different areas of the premises.

When compared to manual systems, electronic key control systems help provide for an effective security management program while delivering valuable business intelligence for the organisation.

For more information, please visit:
www.morsewatchmans.com **ESST**



Author Bio:

Fernando Pires is VP of Sales and Marketing at Morse Watchmans. Morse Watchmans is the security industry's leading provider of market-proven products and technologies for key control, key security and key and asset management solutions and is driving the evolution of key control and security management systems.

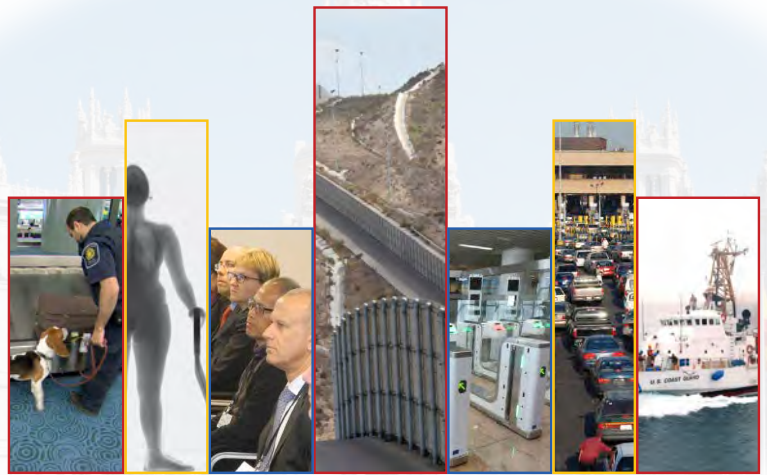


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The world is experiencing the largest migration movement in history, with challenges for the border management and security community, as little sign of peace and security in the Middle East is apparent and porous borders in Africa and Asia continue to provide challenges.

International organised criminal gangs and human and drug trafficking groups exploit opportunities and increasingly use the internet and technology to enhance their activities.

Controlling and managing international borders in the 21st Century continues to challenge the border control and immigration agencies around the world. It is generally agreed that in a globalised world borders should be as open as possible, but threats continue to remain in ever evolving circumstances and situations.

Advancements in technology are assisting in the battle to maintain safe and secure international travel. The border security professional still remains the front line against these threats.

The World Border Security Congress is a high level 3 day event that will discuss and debate current and future policies, implementation issues and challenges as well as new and developing technologies that contribute towards safe and secure border and migration management.

ONLINE REGISTRATION OPEN

For further details and to register online: www.world-border-congress.com/registration

Join us in Madrid, Spain on 20th-22nd March 2018 for the next gathering of border and migration management professionals.

www.world-border-congress.com

...for the international border management and security industry



Speakers include:

- Dr Enrique Belda, Deputy Director General of Information Systems and Communications for Security Secretary of State for Security, Ministry of Interior, Spain
 - Rasa Ostrauskaite, Director, Transnational Threats Department, OSCE
 - James Douglass, President, European Association of Airport & Seaport Police
 - Alvaro Rodríguez Gaya, Head of Strategy of Europol's European Migrant Smuggling Centre (EMSC), EUROPOL
 - Antonio Doblaz Jimenez, Lieutenant Colonel Head of the National Coordination Centre-EUROSUR Spain
 - Thomas Wuchte, Executive Secretary, International Institute for Justice and the Rule of Law
- For full speaker list visit www.world-border-congress.com

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Dahua Technology Releases DSS Pro VMS

Dahua Technology, a leading solution provider in the global video surveillance industry, announces the release of DSS Pro - its Windows-based VMS (Video Management System) product. Utilising an advanced modular design, DSS Pro is a powerful central management system featuring high flexibility, advanced scalability, and superior reliability.

DSS Pro is a Security VMS Software developed by Dahua using Client Server(C/S) architecture. It enables the flexible deployment of multiple modules to meet customer needs.

Dahua Windows-based VMS - DSS Pro

Product Features

Easy Access: DSS Control Client, DSS Web Client, and DSS Mobile form the suite of DSS clients, enabling users to enjoy instant, around-the-clock access to video surveillance and giving them the choice of a viewing interface that best suits their needs. DSS Control Client provides easy and powerful daily operation and surveillance task handling. GPU decoding and multi-screen support allows the simultaneous display of multiple types of content. DSS Web Client offers convenient DSS access from any Internet-enabled PC browser. DSS Mobile enables users to view feeds from up to 4 cameras simultaneously. It also supports remote playback of recorded footage from selected cameras and control of PTZ cameras.

Embrace Openness

Aside from its support for the full range of Dahua products, DSS Pro



is designed for 3rd party device integration through standard ONVIF. The DSS SDK for 3rd party VSS integration supports Windows, IOS, and Android.

Easy Expansion: DSS Pro supports easy performance upgrades via distributed hardware extensions, easy functionality upgrades via add-ons, and easy capacity expansion via license subscription. DSS Pro also integrates an alarm system, POS, Face Recognition, and ITC for advanced security applications.

High Reliability

DSS Pro supports hot standby which ensures system reliability for critical applications. When abnormal behavior is detected, the detection service will automatically restart the server to ensure service stability.

Quality Service: To optimise user experience, Dahua offers quality aftersales services including Dahua Software Upgrade Program (SUP) to provide users with access to the latest Dahua software, Dahua Software Support Plan (SSP) which offers free post technical support, and Custom





Development that ensures customised solutions are supervised by Dahua professionals to guarantee quality and performance.

Application Scenarios

Beyond its basic application as CCTV management system, DSS Pro can be used in many vertical industries such as retail, banking, transportation, and Safe City with the use of add-ons. Add-ons are separate software components installed on top of existing DSS video surveillance systems, providing users with extra powerful functionalities.

Business Intelligence

In addition to its powerful surveillance capabilities, DSS also provides advanced business analysis functionality. Intelligent analysis features help department stores, outlets, and other businesses improve customer satisfaction, provide a secure shopping environment, and better plan store layout & consumer routes to grow business.

LPR

The LPR module features automatic number of plate recognition (ANPR), vehicle image capture, vehicle list management, and more. It has a wide range of applications in the fields of parking and traffic management.

Face Recognition

Face Recognition is beneficial for various applications such as monitoring the entrances and exits to railway stations, metro stations, airport terminals, commercial buildings, seaports, schools, factories, and offices.

Dahua DSS Pro is an ideal choice for those who desire an easy-to-use, customisable, and centralised video management solution with high quality aftersales services. The release of DSS Pro is well in line with Dahua's value proposition of providing innovation, quality and service. With a mission of "Enabling a Safer Society and Smarter Living", Dahua will continue to focus on its value propositions to serve customers and end users around the world.

For more information, please visit:
www.dahuasecurity.com **SST**



LC1200T-TH

Dahua Technology Creates a More Connected World with HDCVI-IoT

Dahua led the industry to introduce HDCVI Technology. Throughout the years, it continues to enhance the technology leadership by bringing state of the art performance in terms of resolution, light sensitivity, intelligence and usability to the HDCVI community. In 2017, Dahua unveiled HDCVI 4.0 era to the world, followed by the launch of HDCVI-4K, the first key technology in its technology framework. Now it is the debut of HDCVI-IoT.

What's HDCVI-IoT?

While still a relatively new concept unfamiliar to most people, IoT (Internet of Things) has already brought great convenience to our daily life, ranging from smart lighting and keyless entry access control system to automatic driving, all of which are free from manual control and operate on their own. With intelligent perception and recognition technology, it is possible to directly exchange



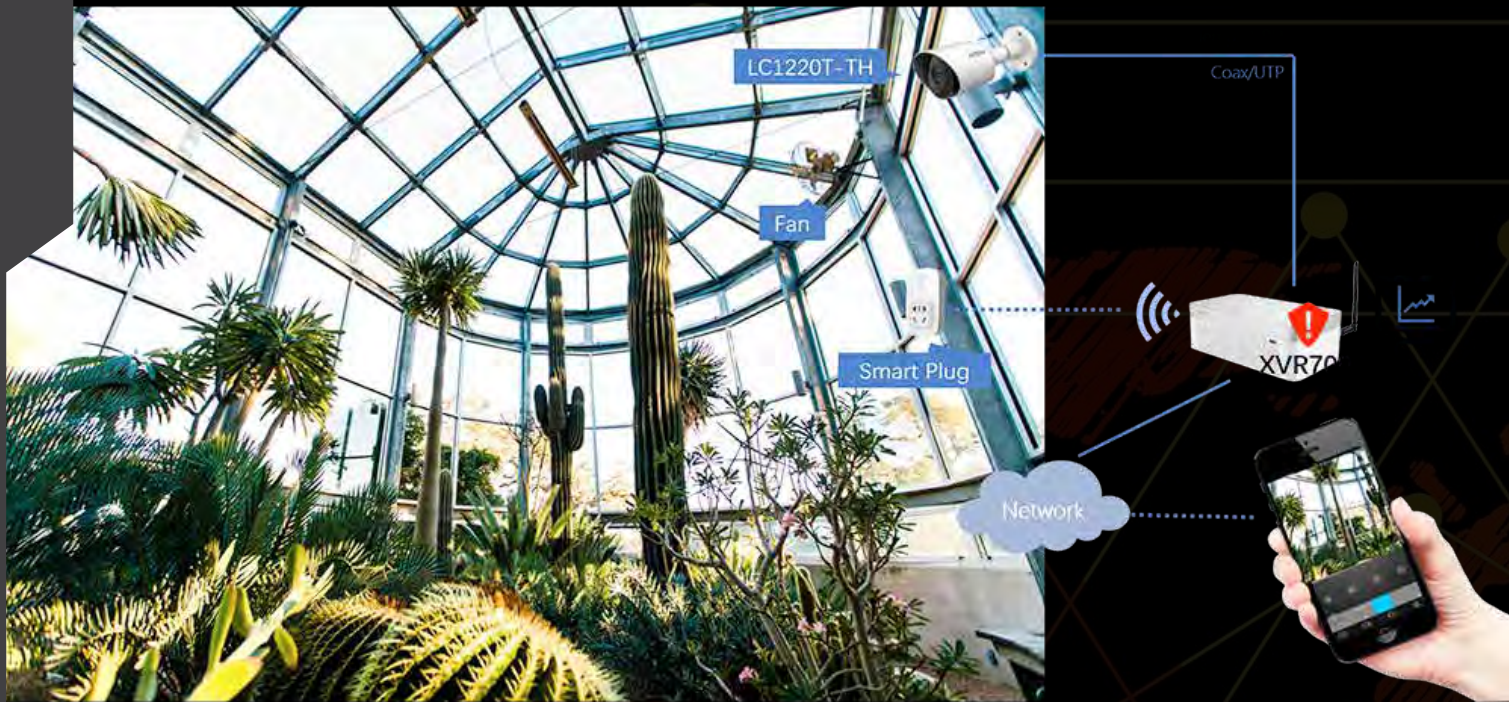
LC1200SL-W

“Dahua, being the first, proposed “HDCVI-IoT” technology that combined existing HDCVI high security video surveillance with IoT consisted of more intelligent off-line monitoring and control system. One of the core technologies of IoT is the integration of sensors and transceivers on each device, rendering intelligence to the device to perceive and judge.”



information between things, meaning IoT does not rely on internet connectivity nor human intervention to operate properly. In many situations, IoT makes things respond more reliably and in a more real time manner than internet remote control systems. In fact, IoT has pervaded every aspect of today's life, changing the industry, agriculture, construction, energy, medical,

retail, consumer electronics and many other industries. Developed by Dahua patented technology, HDCVI is the world's leading HD-over-coax technology that can simultaneously transmit audio and video, power and control signals through the existing analog infrastructure. The product line now covers front-end cameras with resolution up to 4K as well as a full range of back-end



storage products. Boasting stability and excellent quality image, the product has already been widely used in all industries around the world.

HDCVI HD-over-coaxial technology features a simultaneous transmission of audio and video unaffected by long distance, and can operate on its own without network, which coincide with requirements of IoT technology: real-time-ness, off-line local control, high security performance, etc. Based on which, Dahua, being the first, proposed “HDCVI-IoT” technology that combined existing HDCVI high security video surveillance with IoT consisted of more intelligent off-line monitoring and control system. One of the core technologies of IoT is the integration of sensors and transceivers on each device, rendering intelligence to the device to perceive and judge. For instance, if someone breaks into a high security area, a conventional camera can only re-play the video record of the time while a Motion Eye camera of HDCVI-IoT series, through the built-in high-performance PIR (Passive Infra-Red) sensor in collaboration with built-in video analytics, can accurately filter situations like a dog moving around and natural environment changes such as moving tree leaves, and then trigger the alarm in real time while the video is available to verify the alarm. In short, the technology as well as the function of video surveillance is upgraded from record and replay to reason and respond.

Features and Applications of LinCa Series

HDCVI-IoT technology works in four steps, to “sense” and “pass” information with the front-end camera;

to “calculate” and “control” the scenario with the back-end storage. For small and medium off-line local IoT applications, Dahua has developed LinCa series of front-end products, including the 2Megapixel Camera LC1220T-TH with a built-in high precision temperature and humidity sensor, the 2Megapixel Camera LC1200SL-W with built-in wireless gateway, both supported by back-end storage with built in intelligent control algorithm and easy access to Ethernet.

LC1220T-TH

In many circumstances the data of temperature and humidity requires real time attention, such as the storage of food, medicine and chemicals. In which cases, we need cameras to monitor how the goods are handled from afar, but we also need to maintain the temperature and humidity of the warehouse at certain level or there will be some unnecessary damage. LC1220T-TH front-end camera can do both for us, which means when the temperature and humidity go beyond the set number, the camera that collects both images and data will trigger the alarm and at the same time, through back-end linkage control system, start the air conditioner, light and spray system to restore the normal. Moreover, you can also manage the data through back-end in real time and have a regular output of data reports to avoid any possible energy waste resulted from inefficient use of air-conditioners.

Besides the aforementioned food and medicine, relics in museums and books in libraries also require a strictly controlled storage environment since they too



are highly likely, sometimes irreparably, damaged by climatic factors. One recommendable solution is to keep the existing analog monitoring circuit and replace the equipment with HDCVI-IoT series of products that will ensure a 24/7 video surveillance and environmental monitoring. The system will collect and process the essential environmental data automatically as well as send out alarm signal and make air-conditioners respond accordingly if necessary, all recorded in regular data reports sent to you to review collectively.

In addition, the growth of plants and animals are commonly known as closely related to the temperature and humidity of the environment. They will stop growing or even die in a wrong environment. A LC1220T-TH camera plus a back-end recorder and light intensity sensor is nothing less than an indoor temperature and humidity monitoring system visualised. With various real time environmental data superimposed on the monitoring video, one can have a good control of crucial parameters of agricultural greenhouses, flower breeding rooms and farms, thus optimising the efficiency.

LC1200SL-W

As the demand for intelligent alarm system keeps increasing in the security industry, a variety of sensors have been poured into the market, among which, thanks to the continuous innovation of wireless sensor technology, are wireless sensors of smoke detector, water leakage detector, door contact, PIR, etc. They enjoy an increasing popularity among users since compared with traditional wired alarm system they have numerous advantages, including saving the money of wiring, easier installation and better fit to the general aesthetic of interior decoration.

LC1200SL-W

In this context another innovative product in the HDCVI-IoT series, LC1200SL-W, came into being. Based on the built-in low power consumption wireless gateway transceiver of 2MP HDCVI camera, a single camera provides access to 32 wireless alarm equipment within 100m. The gateway camera is compatible with 433MHz

/868 MHz /915 MHz, all three major global wireless communication frequencies and conforms to Dahua Airfly protocol. Through wireless transmission, the detection device transmits the alarm signal to the camera which will capture the images accordingly and transmit through coaxial cable the alarm signal superimposed with video signal to the back-end devices. Which, in turn, put the real time surveillance images on the monitor screen and trigger alarm in real time. Meanwhile the alarm signal and the video signal are bound and stored, making it easy for users to search and review the corresponding video clips by the serial number of alarm equipment.

The whole system can be put together in a simple manner. It can be independently installed or uninstalled and operate on its own when not connected to internet.

It is highly secure with no delay in transmitting video and trigger alarm, ensuring timely notification when an incident occurs. If connected to internet it allows remote control, rendering it possible for local forces to act at the same time with Alarm Center. The back-end intelligent video segmentation and tagging storage technology facilitates post event investigation. The ease of use and compactness of this system makes it suitable to use at home and small-medium sites monitored by alarm system.

Summary

HDCVI 4.0 is serving to increase the potential market space of HD analog and protect the investment of HDCVI customers. As one key component in HDCVI 4.0, HDCVI-IoT combines advantages of coaxial transmission of HD video and Internet of Things. This technological innovation produces a 1+1 > 2 effect by integrating sensing information, video and HDCVI IoT for comprehensive surveillance. It functions as a sharper eye, an alarm trigger and even a first aider. Another key component of HDCVI 4.0, HDCVI-AI can even alarm you before the accident happens by spontaneously analyse the data and video acquired, which is certainly something worth looking forward to.

For more information, please visit:
www.dahuasecurity.com **SST**

“In addition, the growth of plants and animals are commonly known as closely related to the temperature and humidity of the environment. They will stop growing or even die in a wrong environment. A LC1220T-TH camera plus a back-end recorder and light intensity sensor is nothing less than an indoor temperature and humidity monitoring system visualised.”



DIY SMART HOME SECURITY SYSTEM

By: Honeywell | www.yourhome.honeywell.com



With an all-in-One Smart Home Security System featuring Amazon Alexa, simple setup and facial recognition, Honeywell Smart Home Security helps users stay aware of what is happening at home so they can come and go with confidence.

The key to its user- friendly factor is that it is simple to set up. The Camera Base Station connects to sensors, devices, and services, and comes integrated with Amazon Alexa™ and facial recognition. Whether users rent, own, or relocate regularly, Honeywell Smart Home Security is designed to adapt to all types of home owners.

Installation

The system is simple to setup and install so users need not worry about complicated wiring. All the accessories are powered by batteries for seamless smooth home monitoring.

Facial Recognition

With facial recognition*, the system can inform on when the kids get home or alert users if someone is in the house that it does not know. It can also alert users to unusual sounds like a smoke alarm or a crying baby.

Voice Control and Amazon Alexa

Communication is easy with voice. Just say “OK Security, I am leaving,” and the system will switch to “away” mode. The Camera Base Station processes security commands itself to ensure secure operation even if Internet access is down.

For further user friendliness, Honeywell worked with Amazon to integrate Alexa right into the Camera Base Station, with

three microphones and an omnidirectional speaker. Users can ask questions, play music and check the weather just like any Alexa device.

Smart Home Integration

A smart home should be easy to manage from one system. As such, there will be software upgrades available that will keep adding to





what the system can do for its users. For launch, users can perform a multitude of operations with Amazon Alexa, IFTTT, and Z-Wave Plus. For instance, Z-Wave Plus allows users to control compatible lights and it's part of how the system can create the sounds and lights of a busy home to deter intruders.

Cloud Control

The system comes with 72 hours of free cloud storage to save video alerts and more time is needed, users have the option of extending with StoragePlus.

Accessories

Access sensors alerts users as to when doors and windows are opened or closed specifically when a user is leaving the home.

Remote Controlled Key Fob

With a single click, users can change modes in and around the home without the app which is a handy option suitable for kids, pet sitters and house guests.

Motion Viewers

Designed to extend the reach of the smart home security system, motion viewers provide video clips



of motion they detect souses can see the cause.

Motion Sensors

Motion sensors send alerts when motion is detected so users will be aware if someone is in the house when it should be empty.

Lyric App

Users can manage their Smart Home Security System and other Honeywell connected devices all from one place with the Lyric App which is available for Android and iOS. **SST**





SMP ROBOTICS S5.2 AUTONOMOUS UNMANNED GROUND VEHICLE



Features

Security steps up with robotics thanks to the S5.2 Autonomous Unmanned Ground Vehicle by SMP Robotics which is the Most Advanced Outdoor Security Robot. Featuring fully autonomous patrolling, this robot is equipped with Panoramic Video Surveillance System thanks to its PTZ camera and Deep Learning for human recognition in the cameras' observation range so nothing gets past it!

Intelligent Security ensures recognition of staff members by uniforms and Swarm Intelligence for the reliable group patrolling of large areas.

Other features include the Obstacle Avoidance and anti-collision system which means the robot can overcome obstacle up to 7 inches.

For connectivity, there is Cloud Data integration and easy Integration with VMS central monitor systems (such as Milestone etc.). It supports ONVIF standards by 100% and has enough Ingress Protection for outdoor application.





The robot features Self-Diagnostic Systems along with remote robot monitoring systems for 24/7 surveillance and a panic button with two way audio intercom.

The robot can be operated in various terrain and any weather conditions all day everyday. The operating temperature range is $-25\text{ C} - +45\text{ C}$ with up to 20 hours of autonomous patrolling. There is also an automatic Recharging system and is IP 65 water and dust resistant.

Profit Points

The robot is a quick payback of your investment, easily within 6 months of operating and features easy installation with 24/7 virtual monitoring of the robots by the manufacturer and ongoing consultation and training for the client's technical staff. Convenient and affordable leasing agreements are also available.



Group Patrolling

Group patrolling works with a minimum of 3 robots and a maximum of 30 per site. Three SMP Robotics S5.1 security robots autonomously and jointly patrol park territories.

UGVs automatically avoid the obstacles and build their route, depending on the position of the other robots in group.

Group patrolling allows users to evenly distribute robots through the territory. This is especially important if one or more robots leave the route (for example, for charging or by operator command)

Group navigation is carried out due to advanced algorithms of image recognition developed by SMP Robotics. This is first ever commercial application in security which is utilise swarm technology and deep learning technology.

For more information, please visit:
www.smprobotics.com **SST**



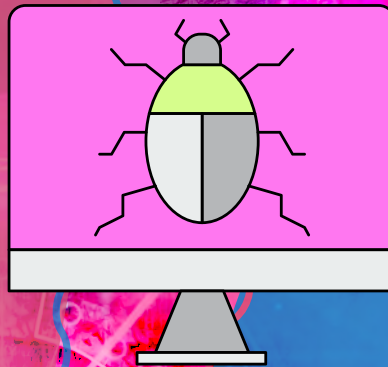
WELCOME TO
THE FUTURE

SECURITY TECH IN TOMORROW'S WORLD

THE FUTURE FACE OF SECURITY

DEPS, Digitally Engineered Personalities, personal sensors that live in the global telecom Internet network and provide 24 /7 follow-you-anywhere security protection for individuals, enterprises and governments will be necessary and in demand. Say goodbye to privacy.

Smart Watchers i.e. super-sensitive satellite and video network electronic surveillance, will be everywhere. Real-time personal face scanning and suspicion profiling tied to massive supercomputers, sensory-aware networks and data warehouses will determine risks, provide prevention strategies and intelligence on neutralising threats. China is currently spearheading this surveillance centric society.



National Identity Cards with embedded smart chips,

containing an individual's entire Genomic Profile will act as a secure personal identifier. They will wirelessly authenticate an individual's location, security clearance level and identity to a sea of intelligent networks tied to government, transportation, banking etc. We can see this already in the form of body chipping.



Sniffers designed to automatically sense, watch, search and identify individuals with critical information; weapons or bombs will have the capability to navigate physical, wireless and electronic realities. In Israel, research is going into how security robots can be equipped with weapons.

Secure-Wearables that are embedded, pinprick size hyper-sensing bio-reactive Nano-chips, personal pin codes and GPS location monitoring will assist in security tracking and recovery after kidnapping or theft. This is already being done on an experimental level with body hackers who insert RFID chips under their skin.

Pandoras, the computer virus attacks of the future, will be self-mutating viruses created

to destabilise, confuse and destroy critical electronic infrastructures essential to industry and government. These will be used as offensive and defensive weapons by all sides. Cyber attacks in the form of ransomware has shut down everything from train stations to nuclear plants in 2017 and there is more to come as hackers become more sophisticated and the world gets more connected.



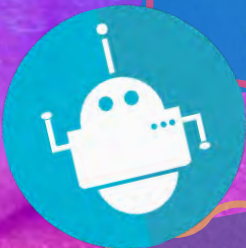
Biometric Authentication: facial, eye, fingerprint and genomic

scanning will be necessary to validate an individual's physical or virtual entry into electronic networks or physical areas. Security Tattoos with bar-scans will be popular and fashionable. This is already implemented in airports currently and coming soon, emotion and voice recognition as well as lip-reading CCTV (as covered in our Nov-Dec 2017 issue).



Economic Information Warfare (EIW), comprising

of sophisticated attacks against entire economies, commerce and enterprises will accelerate as a global threat. There are two forms of economic information warfare, information blockade and information imperialism. Information blockade is the stoppage of information flow - the digital business and Information imperialism is the suppressing of information from selected parties.





TouchLock BT XL

By: BIO-key | www.bio-key.com

Regarded as the world's smartest padlock, Touchlock BT XL offers two secure options for opening the lock. Using the TouchLock app and your smartphone, customers can open their lock with the fingerprint application or by entering in a PIN number. TouchLock BT XL comes in a variety of vibrant colors.

This innovative padlock powered by bluetooth, the lock can be opened with the user's fingerprint or PIN number and is user friendly. The lock can be shared with friends and family as it can Store up to 20 fingerprints. Style is also a factor with its Sleek and rugged design that protects valuable assets and comes in brushed metal, blue or yellow.

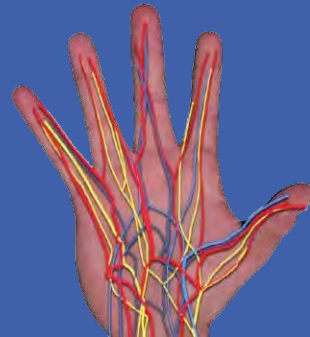
COSEC Door PVR

By: Matrix Security Solutions | www.matrixaccesscontrol.com

COSEC Door PVR is a highly secure and contactless biometric device that reads the internal vascular pattern of the palm. Palm patterns are unique to each individual and exist underneath the skin layer, which cannot be forged thereby making it most secure compared to other biometric technology.

To ensure accuracy, COSEC DOOR PVR utilises the Fujitsu biometric palm vein scanner to provide utmost security and hygiene. This makes COSEC DOOR PVR more secure in comparison to other biometric devices. Being contactless and technologically advanced, it is appropriate for places like hospitals, chemical industries, nuclear stations, factories, corporate houses, R&D centres, financial institutes and many others where security and hygiene are of utmost importance.

With this unique palm vein recognition system, COSEC DOOR PVR is capable of storing up to 20,000 user templates and has up to 1,00,000 events storage capacity. It proves to be extremely secured for Time-Attendance and Access Control applications with false acceptance ratio less than 0.00008%.





Facial Recognition Smart Lock

By: Klacci | www.mysmahome.com

The IF Series Smart Lock provides an intelligent way of unlocking doors. A user's smartphone can now be used to biometrically verify the identity and unlock the door. The built-in facial recognition can ensure the authorized person can access the door. With its online cloud server, users can manage their access to control their door lock wirelessly from anywhere.

The SMART lock features a pleasant design that matches the doors aesthetically along with privacy and hold open modes that can be setup from the inner side of the lock. A smartphone can be used to verify the identity and wirelessly connect with the lock and there is also a mechanical key override that provides access in case of electronic or power failure. The Interchangeable core design also allows key changing without having to replace the whole lock.

For additional security, there is passcode input and facial recognition dual verification and can be replaced by fingerprint for smartphones with such features.



VingCard Signature RFID

By: Assa Abloy | www.assaabloyhospitality.com

The VingCard Signature RFID provides users with a stylish lock that appeals to a contemporary environment. Signature RFID provides less hardware on the door while giving more functionality to all users.

The lock is ideal for new construction/ retrofits and new installations and also provides a wide range of design options for handles. The lock is also mobile Access compatible with RF Online capability (wireless) and can be powered over Ethernet Online (wired).

Vingcard Signature RFID supports the latest RFID technology and Mobile Access Capability. It is WIFI compatible and an Easy upgrade from Signature Magstripe or Combo. It is Fire listed for use on fire doors and has a Case hardened full 1-inch (ANSI) throw deadbolt. The lock also features a panic release function with a deadbolt and latch that are automatically retracted by inside handle for easy regress in emergency situations. Also featured is a stainless steel parts for mechanical strength, corrosion resistance and attractive appearance.



BX Thermal Bullet Camera

By: IndigoVision | www.indigovision.com

IndigoVision, the leading developer of end-to-end video security solutions, are delighted to announce the launch of their new BX Thermal Bullet Camera. With outstanding thermal sensitivity technology, IndigoVision's BX Thermal Bullet Camera is the perfect solution for dark, long range monitoring applications; bringing another dimension of security to IndigoVision's camera range.

With a VOx uncooled thermal sensor and a thermalised focus free lens, the BX Thermal Bullet Camera provides an all-in-one intelligence-driven solution for extreme outdoor and indoor thermal security. High thermal sensitivity (<40mK) captures more image details and accurate temperature measurements over long distances, providing endless installation possibilities; from perimeter detection to process or machinery monitoring.

Combined with powerful, built-in intelligent video and thermal analytics which can detect a maximum, minimum or temperature difference, alerting users when an abnormality is detected.

Features include multiple resolution options, high thermal sensitivity, thermal analytics, extensive operating temperature range and more.



The Moon

By: 1-Ring | www.1-ring.net



The Moon is the world's first levitating smart home camera featuring stabilised Levitation for 360° Vision. Features include smooth and noiseless levitation, is fully stabilised and controlled by a remote. What's more, it fits in a perfect spotlight position.

The Moon is perfect for video and conference calls with 2 microphones for noise cancellation, HQ speaker for 2-way communication and automatic rotation towards the active speaker. Security is guaranteed even when you are away from home thanks to the smart event detection and automatic rotation along with smart alerting and notifications. To add to these impeccable features, the smart voice recognition recognises such as baby cries, breaking glass, dogs barking and more.

Top of the line tech features are included in the Moon such as Integrated IR Blaster and Bluetooth module, remote control for legacy appliances such as the TV and air conditioning. Also included are Integrated Zwave Plus, Zigbee 3.0, Bluetooth Smart, Temperature, Humidity, Light and CO2 Sensors. Smart home security is enhanced in the Moon via features such as Enterprise Grade Encryption, Sound Direction Detection and Presence Simulation.



Cam IQ Outdoor

By: Nest | www.nest.com

Nest Cam IQ is a powerhouse of brains and brawn. Weather-proof. Tamper-resistant and seriously sharp so it can help you know about a break-in before it happens. Nest Cam IQ can detect a person up to 50 feet away, then alert users with a photo of who is there and with Nest Aware, it can even recognise a familiar face. Combining a 4K sensor with HDR and intelligent imaging provides the camera with its Supersight which is basically 1080p HD with superpowers. Nest Cam IQ combines multiple 4K images to even out challenging lighting conditions so details don't get blown out or lost in the shadows.

Features include Extra strong WIFI thanks to a 2x2 MIMO chip, Weatherproof IP66 rating, High-power infrared LEDs for clear and even night vision, a Locked mount with a hidden power cord for 24/7 security, Versatile hinge for multi-axis 360° rotation, HD Talk and Listen along with powerful built-in speaker and microphone with noise and echo suppression. The feed is hosted via cloud connectivity that is encrypted for safety with two-step authentication.

Nest Cam IQ outdoor is tough security on its own and it may deter intruders from even breaking in but when added to the Nest Secure alarm system, Nest Cam IQ indoor cameras, the Nest Hello video doorbell and works with Nest products, the home can be covered from the outside in.



Netatmo Presence

By: Netatmo | www.netatmo.com

Netatmo's Presence is truly an outdoor camera fit for Smart surveillance with people, car and animal detection. Presence detects and reports in real-time if someone loiters around the user's home, a car enters the driveway or the pet is in the yard. Ultra-precise alerts assist in preventing break-ins or property damage thanks to the livestreaming feature of the Netatmo Security app available for both android and apple.

Presence offers 24/7 protection whether day or night. During the night, users may watch discreetly with Presence's infra-red night vision or switch the camera's floodlight on. The smart floodlight can be switched on manually in the app or set to switch on when it detects a person, car or animal or all three. It helps users find their way safely at night and deters any unwanted visitors. Built to be weather resilient, Presence is specifically designed for outdoor use and can withstand the elements- rain, snow, moisture, dust and dirt, thanks to HZO technology, an innovative thin-film coating solution.

Designed for simple installation, Presence can replace any existing outdoor light fixture and features local video storage on an SD card, is uploadable to cloud or on the user's personal server. Notifications are customised according to the user's needs with alert zone, download and timelap features.

What sets Presence apart from other Smart home security cameras are its unique features such as the elegant aluminium design which adds to its durability and aesthetic. The Full-HD video quality of Presence is also superior with pinch to zoom features included. Smart surveillance comes into play as Presence only records footage when something is occurring, saving users the tedious task of reviewing empty footage. Another remarkable feature is the ultra long detection which detects people, cars or animals up to 20 meters or 65 feet. For the highest level of protection, Bank-level and end-to-end encryption is used minimizing the risk of being hacked. Best of all, these amazing features come packaged in an outdoor weather proof package.

ROBOTS



ATOM Intelligent Security Robot

By: Amaryllo International | www.amaryllo.eu

ATOM is the first security robot that can recognise human faces, talk to people, and auto-track intruders 360-degree even in complete darkness. When intruders are detected at night, a pair of flash LED light will shoot out to follow them. ATOM is an enhanced robot on Amaryllo's 2015 and 2016 CES Best Innovation Award design. It is what a real intelligent security robot should be. Improvements were implemented and more features were added to the original design such as human face recognition, human-voice event greetings, instant 10-second video alert, alerts timeline access, activity zones, blackout zones, hourly time announcement, Google Services connection, intruder warning light and more.

Features include Smart alert whereby ATOM sends instant picture or video alerts to users with embedded icons for them to call pre-registered phone numbers or to sound alarm to scare off intruders.

Top of the line features include Real-time 360° auto-tracking, Real-time face recognition with instant face alerts, Instant 10-second video notification, Human voice speech function, True Real-time two-way talk, 256-bit encryption, Blockout zone designation, Remote pan/tilt/zoom and more.



Cobalt

By: Cobalt Robotics | www.cobaltrobotics.com



Cobalt is a self-driving security robot supported by human specialists. The focus is on predictive security with a human touch. The robots use cutting-edge AI and machine learning algorithms to detect and flag anomalies such as people, motion, audio, and spills.

Fully equipped with cameras and sensors, each robot has super-human sensors with perfect recall and a logged / auditable history of where it was and what it saw. Cobalt works closely with humans via telepresence in a person to provide high-level guidance and face-to-face interaction.



The robot has 3 high-quality wifi antennas and a cellular backup, though the robot can continue autonomously through areas with no connection. The company provides full-service, uninterrupted security coverage. Robots recharge when necessary while still actively watching and listening for security events. Robots are capable of moving at a running speed in emergencies, but usually patrol at a casual walking speed, being especially cautious around people, doors, and corners.

Cobalt helps secure businesses with unwavering attention leaving no gaps in surveillance. It also detects anomalies such as unidentified anomalies and responds by approaching the person and identifying them via its badge reader. If further verification is needed, cobalt will notify a human pilot, who can then have a 2-way video chat via telepresence.

Cobalt Rigorously implements security policy with success through initial and continuous pilot training.

**K5**

By: Knightscope |
www.knightscope.com

The Knightscope K5 is best suited for securing large outdoor spaces. Working together with human eyes, you'll be better equipped to keep areas such as parking lots, corporate campuses and hospitals safe autonomously.

The K5 weighs in at 400 lbs and is about 5 ft 3 in height. Striking a balance between physical presence and amazing technology, the robot provides state of the art user-friendly image for any organisation's patrolling operations. One of the K5's features is license plate recognition wherein its 4 cameras are fully capable of recording 300 license plates a minute. Users can also create their own blacklist to receive alerts when former employees or trespassers are located in your parking lot. This feature allows users to not only monitor the parking space but also to track vehicle dwell time and monitor the utilisation of lots.

K5's signal detection features protect the user's data from rogue routers and also assists in identifying potential suspects in an area during a crime. Furthermore the K5 can identify mobile devices within the deployment area.

**Robotic Aerial Security**

By: Nightingale Security |
www.nightingalesecurity.com

Nightingale Security is the first Robotic Aerial Security company to receive FAA exemptions allowing both Night time and Multi-Drone operations.

Securing the perimeter is a fundamental physical security requirement and Robotic Aerial Security offers new perimeter surveillance capabilities hence enhancing existing security assets and increasing overall security.

Robotic Aerial Security is cost effective as it is a better solution for remote area surveillance. The challenges of rough terrain are also addressed with Robotic Aerial Security as the drones can get there fast and send live videos back to the customer's security team.

Commercial applications for Robotic Aerial Security include a multitude of industries such as solar farms which consist of large facilities and oil and gas plants wherein drones can cover perimeter security to prevent break ins in high risk areas 24 hours a day. Other applications include border patrol where drones equipped with IR sensors can detect night time border activity.

Robotic Aerial Security can provide invaluable situational awareness about dangerous and dynamically unfolding events in areas where there are fires, oil spills and gas leaks. Drone security can also secure pipelines hence reducing risks of damage, leaks and theft and protecting people and profits.



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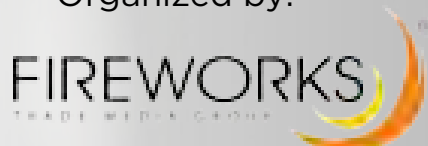
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S5 HD Security Patrol Robot

By: SMP Robotics |
www.smrobotics.com

The S5 is a mobile video surveillance system for patrolling restricted areas. It is designed to patrol well-lit territories or large premises and equipped with six high-definition cameras to form a continuous 360-degree panoramic view with extremely high resolution. Providing high-quality video surveillance while in motion and when standing still, S5 High-frequency vibrations caused by movement along rough roads that may otherwise result in picture deterioration with other camera applications are efficiently absorbed by the robot's suspension.

With its ability to patrol territories without human input, the robot provides for remote video surveillance using WiFi wireless data transfer technology. The integrated WiFi module transmits images captured by panoramic HD cameras installed on the robot. Thanks to the omnidirectional antenna installed on the robot, the robot can transfer data to its base station from a half-mile away.

Apart from the surveillance camera's video feed, the patrolling robot can send its current location on the map of the secured facility, the state of its electronic systems and its battery capacity. The authorised user can change the robot's patrol route, select a camera to show in high resolution, or trigger a light and audio alarm.

SAM

By: Robot Security Systems |
www.robotsecuritysystems.com



SAM is the first robot that can recognise people and objects while on the move. Since SAM knows exactly what the floor plan of the premises looks like and features a multitude of sensors, it can effortlessly pass by obstacles, take the elevator and also open (automatic) doors while making surveillance rounds.

SAM responds to signals by alerting the police, fire brigade, an external incident room or owner of the premises. If required, it can be interactive by establishing a speaking/listening connection with an emergency switchboard or setting up an audio/video stream. If a person fails to identify themselves through the badge reader on time or tries to sabotage SAM, SAM will always sound the alarm.

SAM scans the room it is patrolling and can recognise fire (smouldering and smoke), faults in technical systems and air conditioners, UPSs, generator sets and current systems at an early stage. SAM is always on the look-out for leaks, toxic substances, smoke and temperature differences.

SAM offers various programming options. Whenever SAM encounters an obstacle in its path, for example a box that has accidentally fallen from a rack, SAM will record this and choose a new patrol route. It will store the information about the object and remember the new route, so that it can take the changed route during its next round. SAM varies its routes and repeats a route if it has noticed something that may pose a danger.

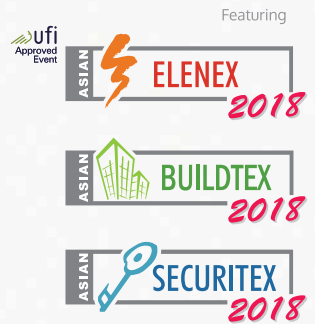
SAM features an interface with its own alarm system. Cameras include a thermal imaging camera and 4 cameras for a 360 degree view. SAM has a maximum speed of 10km/hour, is available 24/7 and never gets tired. With the ability to operate elevators and automatic doors, SAM's multitude of features include automatic map updates, people identification/detection, speaking/listening connection, audio/video stream, detection for radiation, smoke, toxic substances, leaks, temperature differences.



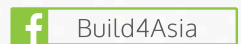
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VisionHub Video Management System

By: Qognify | www.qognify.com



The software transforms VMS into a complete security management solution. Today more than ever, video is center stage, becoming the most critical element inside the security control room. VisionHub is a video management system that provides the necessary holistic approach to make sure VMS power is leveraged to the maximum.

Advanced, homegrown and field-proven Video Analytics suite includes the patented, award-winning Suspect Search. Fitting any size and any architecture from single, critical locations to multiple independent sites with a centralised management location, the software serves a multitude of user needs.

Powerful redundancy, the highest standards of IT security and advanced video recording software ensure that users never lose video. Deployment, configuration and integrations infrastructure are designed to make delivery easy and cost effective.

Stealth® Identity

By: Unisys | www.unisys.com

Confidential or personally identifiable data is compromised by cyberattacks which are becoming more frequent today. To stop unauthorised access to sensitive information without frustrating legitimate users, trusted identities need to be verified with more than just passwords.

Unisys Stealth(i)delivity delivers identity management that balances strong security with positive user experiences. An open architecture allows users to quickly and easily implement biometric access control and multi-factor authentication across multiple devices. New users are validated with verified enrollment and users can trace identities for audit. It is a robust solution that supports everything from simple consumer applications to large-scale citizen identification programs used for border crossings and national identification repositories.

Benefits include configuration and deployment of biometrics with transactional and risk-based policy settings which allow users to enroll once and authenticate across



all channels. It also reduces costs from security devices or frequent password resets, delivers appropriate access to data with contextual awareness and assists in expanding biometric security without replacing authentication infrastructure.

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