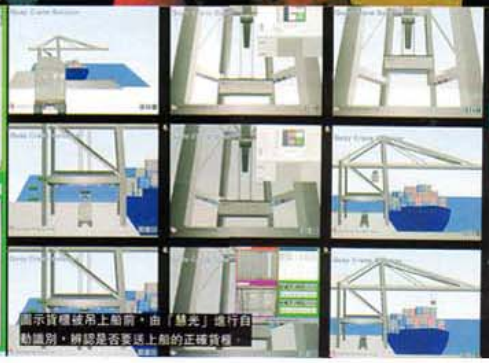
CONTENT 目錄

封面故事

Dr Lee(前)與阿Ken(右)：初組公司時，只有三四個人，但現在已開始進入中型公司。

「慧光」技術千里眼
自動識別車樣車牌

在電腦顯示，就算車牌一樣，系統仍能識別車樣的不同，響起警號。



顯示貨櫃被吊上船前，由「慧光」進行自動識別，辨認是否要送上船的正確貨櫃。

何宣威說，這些年輕人的確很有能力，是一股新動力。

還看新動力

在香港，出現了許多team wrok精神的年輕科技公司，那固然是好事；「而且，」創新科技署署長何宣威指出：「這批年青人也正為香港創造一種新產業。」

他說，在香港這個經濟轉型時期，很多問題一一湧現，推動香港轉型，帶動經濟產業的龍頭顯然十分重要，何宣威認為，金融、旅遊、物流與服務業，以及現時香港的創新科技，都是重要的龍頭。然而，年輕積極的科技公司的出現，雖叫香港有了一點新希望，但這些新產業是否能推動香港經濟好好發展下去？答案當然不可能是Yes或No，而是視乎整體香港的發展，何宣威說：「這班年青人，當然要政府在各方面支持，但路是人走出來的，他們正正面對香港整體經濟營商環境沒那麼好的時勢。」他認為，這些新產業，若能專注內地市場，會比較容易發展，「我們應知道香港基本的優勢，

98%識別率

直到二千年，「慧光」技術才獲頒美國專利權，申請時間凡五年，但這套由前香港科大教授Dr.Lee發明的video OCR 技術，早已在中港台及澳洲等地方使用，用作自動識別車牌及貨櫃編號，而上月英國政府已買入了這種自動識別車牌系統設備，而最新發展的「慧光」，已到了自動識別車樣及貨櫃破損等方面。

「慧光」技術，是小小香港的發明，但卻是一套獨特應用在交通上的自動識別系統。「慧光」的開始，依然始自二人team work。「九七年我用自己的積蓄向科大購回『慧光』技術的知識產權，並和我的學生阿Ken，一起組成亞洲視覺科技有限公司，就是現在這間公司，那時我們只有三四個人，是team work，一起把慧光應用到商業用途。」現在公司已開始發展成中型公司，「我的願望是國際化。」

發展這套技術，開發的時間很是悠長，它的本領有別於一般在室內處理的光學識別技術，因為在街頭及收費停等識別車牌及車樣，顯然因天氣不同、燈光光度、車速快慢，車牌顏色與新舊等不同，而影響結果，研究需一一克服這些問題，開發這個科技其實需要漫長的時間。Dr.Lee亦老實說，不是說全球只有香港開發這種自動識別系統，但識別能像「慧光」般高強，達到98%，卻只有我們。「其餘2%，多是車牌或車輛有損毀，不是系統的問題。」

在上海，上海政府大樓一年前已開始採用「慧光」，你又猜香港什麼地方採用了呢？

中港邊境、香港國際機場、機鐵沿線停車場及巴士站、香港三號碼頭的一些公司以及私人屋苑。

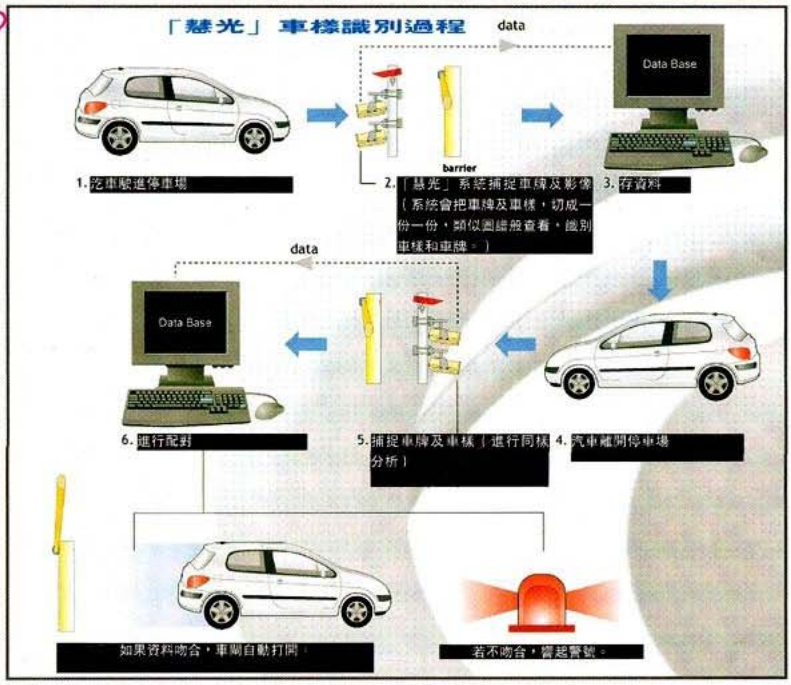
香港會不會是基地？

「慧光」現在的新研究工作，十分有趣。在最新的自動識別車樣系統（Vecon-Match）方面，分別研究不同的國家車樣，Dr. Lee說：「現在已做到十個國家，但每個國家的車輛都有出入，將來可以做到更多國家。」另一項有趣的，是已開發了一段時間的自動識別重量，專用捉拿超載貨車或貨櫃。事實上，Dr. Lee與阿Ken的目的，是把最新的視覺技術，發展為「全能電腦眼」。

他們會不會像其他年青科技公司，留守香港呢？「我們會把最核心的科技放在香港，因為放在大陸，很怕被抄，而香港也有免稅港口，有地理之便，銷售能接觸大陸及海外。」

說到香港科技，人人都說香港政府支持不足夠，但Dr.Lee反而提醒我們，說，世上沒有一個政府可以叫做足夠，人材與薪金才是最大的問題；「香港薪金太貴了，租金也貴，成本也變得貴了，而這裏的人對公司亦沒有忠誠，我們請一個人入來，培養他成材，是很大的投資，但很多香港人都是跳來跳去，我們希望請來的研究人員，一起把新的問題解決，這才是與公司一起成長。

「教育方面培養人材，香港要做好些。香港沒一個長遠計劃，是由於英國政府之前的計劃好短暫，現在香港卻要很多事情一起開始。」



說員工的忠誠，好像很古老的，其實Dr.Lee十多年前來自星加坡，現在家庭都在香港，至今對人處世仍帶着星加坡人的熱誠與傳統。

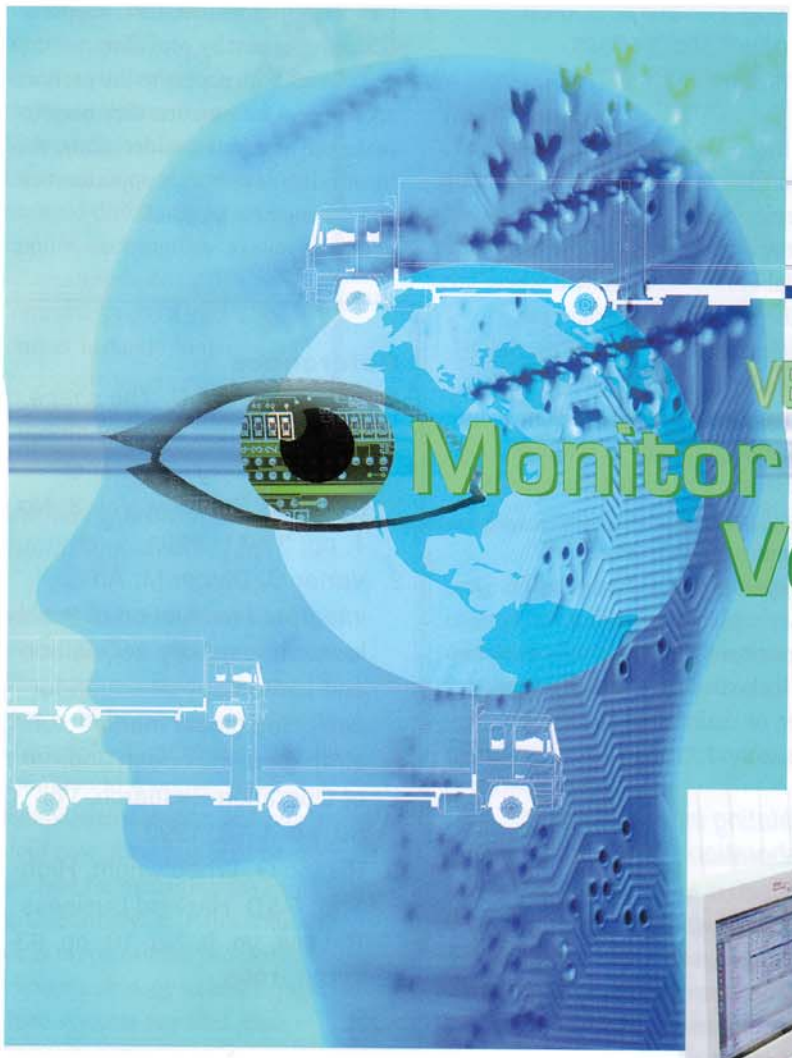
一是這裏有很自由的經濟體系，二是香港的服務業水平很高，至今，物流、金融，香港仍是亞洲一個領先的都市；三是香港不是沒有工業，但都過了一條河（指珠江三角洲一帶），那仍是香港人的工業基地。」

指出這些優勢，何先生的意思是這些年青公司，可以配合開發業務的科技系統，例如服務業的作業系統，管理及行政新科技，以及其他生產的科技配套。

還看這些年青的小公司，理想都十分遠大，都想以香港為基地衝向國際，而以他們獨特的科技，諸如前文介紹的橡膠土、慧光技術、基因SNP數據庫、藍芽網絡等，都有很大的商業市場潛力，為了未來發展，何宣威的意見是，一要保持實力，二把公司深化，「已做好的東西，應保持勢頭，保持力量，社會人士及商界都應支持，某程度我也要替政府講句公道話，政府已做的是有限度的，但政府在這方面的承擔沒有減少。」

不是說香港政府沒有支持新科技發展，而是這個城市，就是看不到政府的長遠大計，雖然創新科技署已資助了八十多個項目，而科技園亦有培育公司的計劃，但對比許多國家資助R&D、稅務及租金優惠等，香港的支持顯然少了一大截，這都是老生常談的問題，在這些年青公司這股新動力面前，再說顯然已太沉悶。何宣威反而提醒我們，動力在哪裏？長期遺看人材教育，若沒有具有視野與創意的人材，是配合不到新經濟形態的發展，「這方面香港要有一個平衡，那是教育的問題，社會發展好快，教育方面完全或着重學徒制是不行的。」

言下之意，是否就是香港的教育未能配合這股new energy of Hong Kong？看來，這股動力要跑得快與有持久力，還要想辦法注入其他新動力。



VECON's Electronic Eyes Monitor Cargo and Vehicle Flow

Dr. C.M. Lee, the founder and CEO of Asia Vision Technology Ltd.

To monitor the myriad of vehicles and containers going through ports and border crossings everyday, it is at best to install a fast and reliable visual monitoring system — capturing the numerical codes on licence plates and containers, then instantaneously transmitting them to the backend systems. Consequently, terminal and gate operators could get rid of the hassle of manual recording and input errors, whilst ensuring smooth container and vehicle flows.

Sounds tempting but unrealistic? Such a system has actually been readied for deployment right here at the CSX World Terminals in Hong Kong.

The brainchild of this system is Dr. C.M. Lee, the founder and CEO of the Hong Kong-based Asia Vision Technology Ltd. In 1989, Lee at the National University of Singapore invented a visual data capturing and reading technology, which was later installed in the Port of Singapore Authority.

In 1993, Lee refined the technology at the Hong Kong University of Science and Technology with Mr. Wong Wing Kin, one of his Masters students and later partner in Asia Vision Technology. Set up in 1997, the company later became a member of the Hong Kong Industrial & Technology Centre (presently the

Hong Kong Science and Technology Parks Corporation)'s incubation program. Its flagship product is VECON, which embodies Lee's original visual capturing design concepts.

VECON is claimed to be a solution to the ultimate nightmare of gate and terminal operators: how to record the necessary coding and numerical data from containers and vehicle fleets with the least delays, yet with the highest accuracy?

Said Lee: "The essence of the VECON technology is to recognize specific words, codes and numbers from a visual image, and to extract them by removing all the unrelated objects from the image."

Presently, Lee said that their system could recognize codes and characters on licence plates in different languages, such as Chinese, Japanese and Korean. The system is now being extensively deployed in traffic management, fleet management and port administration in places such as the PRC, Hong Kong, Taiwan, Brazil, and lately in Australia.

Simulating human eyes, VECON's "all-purpose computer eyes" capture and transfer visual images to a backend system. The visual data is then further processed for whatever purposes designated by clients. The technology can now accommodate objects in motion, even those with damages or scratches.

For the backend interface, it is mostly tailor-made for individual clients. "It is not that we can't develop a generic software package for working in the logistics environment, but every terminal has its unique workflow. It is also not cost-effective to do so. The same case applies in every market, as we usually work with local system integrators to cope with the local conditions better," Wong explained.

Digital Solution for Container Management

With fixed formats designated by local authorities, it is easy to recognize codes and characters on vehicle's licence plates. However, this is not the case for containers. "Although there is theoretically an international format of container codes and numbers, it is not closely observed in the real world. Therefore, we needed to develop a specific software package to be flexible enough to cope with the local conditions better," said Lee.

In an operating container terminal, the VECON system can be used to automatically capture codes and characters on the containers as they pass through the entry/exit gates or during loading and unloading. Once the container information is acquired, all the necessary codes and numbers on the container are then passed to the Terminal Operating System to perform the necessary steps that allow the driver to proceed to the next destination.

"All the container trailing drivers are now carrying ID cards that confirm their identities. The VECON system can provide an added level of security: the container numbers can now be easily verified and matched with the drivers' identities.The solution provides a cost-effective, efficient solution that increases both security and container terminal throughput by ensuring that the drivers' ID card

REGULAR COLUMN

Installation of the VECON system in CSX World Terminals

number is matched with the container number," Lee emphasized.

According to Lee, CSX World Terminals (formerly Sea-Land Orient Terminals Ltd.) has one of the most successful installations of the VECON system in Hong Kong.

The VECON-CON solution has been used at CSX World Terminals since 1999. According to their official statement, "our gate-out process is made 100% automatic with improvement in our container dispatch reliability". The solution has proven to be a cost effective, highly accurate solution enabling the company to remove human errors, minimize the level of manpower required and give an additional level of security to the process.

Damage Inspection and Fleet Management

Other than container number recognition, Lee said the system had also been used for damage inspection and fleet management.

For example, Asia Vision Technology has developed a Container Damage Inspection (CDI) system. With a video-capturing device, the CDI system takes high definition digital images of the container so an operator can review the images for damage. This helps automate the process and efficiently settle disputes that may arise with insurance claims.

"Such a system can offer a permanent electronic record of the container's condition as it enters and exits the terminal," said Lee.

On fleet management, Lee claimed the VECON technology had been widely welcomed by both public and private users across Asia, notably the PRC and Hong Kong.

In the PRC, police in Guangzhou and other metro areas have been experimenting the VECON technology to verify drivers who may fail to pay certain legal fees or are involved in minor traffic offences. "We can mount the system on a moving police vehicle and capture licence plates instantly. It can then extract and verify all numbers and as a result dramatically speed up law enforcement," Lee said.

In Hong Kong, users of the VECON system include the three Airport Express Shuttle Bus Stations, the police force and the car park of the international airport as well as several private and public car parks.

"For the Airport Express Shuttle Bus Stations, the system provides a valuable aid in managing the inflows and outflows of vehicles passing through the terminal," said Lee. "For example, we can mount a camera at the vehicle entrance of Kowloon Station. It captures the data on the licence plates of the passing shuttle buses, matching it with the timing information. This has substantially reduced errors, which are inevitable in manual observations."

Following the initial success in terminal logistics management and fleet management, Lee is now looking to apply the VECON technology in more areas, and one of such is a mobile container number capturing system called VECON-MIV (Mobile Inventory Vehicle).

Here is how it works: a Global Positioning System (GPS) antenna is mounted on a pole with standard CCTV camera, industrial PC and placed at the rear of a vehicle. The system can scan rows of containers , thereby saving much time and manpower in locating lost containers.

"Of course, we are now looking at more application areas of this technology," Lee added.

Seeing is believing

Optical Character Recognition (OCR) systems are becoming an increasingly common sight at the gate complexes of some of the world's busiest container terminals

OCR technology is not, of course new and some people have been promoting this concept as the ideal solution to the problem of accurately recording truck and container data at a terminal's gate for many years now but today it does seem as if this is an idea for whom the time has come. Take the Vehicle and Container Number Recognition (VECON) system of the Hong Kong firm Asia Vision Technology (AVT), for example. VECON was invented by Dr CM Lee at the Hong Kong University of Science and Technology in 1993. The working first system was installed at Shanghai's United Asia Container Depot in 1996.

Lee and Ken Wong, his former student, then acquired the international patent rights of VECON from the university and sought to further develop and commercialise the technology by founding Asia Vision Technology Ltd in 1997. A US patent was issued in 2000 for the VECON technology and, during the same year, the company's systems were successfully installed at the CSX World Terminals container handling facility in Hong Kong.

AVT's suite of container number OCR solutions covers the following areas:

- Road portal or pedestal OCR solutions
- RTG/RMG/quay crane OCR solutions
- Container damage inspection (CDI) solutions
- Rail portal OCR solutions
- Mobile inventory vehicle (MIV) OCR solutions

Road portal or pedestal OCR solutions

The VECON-CON PORTAL system satisfies the operating requirements found at yard portals in container terminals. These portals act as a pre-screening barrier for all incoming containers before they proceed to the various terminal in/out gates. The VECON-CON PEDESTAL system is deployed at the actual in/out gate of the terminal. Both solutions identify the following numbers:

- Container numbers
- Chassis numbers
- ISO codes
- License plate numbers
- Genset numbers* (*limited to only under slung gensets & excludes hand-written numbers)

The immediate benefits of the system are:

- Increases the efficiency of the terminal
- Streamlines the logistics process
- Significantly reduces the manpower required to track container movements
- Significant costs savings are achieved by implementing the solution
- High accuracy rate
- Seamless integration with Terminal Operating System
- User friendly
- Modular
- Customisable
- Scaleable
- Solution uses off the shelf non-proprietary hardware
- No expensive modifications to existing in/out gate infrastructure required
- Automation of previously labour intensive processes and reduced incidence of errors
- Increased security at terminal entry/exit points due to 24-hour container number recognition

AVT's VECON system was developed back in the 1990s

In use, photoelectric sensors allow the VECON system to quickly detect the presence and location of the container. Each photoelectric sensor has two components, an emitter and a reflector. Each emitter requires a 220VAC to 12VDC power supply and each reflector is a strategically positioned mirror. In order to avoid false readings created by varying truck lengths, the system detects the edges of the containers as they enter the sensors. This ensures that the video cameras are precisely aligned to capture the numbers on the sides, top and rear of the container.

To guard against false triggers created by wind and other environmental elements and to increase system reliability, dual sensors are deployed and controlled by an adjustable timing threshold. A container is detected if both sensors are blocked for more than one second. For

ECT has gone for Cosmos' Visual Gate System

each 20ft container one set of sensors is required. The sets of sensors are placed 19.5ft apart to detect that each container has travelled 20ft from the first set of sensors. The solution easily handles 1 x 20ft, 2 x 20ft, 3 x 20ft, 1 x 40ft and 1 x 45ft container configurations.

The VECON OCR system from AVT can utilise existing in/out gate infrastructure, avoiding the need for costly modifications to be made to a port's facilities

Four video cameras and four (or six for detecting three 20ft containers) sensors are used to detect the container position, precisely capturing images at exact moments. To improve the recognition rates, multiple images from each camera position are captured and processed. In a typical configuration (1 x 20ft container), twelve images are captured from four different positions. The VECON software then selects the best result based on the confidence of each recognition result. The result is then displayed to the operator in a user-friendly Graphical User Interface (GUI) format.

The hardware that is used with the solution is readily available, standard, off-the-shelf CCTV cameras, sensor and lighting equipment. A high-speed off-the-shelf PC is also required (per lane) to operate the software. Server hardware for the systems should be housed near the portal or pedestal areas using NEMA-4X equipment enclosures. A LAN connection must be provided prior to operation.

AVT claims that, unlike some of its competitors, the company's VECON solutions can utilise an existing in/out gate infrastructure and avoid costly modifications. The VECON-CON (container number recognition) module has also, AVT stated, consistently been proven to provide reliable results and outstanding accuracy rates at all times even under the toughest environmental conditions. In addition, the VECON system can be seamlessly combined in a modular fashion with AVT's other VECON OCR technology (container number, chassis, ISO codes and license plate) to provide the container number. VECON can integrate seamlessly with terminal operating systems, AVT claims, and VECON solutions are proclaimed by their provider to be cost effective enough to be installed even in the smallest of container terminals and provide an easy upgrade path as TEU volumes grow and expansion plans materialise.

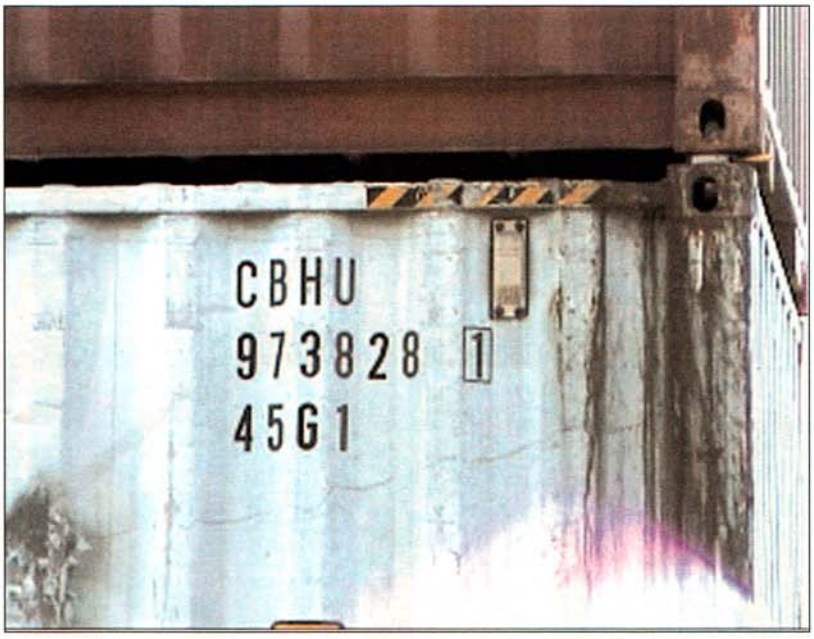
The VECON Container Damage Inspection (CDI) solution

The objective of the VECON-CDI system is to record container surfaces into easily retrievable digital images so that the operator can interrogate the container surface for damage offline. The VECON-CDI system is installed at the in/out gate or gantry so that the four surfaces (left, right, top & rear) of the container can be captured and electronically logged. The operator can then retrieve and examine the images for damage on the user interface provided. As the surface area of the container is large, four high-resolution digital cameras are used to capture the images of the container surfaces.

Coming soon!

Although not yet on the market, VECON-CRANE solutions will soon be available for addressing the recognition of in-motion containers on rail-mounted gantry cranes, rubber-tyred gantry cranes and ship-to-shore quay cranes. The installation of VECON-CON system on an RMG/RTG or a quay crane can, AVT claims, dramatically improve the efficiency of port operations. These solutions are, for example, ideal for verifying container ID numbers and ISO codes against the client's database

VECON-MIN is coming soon!



Four video cameras are used...

to ensure that containers are being loaded and unloaded correctly to and from vehicles and ships. These solutions also further automate terminal operations and efficiency at the terminal berth while safeguarding against incorrectly loaded/unloaded containers.

Rail portal solution

The VECON PORTAL configuration will soon be available for rail to address the recognition of in-motion containers on rail cars. An optional AEI tag reader module will also be available to integrate with the solution. To allow for recognition of single/double-stacked containers on rail cars, AVT's VECON rail portal solution utilises CCTV OCR cameras, sensors and lighting equipment installed on column-style portal structures on each side of the rail track. For each track that requires recognition, VECON-RAIL PORTAL software will control CPU server devices to capture and interrogate the images of the containers as they pass. To assist in the identification of containers and the rail/well cars on which they are associated, the end-user can also include AEI tag readers. This hardware will be deployed alongside the above-mentioned OCR equipment on the portal columns. The goal of the deployment will be to provide a TOS or host system an inventory list of both the containers and their associated well cars from a passing train.

Mobile Inventory Vehicle (MIV) solution

AVT's Mobile Inventory Vehicle Solution, (VECON-MIV) is currently is still at the development stage. It is a mounted system that is designed to be placed in a 4x4 truck or similar vehicle. Depending on the positioning of cameras, the numbers can be captured on double or single stacked containers. The system uses range detectors, GPS & antennae to read the container numbers at the terminal. Two video cameras and two floodlights are then used to read the container number on the surface of the container. As the container number is usually printed on a corrugated surface (introducing noise), two video cameras are used to achieve a higher accuracy rate.

In order to capture the best possible images for recognition, the cameras must be properly positioned and focused. The zoom and focus of the video cameras are adjusted automatically by the AVT system with respect to the distance detected by the range detector. This information can be passed to a yard management system to provide automated inventory as well as the location of the container. The VECON server is housed in an industrial designed, shockproof and weatherproof housing at the rear of the vehicle. OCR output and TOS data transfer are facilitated via a client supplied RF LAN network card and antenna. Bandwidth requirements are minimal, with the need only to transfer four 50k-100k JPEG images for each container interrogated.

AVT's VECON solutions have currently been installed at the following locations:

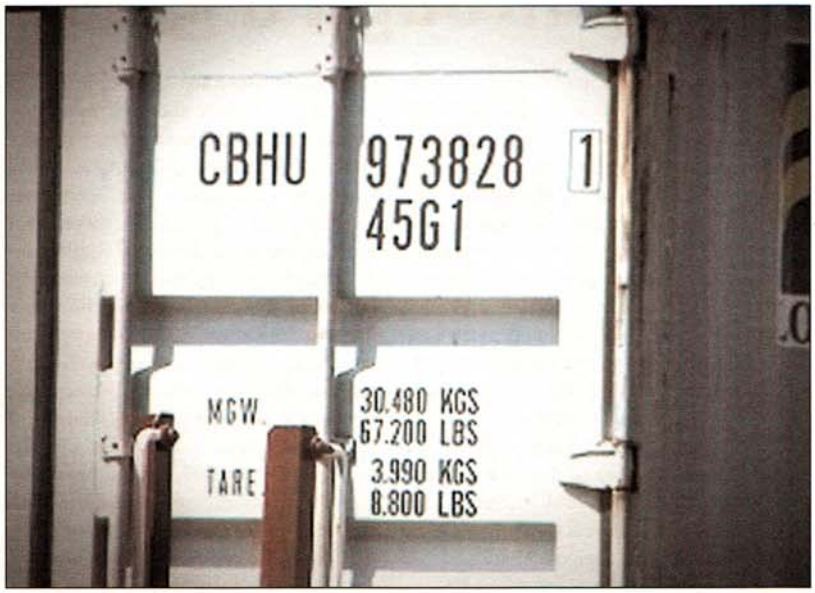
Hong Kong:

- CSX World Terminals

PRC:

- Da Lian Da Yao Wan Customs
- Da Lian Da Yao Wan Port Authority
- Da Lian Container Terminals Ltd
- Shenzhen Yan Tian Port
- Kun Shan Export Processing Area

... to detect the container's position



CONTAINER HANDLING

- Tian Jin Zhen Hua Transport Company
- Nanjing Xin Seng Wei Customs
- Shenzhen Export Processing Area
- Xiamen Export Processing Area
- Tianjin Dongfang Development Ltd

Meanwhile, in Europe...

One of the pioneers of workable OCR systems, the Belgian firm of Cosmos, recently announced that Europe Combined Terminals (ECT), Europe's biggest and most advanced container terminal operator, has decided to equip its Rotterdam Home Terminal with Cosmos' Visual Gate System (VGS) and is currently redesigning its gate infrastructure to add a dedicated drive-through gate portal - VGS is described by Cosmos as an automated drive-through gate system, equipped with a set of high-resolution digital cameras. In use VGS will ensure an easy and rapid registration of trucks and containers, with container numbers, ISO codes and each truck's license plate identified through OCR and linked with the ECT Home Terminal host system.

After an earlier 12-month test period at the new gate area, ECT was very enthusiastic about the recognition rates. In total, 15,000 trucks were analysed, with a recognition rate of 95% without comparing the results with data from the host system. The recognition rate increased to 99.5% after verification with the terminal's database. The average gate passing time was 12 seconds, yielding a capacity of up to 300 trucks per hour per lane. Today, VGS is capable of analysing 450 trucks per hour per lane, with a passing time of eight seconds.

ECT management decided to implement VGS thanks to the overall success of the trial project, which clearly showed that VGS was capable of increasing gate throughput and reducing the cost of labour. ECT opened two visual gates that were operational in the first quarter of 2002. ❑

VECON-CRANE from AVT

Through a glass darkly

The government of Canada and the Vancouver Port Authority (VPA) have commissioned gamma ray equipment that will create a 'smart border' by scanning for contraband in containers passing through the port of Vancouver. The new mobile technology, designed to complement additional manual inspections, can safely and non-intrusively inspect containers at the rate of one per minute. The equipment, purchased by the VPA for C$2.5 million, will be operated by local Canada Customs and Revenue Agency inspection officers at the three container terminals, Deltaport, Centerm and Vanterm. The port of Vancouver will be the first Canadian port to use this technology.

'Canada Customs is committed to ensuring the safety and security of cargo entering and leaving the country', stated Blake Delgaty, CCRAs Regional Customs Director. 'The container screening equipment will complement our existing technology and significantly enhance our abilities to protect the border and to facilitate low-risk trade here in Vancouver.' 'With more than one million containers passing through our port each year, this technology will further enhance our port as a secure and expeditious place for business', noted Captain Gordon Houston, president and chief executive officer of the Vancouver Port Authority. 'It is our hope that the new technology will now set the stage for the electronic bonding and pre-clearance of US-destined cargo through our port.'

The new technology is claimed to be safe, secure and fast. With the assistance of gamma ray scanning, operators view radiographic images of containerised goods on a computer to quickly and easily identify hidden compartments associated with the transportation of stolen or smuggled goods. They are then able to determine if commercial cargo is consistent with the declared manifest. Data can then be saved, transmitted and shared with other agencies responsible for cargo verification. Once scanned, the containers are sealed and tracked to their final destination.

「我支持！香港科技發展」計劃之IT檔案III

HI-TECH WEEKLY RTHK 香港電台

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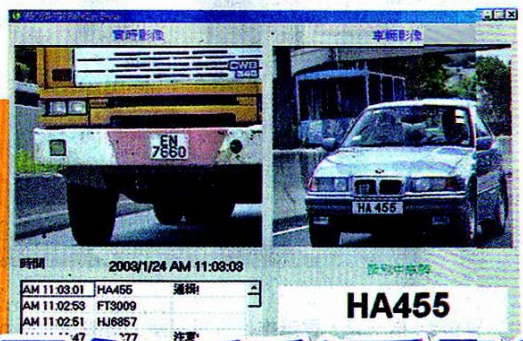

亞洲視覺科技 車牌號碼無所遁形

由學院研究走到商品化的道路向來崎嶇，離開校園要面對的主要問題是資金不足。關於科技研究的項目和產品開發，要找商界支持並不容易；以科技為本的公司若要走出重圍、闖出明天，一大出路是尋找風險基金的投入。

亞洲視覺科技有限公司今天便走出他們的光明大道，其車牌辨識系統發展成多樣化的產品，更應用到停車場、貨櫃碼頭、高速公路等，銷售市場亦由中港兩地拓展至全球多個國家地區。當技術成熟、資金充裕、公司上軌道時，是時候向下一個目標（可能是上市）進發了！

大家未必聽過「慧光」（VECON）這個名字，但它是一套取得美國專利號碼 6,026,177 的影像光學文字辨識系統。本港落馬洲、文錦渡及沙頭角三個陸路邊境管制站、上海亞洲聯合集裝箱碼頭，以及美國加州長堤碼頭，均用上由這套技術發展而來的產品。而最厲害的是，它能讀取並識別靜止或移動中的汽車車牌號碼或集裝箱號碼。

一個專利的誕生

慧光的「生父」李春茂博士，將他讀博士學位時一篇關於視覺科技的論文，慢慢發成一套可賣錢的系統。這一切的轉變，由他在新加坡國立大學系統科學院擔任研究員期間，為新加坡港務局成功設計及安裝世界上首套集裝箱號碼自動識別系統開始。

1992 年，他到香港科技大學當教授，遇上當時的學生黃永健，並偕他一起研究這門識別技術。直至 1997 年，二人從香港科技大學取回「慧光」的知識產權，並成立亞洲視覺科技有限公司。二人由師生關係演變成生意拍檔，並由李春茂博士擔任公司主席及總裁，以進一步發展及推廣慧光技術，促進其商業化。

商品化要夠實際

在公司正式成立前的一年，他們小試牛刀首次將「慧光集裝箱號碼自動識別系統」安裝於上海亞洲聯合集裝箱碼頭。可是，那次他們遭當頭棒喝，因為原來系統在強烈日光及特殊的環境下未能完全發揮效用。這提醒了他們，雖然產品通過研究室的實驗，亦必須拿到實際環境去測試，才可修改及調校成完整的產品。李春茂博士自此便經常走訪世界各地的研討會及展覽會，爭取和商家及業界交流，以便了解各地市場的實際需要，繼而發展出新的產品來。

▲ 李春茂博士認為，一種新產品並非在實驗室裏創造出來的，科學研究一定要有實在的環境進行系統應用測試才可，否則難以發現在實際應用時所遇到的問題，以致不能提高產品的質量和可用性。最重要的是，要了解用家和業界的需要，根據市場需要而做。

風險基金中求勝

單靠努力研究當然未夠，商品化過程中最重要的是資本。亞洲視覺科技有限公司也不例外，它於 2000 及 2001 年間先後獲得首富國際投資有限公司及滙打直接投資有限公司注入風險基金成為公司股東。有了充裕的資金，產品開發便火速前進。在這幾年間推出的產品數量不斷增加，應用範圍由停車場、貨櫃碼頭，擴展至紀律部隊、各條隧道及屋苑等，更推廣到世界各地，包括香港、內地、台灣、新加坡、南韓、日本、巴西等，而今年更計劃推展至歐洲地方。目前，該公司的 80% 收入來自車牌號碼識別系統的銷售，雖然每套售價只是港幣數萬元，但毛利接近 80%，故它去年底憑過去三年錄得 378% 收入增長，獲全球第二大會計師事務所——德勤會計師行評選為「亞太區高科技高成長 500 強」企業之一。

▲ 由於各地車牌都有本身的一套編制方式，所以每進軍一個市場，都要搜集數十萬個數據樣本，以供辨識系統學習。

用於陸路邊境管制站

最近，它更趕及配合 24 小時通關的措施，完成在落馬洲、文錦渡及沙頭角三個陸路邊境管制站、合共 42 條出入境通道裝設車牌辨認系統工程。透過閉路電視鏡頭配合系統，在拍攝了過境車輛的圖像並將車牌數碼化後，會自動記錄車牌號碼、過關時間甚至車身顏色。預計新系統可令每輛出入境車輛的檢查時間節省五秒，以及協助海關核查目標可疑車輛。這項工程亦為它帶來千多萬元的可觀收入。

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技術解碼

車牌或貨櫃上的編號會受到各種因素，如生銹、泥濘、油漆剝落、字體褪色、光線強弱等影響字元的清晰度。「慧光」技術的出現不但能解決這些問題，且能更快、更準確地識別字元。無論字元的大小、形狀、厚度和距離有分別，系統均能讀取；而在字元識別方面，系統能將讀取到的字元自動縮放，使誤差降至最低。該系統可在 Windows 及 UNIX 平台上運作，處理及識別每幅圖像的平均時間少於 0.5 秒。

▲ 中國、日本、加拿大、澳洲甚至世界各地的車牌都各具特色，但「慧光」系統都可一一識別。

解碼程序

Step 1

▲ 拍攝車牌或貨櫃號碼的圖像。

Step 2

▲ 將模糊的圖像逐個數位分割，並獨位進行辨識。

Step 3

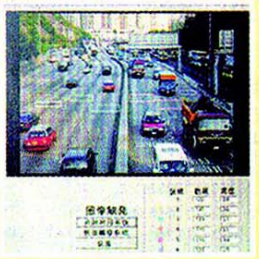
856VRH

▲ 經電腦分析後得出結果。

其他辨識產品

ITS–TrafficStat：路段交通訊息系統

此系統毋須在路上鋪設地感駛線圈，只需透過圖像分析和識別技術，便可從攝錄機中實時找出車輛，並分析車輛的長度、寬度、行駛方向等訊息，以便估計車速、統計汽車流量及提供最新的路面情況。



VECON–VLS：停車場車輛自動定位系統

系統會自動記錄停車場內所有車輛的車牌及其停放的車位號碼，有助停車場管理員為車主尋找車輛的停放位置及安排車位，直接減少人為的錯誤及有助加強保安。

VECON–MIV：集裝箱自動定位系統

貨場管理員駕駛設有相關系統的車輛，便可沿途進行檢查裝箱數量、號碼與位置等，並進行清點工作，從而提高管理效率、降低成本。

ROBOEYE：移動電眼車牌號碼自動識別系統

此系統是世界首創的手提車輛監測系統，可安裝於行駛中的警車，亦可在天橋及路邊臨時設卡使用，以便自動監測公路或車道上的違例車輛。同時，亦可識別高速行駛中的車輛之車牌號碼，並即時與車形對比系統搭配使用，以便偵破被竊車輛，並將資料傳送至總部。

不斷求變 力臻完美

科技與市場是不可分割的，亞洲視覺科技有限公司雖然相信自己的技術比其他同類產品優勝，但市場策略一點也不怠慢——不斷推出新產品不在話下，當產品價格與對手拉成均勢時，更想盡辦法突出自己；而推出「現金退回保證」計劃便是一個聰明的做法。在該計劃下，若用家對產品不滿意可要求原銀率還。李春茂博士表示，這樣的保證代表他們對產品有信心，亦希望藉此讓用戶感到安心。

為了減低營運成本，他們更找來幾家系統整合商幫忙尋找車牌樣本，以及進行系統軟硬件的安裝及維修等工作，這全都有助公司專注於本身的產品開發工作上。