# Solution Verticals

There is a greater than ever need to discover unknown threats. Even if there is already a surveillance monitoring system in place, ARVAS could still surface activities you might not have realized were happening amidst all the other activities simply because these events had gone unnoticed. ARVAS can be implemented as your first line of defence helping to sieve out as many abnormal events and behaviours as possible for operators to scrutinize. Hence it can be applied to the different industries, extending analytics coverage to potentially every camera.

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| **Border Security**<br><br>As new global threats emerge, governments are stepping up the security at their borders to enhance homeland security. From the need to monitor for suspicious behaviour and activity, unlawful entry and exits, to filtering and identifying any vulnerabilities of the border control and surveillance, ARVAS can be deployed as a first line of defence for surfacing abnormalities. | **Enterprise and Industry**<br><br>Many organizations have constantly live streaming surveillance video which are largely unmonitored. This produces no value whatsoever to the organization. ARVAS can convert these live streaming videos to value by discovering unusual activities which can lead to improvements not only in areas of security but also safety, operations and maintenance as well. This results in a better return of investment for a video analytics system. |
| **Critical Infrastructure and Government**<br><br>Critical infrastructures remain attractive targets for attacks by intruders with hostile intents. However, the protection of these infrastructures should go beyond the usual perimeter and fence intrusion provided by conventional rule-based video analytic systems to discovering abnormal activities and behaviour within these facilities themselves. More often than not, misdemeanours, crime and security threats begin deep within the buildings unnoticed by security staff who are more focused on the external environment. Vulnerabilities in such cases could be surfaced for attention. | **Public Spaces**<br><br>Public spaces represent one of the most challenging scenarios especially for rule-based video analytic systems because of the complex scenarios from crowd movements and unpredictability of behaviours. Inappropriate application of rules often lead to high false alarm rates. ARVAS can discover almost a limitless possibility of abnormal events and behaviours which could represent deviations from the normal patterns. This could lead to better crime prevention and a more proactive approach to enhancing safety and security. The use of ARVAS in-place of rules in such scenarios can also result in lower false alarms. |
| **Smart and Safe City Surveillance**<br><br>The need for a video analytics system which can provide 100% coverage for all the thousands of deployed cameras in a city | **Transportation**<br><br>Transportation facilities are the biggest movement of crowds. They also represent attractive targets to cause maximum human |

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| surveillance all points to the fact that a comprehensive video analytics system must be both cost effective and efficient in providing analytic coverage on such a large scale. ARVAS' ability to find abnormalities in almost any camera view and scenario is ideal to play this role of a Big Video Data Mining system providing unmatched monitoring and surveillance capabilities. | casualties. The need for public safety in such places is critical and also represent the greatest challenges in terms of the number of surveillance cameras that need to be monitored. ARVAS provides the best means to automate such monitoring tasks so that available manpower and resources could be put to more targeted use during emergencies. ARVAS will also play a significant role in sieving out and surfacing abnormalities from the day-to-day hustle and bustle especially during peak hour traffic. |

The use case scenarios can also be categorized into the following to address not only security but safety, operations and maintenance concerns. The below list gives a better picture the kind of abnormal events which can be discovered by ARVAS.

** Note: The list is not exhaustive as ARVAS is able to discover limitless possibilities of abnormal behaviours so long as they represent deviant patterns in a scene.*

## Security:

- Out-of-ordinary behaviours which might signify unknown threats,
- Unruly or aggressive behaviour,
- Theft such as removal of assets,
- Suspicious behaviours such as loitering,
- Persons carrying unusual objects,
- Illegal entries and intrusions,
- Dubious or unscheduled worker activities,
- People walking against traffic flow, jaywalking, climbing over barricades,
- Unusual crowd activities, aggregations or sudden and massive crowd dispersals in an area.

## Safety:

- Unattended young children playing and wandering into train stations,
- Children dashing and playing on the roads or public spaces like train platforms or escalators,
- Mischievous kid behaviours like jumping over barricades or barriers,
- Vehicles going in wrong directions, parking illegally or making illegal turns,
- Crowd gathering on the roads,
- Anti-social behaviours like fights or tussles which may cause public disturbances, vandalism, aggressions, theft,
- Unauthorised erection of scaffolding.

## Operations and Maintenance:

- Overcrowding and overflow of queues at taxi stands and train platforms,
- Stucked prams at gantries leading to traffic flow obstructions,
- Traffic obstructions and detours due to illegally parked vehicles,

- Fare evasions at train stations,
- Detection of video defects or corruption to live streaming video,
- Disruption to escalator services and system breakdowns,
- Workers carrying out maintenance works without following proper procedures,
- Deviations from routine and normal activities like maintenance works at odd hours,
- Changes to public environment such as new installations.

## About Vi Dimensions

Vi Dimensions was founded in 2015 with the simple idea that video analytics can be done in a much better and efficient way with the ultimate goal to revolutionize safe city surveillance harnessing thousands of cameras.

The company uses its patented algorithms and proprietary unsupervised Machine Learning techniques to derive meaningful information and actionable insights from live streaming video data. This translates to immediate value to the customer not only in terms of security and surveillance but also improves the organisation's safety, operational and maintenance aspects.

Our advanced and innovative system analyses vast amounts of real-time streaming (or archived) data autonomously for abnormal behavior and events. It does not require human intervention to automatically discover dominant motion patterns which means that unlike conventional systems, it does not require a human to specify rules necessary for detection.

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