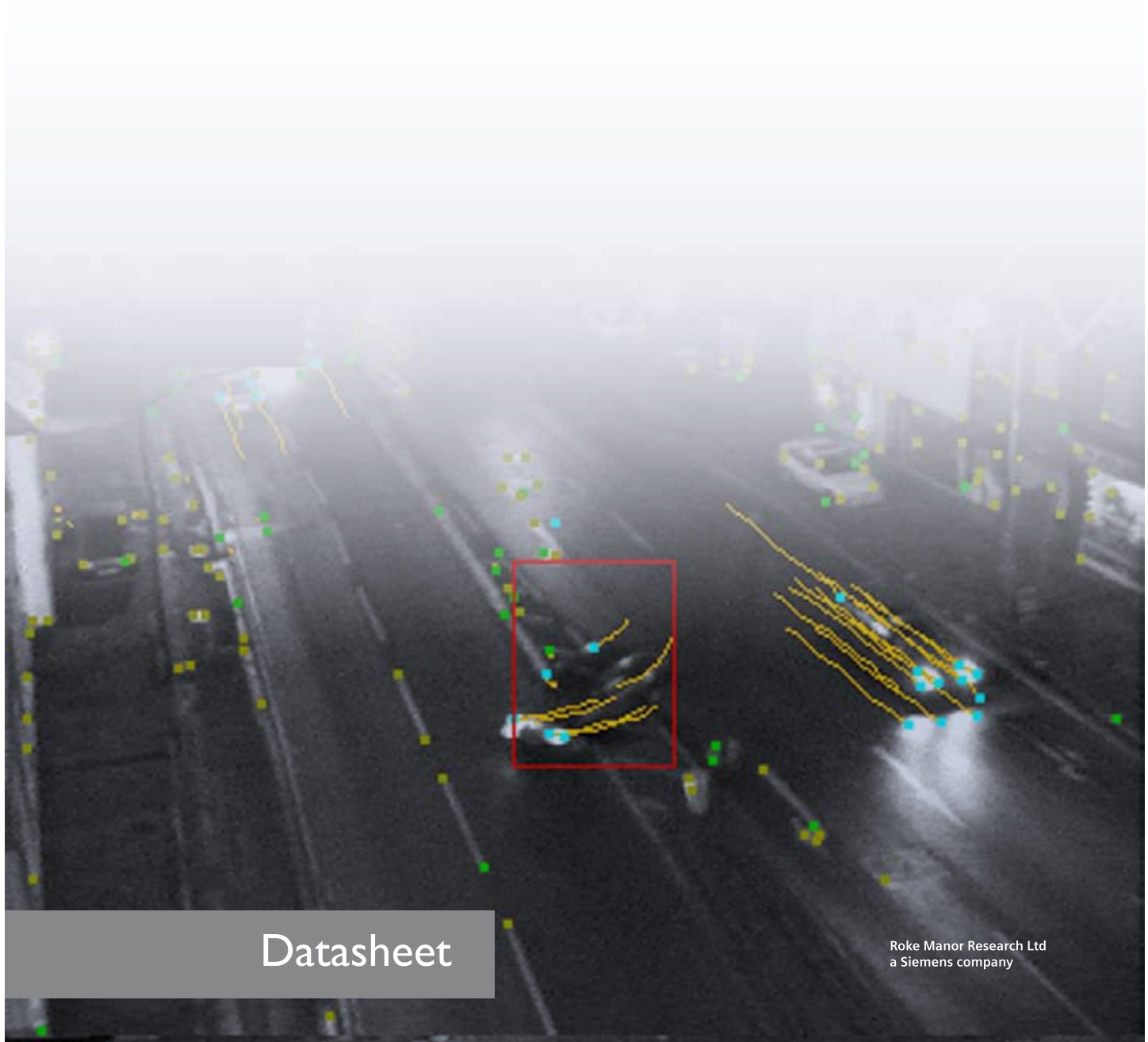


## Video Motion Anomaly Detection (VMAD)

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As CCTV systems become commonplace in security, traffic monitoring and safety, improved methods are needed to monitor the video streams that these systems provide. Roke Manor Research's novel image-processing system, VMAD, provides a simple and flexible way of monitoring a range of CCTV applications, thereby improving the efficiency of staff and CCTV resources.





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## How VMAD works

Unlike conventional video motion detectors which require manual programming to define areas of interest and motion parameters, VMAD learns the 'normal' movements in a scene and triggers an alert when unusual activity occurs.

This intelligent and flexible labour reduction tool can be used in a wide range of CCTV and security applications. Using a combination of real time alerts and active video recording staff can both react to events as they occur and easily locate past events when needed.

## VMAD's features include:

### Automatic learning, detection and analysis:

VMAD's intelligent learning capability eliminates the need to programme detection schemes for events which are difficult to define or foresee, resulting in:

- Reduced set-up overheads for individual cameras - simply plug in the video feed and the monitoring begins
- Adjustment to new behaviour as it becomes commonplace, screening out alarms which are no longer relevant.
- More effective policing – provides an early alert based on suspicious behaviour.
- Accommodation of drift in system parameters over time.

### Analyses image features rather than changes:

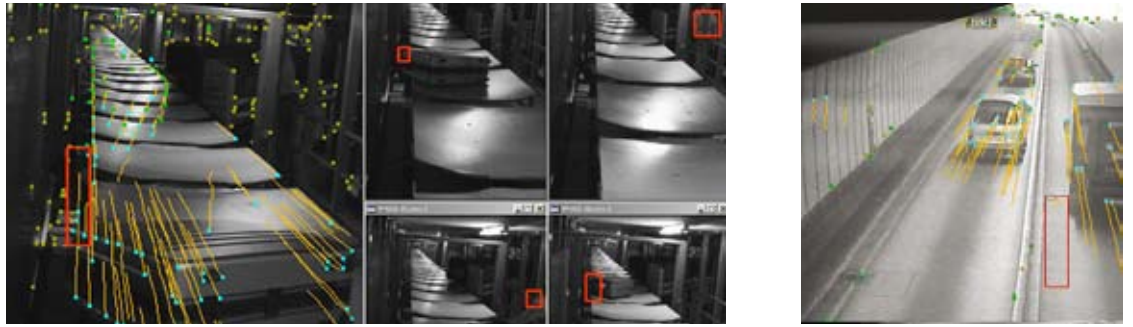
- Changes in illumination levels have minimal impact on performance
- Suitable for indoor and outdoor use in varying image brightness
- No training required to recognise objects or events of interest

### Analyses the characteristics of hundreds of features every frame:

- Detects abnormal motion even where motion is present
- Can be used in situations where different types of movement occur within the scene
- Features can be used to determine camera motion – meaning VMAD can be applied to moving camera solutions

### Integrates with existing CCTV infrastructure:

- Digital or analogue feeds
  - Configurable alarm triggers
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## What can VMAD detect?

VMAD detects anomalous behaviour, which varies from scene to scene. Typical examples of scenarios in which VMAD could be deployed include:

- Traffic travelling the wrong way on one-way roads, or traffic on the wrong side of a dual carriageway
- Pedestrians or animals in road tunnels or on roads
- Intruders climbing over a fence
- Somebody running in an area where people usually walk
- Swerving vehicles
- Pedestrians crossing railway lines
- Traffic coming to a halt in amongst normally flowing traffic
- Excessive speeding, for example near school gates.

Our research team has a unique breadth of skills in image processing, including feature extraction, pattern recognition and image enhancement. We developed the award-winning Hawk-Eye ball-tracking technology that revolutionised the TV coverage of Test cricket. We also have expertise in CCTV, security and transport applications and 3D computer vision for robotics and instrumentation. We understand the need for efficient, real time, processing algorithms and robust techniques able to handle data from real-life situations, and know that these must be implemented in end-to-end systems to meet customers' exact requirements.

Roke's portfolio of image processing techniques are used to extract meaningful information from video and 2D or 3D images.

These image processing techniques can be customised to your needs and include real time extraction so data can be obtained from live video feeds.

For further information on Roke's capabilities in image processing, please contact us.

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**For further information  
please contact:**

**Emma Brassington**

T +44 (0)1794 833288  
F +44 (0)1794 833433  
[info@roke.co.uk](mailto:info@roke.co.uk)

**Marketing department**

T +44 (0)1794 833455  
F +44 (0)1794 833433  
[info@roke.co.uk](mailto:info@roke.co.uk)  
[www.roke.co.uk](http://www.roke.co.uk)

**Roke Manor Research Limited**

Roke Manor, Romsey, Hampshire SO51 0ZN UK

T +44 (0)1794 833000  
F +44 (0)1794 833433  
[info@roke.co.uk](mailto:info@roke.co.uk)  
[www.roke.co.uk](http://www.roke.co.uk)

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