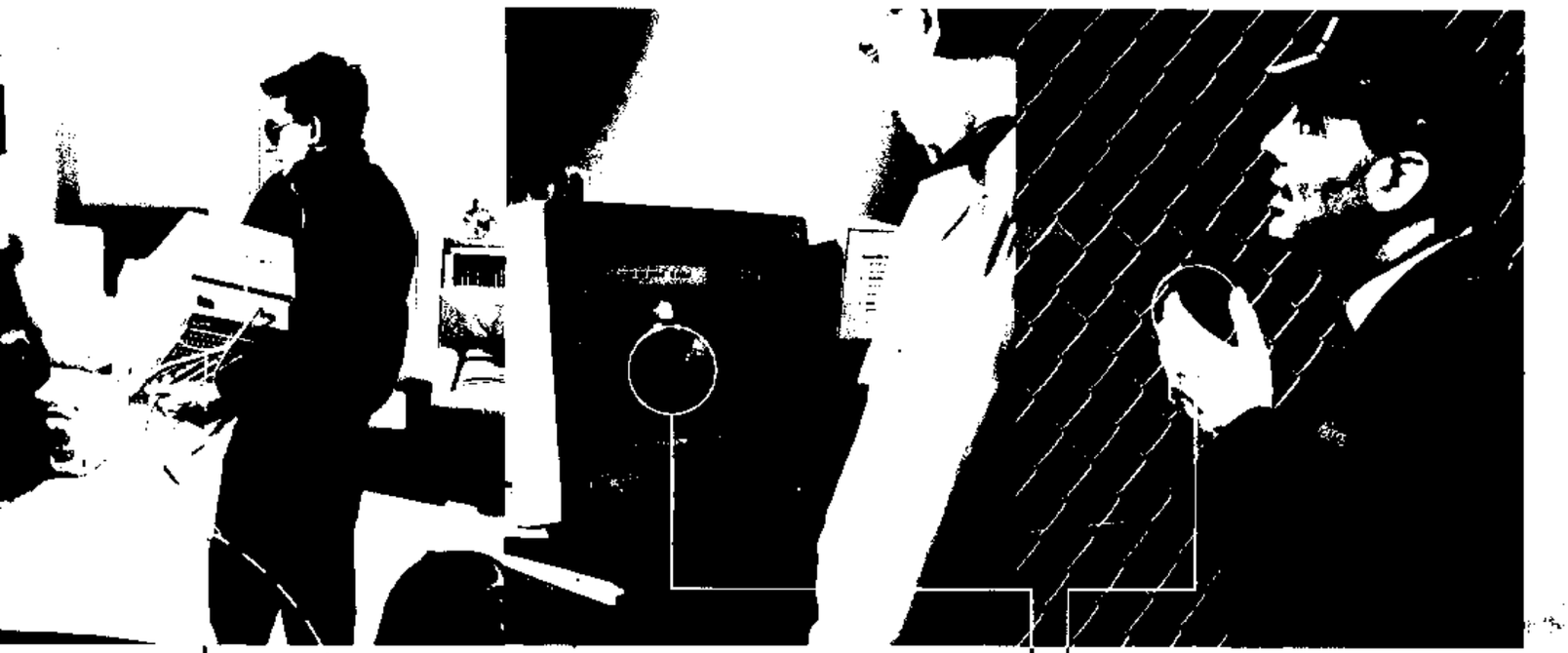
Roke
Manor
Research

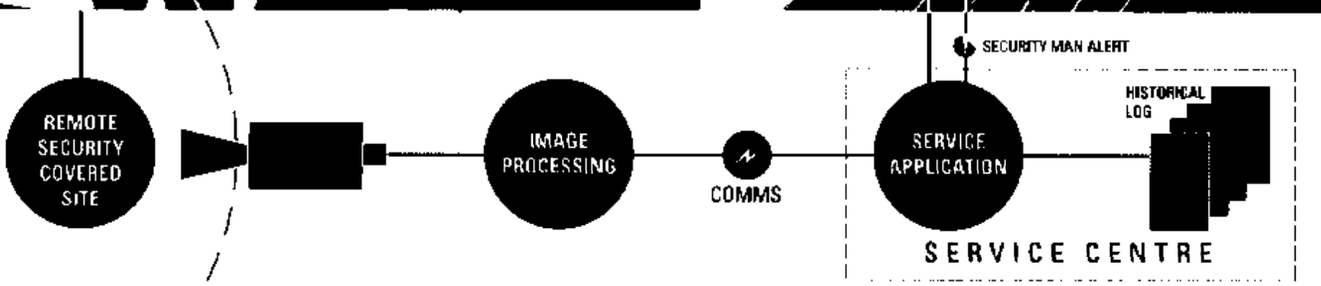
Security

Image Processing for Enhanced Performance

Roke Manor Research
A Siemens Company

Security - Image Processing for Enhanced Performance





Security - strengthened by the power of Image Processing

Automatically and without manual intervention, operators can be alerted, alarm systems activated, video incident data recorded.

Image Processing enhances Security capabilities by detecting incidents, recognising items, tracking people and objects and reading numberplates and other characters.

The Image Processing capabilities of Roke Manor Research will provide a solution to fit the requirements. We've built systems, developed custom solutions, carried out studies, researched and developed algorithms, and created products.

Processing images:

We know how to process information

from: CCTV, video, digital cameras, film.....

to detect: intruders, escapees, stopped vehicles, stationary objects, defects, wear, obstacles, targets....

to measure: object position and orientation, object size, vehicle speed, traffic flow, surface shape....

and to track: people, surgical instruments, aeroplanes....

to read: numberplates, containers, aeroplane tailcodes....

to recognise: car types, car colours, known objects

Building Systems

We can build systems using the building blocks of

- Software from our in-house library
- Standard PCs
- Standard cameras

or

- if the problem is non-standard, our technical experts will tailor a solution

Among the systems Roke Manor Research has developed, installed and maintained are:

KENLEZ - x3 improvement in efficiency in processing speeding violations
A speed enforcement system for the Highways Police in the Netherlands which is currently processing one million violations a year.

ARTEMIS - improving traffic flow and safety
An Automatic Road Traffic Event Monitoring System, providing facilities to detect incidents and measure traffic flow parameters.

AMETHYST - reducing false alarm rates
Perimeter Security System using video processing to automatically screen conventional intruder alarms.

Finding Solutions -
Custom Development and Consultancy

We solve...

unusual problems

and develop...

innovative solutions

using the expertise of our consultancy team.

We also...

undertake studies to assess current methods and develop new techniques

Working with Partners

Roke Manor Research supports a wide client base working under contract or in collaboration with industrial or government partners at home or abroad.

Our Image Processing work has included diverse clients and partners such as Railtrack, Police Scientific & Development Branch, Gillette, The United Medical & Dental School, DERA and MoD establishments, and Siemens companies throughout Europe.

Roke Manor Research

The Quality of Roke Manor Image Processing

With the expertise in our group, and the superb support facilities of Roke Manor Research, we provide a full range of services in image processing, ranging through

- System Design and Installation
- Custom Development and Consultancy
- Algorithm Research
- Off-the-shelf Products

Roke Manor Research offers a complete service to develop novel end-user applications for security, identification, inspection and measurement, using image processing, signal processing and pattern recognition techniques

Our services are built on

- a broad range of development capabilities
- experience of challenging practical applications
- developed products
- skills in important technical areas
- experience in working with a range of clients in industry, Government agencies and our parent organisation, Siemens.

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Roke Manor Research

Iris

automatic number plate reader

Roke Manor Research
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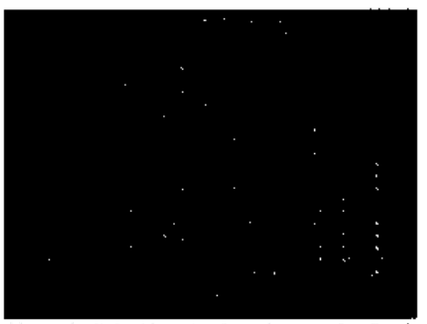
Iris - effective and flexible ANPR using personal computer hardware

Iris is an Automatic Number Plate Reader (ANPR) based on a standard PC platform and low-cost multimedia video capture board.

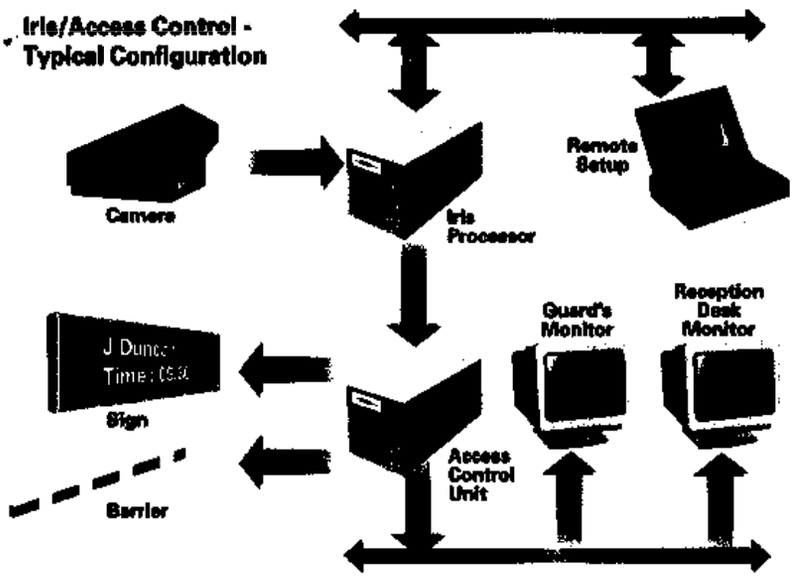
End users can now exploit the benefits of real-time automatic vehicle identification without incurring the premium hardware costs of existing systems.

This ANPR has been designed to operate with video from conventional or IR-illuminated cameras.

With vehicle detection generated from the video signal itself, the system is ideally suited to compact, covert and mobile roadside applications.



Iris can be linked to a database to store details of vehicle movements.



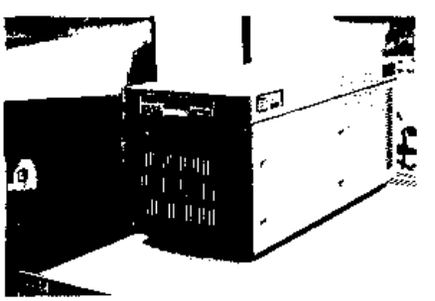
Applications

Iris ANPR is a flexible tool which can be used in a range of applications

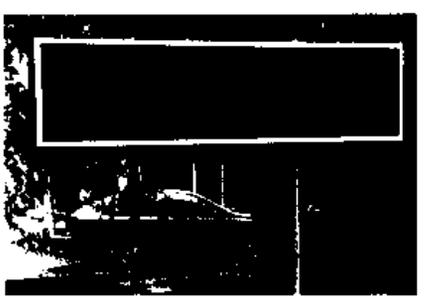
- Access control
- Security
- Traffic monitoring
- Route surveys
- Speed and licence enforcement
- Customer information and signage

Iris can also be extended to perform recognition of other identification marks, such as container codes and railway rolling stock.

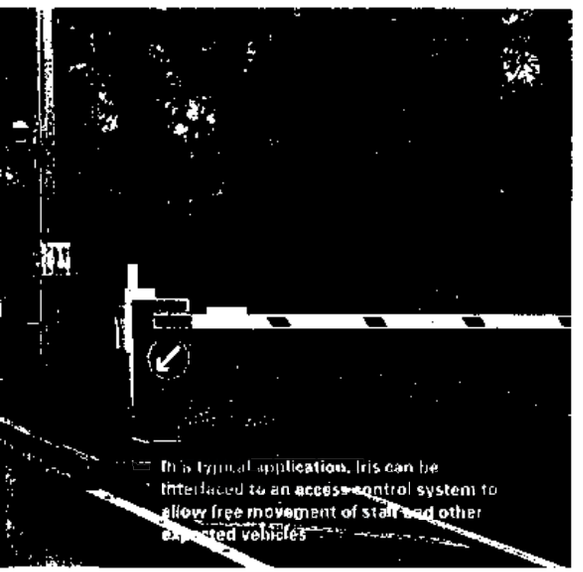
Iris' low cost makes it suitable where budgetary constraints may have prevented ANPR installation in the past - such as rat-run surveys, smaller industrial and office sites, hospitals, supermarkets - as well as in major systems such as motorway installations and high-value security.



Iris is implemented on standard PC hardware to provide a flexible, low cost system.



Linked to a display sign, Iris can be used to welcome visitors or give specific directions.



In a typical application, Iris can be interfaced to an access control system to allow free movement of staff and other expected vehicles

Features

Iris' features include

- Fully automatic and fast operation
- Standard video input
- Low-cost hardware platform
- Single or multi-national plate sets
- Vehicle detection from video or from externally generated signal
- Windows-style graphical user interface for minimal configuration time

Iris can operate reliably in a range of

- traffic speeds
- lighting and weather conditions
- viewing geometry

Additional features are

- Optional post-processing to validate recognised text strings - hit list processing
- Results stored to disc or communicated to remote receiver
- Data storage options from time-stamped text logging to vehicle images
- JPEG compression of images
- Selectable storage of full resolution number plate images
- Optional operation with pre-recorded material

Processing Platform

The standard Iris processing platform consists of

- Pentium PC with PCI bus
- Windows NT
- Matrox Meteor video capture card

Because very efficient processing algorithms are used, modest processors are adequate for most applications. Results can be delivered within 0.2 sec on a 166 MHz Pentium processor, sufficient for motorway-speed traffic. Other PC-based configurations are possible if special processing is required.

Iris configuration can be performed remotely using any office PC or laptop with an ethernet port, running Windows 95 or NT

System Interfaces

Video input may be colour or monochrome in NTSC, PAL, RS470, CCIR formats. Each processor chassis can take up to 4 simultaneous video inputs

ANPR data can be stored or output on

- local log files
- serial or ethernet ports for communication or display

Installations

Iris is being used at several operational sites in Europe for access control and traffic monitoring.

Two specific examples illustrate Iris' use as a black box component and as an integrated part of a bespoke system.

- At Roke Manor Research's own site, Iris is interfaced to the FrontDoor access control system available from SISYS Ltd. IR camera/illuminators, from Pearpoint Ltd, provide the video input. Iris simply transmits ANPR readings to the FrontDoor, which performs database searches and controls barriers and a sign. This system allows Roke Manor Research's staff to come and go freely, while unexpected visitors have to stop at the gate to receive directions from security staff.
- Iris is at the heart of a bespoke system developed for the Dutch Police in Driebergen to process film from mobile speed cameras. This system was developed in close co-operation with Siemens Netherland NV and the Dutch KLPD. About 4000 images per day can be processed by this system, which reads alpha-numeric annotations showing date, time and vehicle speed as well as number plates from each frame.

Linked to a vehicle database, Iris can help security staff by identifying expected vehicles as they arrive.

With Iris, reception staff can be advised of visitors' details before they reach the front desk.

Roke Manor Research

Iris can use conventional or IR cameras which output video in standard formats. Here a camera is used with an IR illuminator to provide 24 hour operation.

Once cameras and processing units are in place, Iris can be set-up remotely and set to work. A graphical user interface program, running on a laptop computer, simplifies remote control and monitoring operations.

Availability and Integration

Iris is available from Roke Manor Research Limited or from selected agents or distributors who are specialists in particular applications.

Where Iris forms part of a requirement for a bespoke system development, Roke Manor Research is able to draw on the resources of its Business Units operating in

- Sensors
- IT and Networks
- Radio Communications
- Products

Iris may be provided in a number of forms, ranging from pre-installed on a processing platform to installed and set up on customer's hardware. After physical installation, site-specific configuration of parameters may be performed remotely using dial-up facilities.

Iris is licenced on a per-camera basis for on-line systems. For evaluation purposes, limited single-machine licences may be available.

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