Idris IN ACTION

Application: Enhanced PIPS' SpikeHD camera

Idris enhanced PIPS' SpikeHD Camera

PIPS TECHNOLOGY
A Federal Signal Company

Background: Becoming an Idris Technology Partner recently enabled PIPS to develop a new Idris-enhanced camera destined for the ITS market. The Idris software will reside on board the PIPS' SpikeHD camera.

Product detail: PIPS SpikeHD Camera optimised by Idris on one platform offers a unique and enhanced suite of applications:

- Instantaneous/differential/enforceable speed
- Access control & classification,
- White listed registration plate recognition,
- Profile based classification,
- Bus lane enforcement & detection,
- All combined in ONE box!

The product incorporates the highly accurate automatic license plate recognition (ALPR) capabilities from PIPS with the loop based detection and classification accuracy of Idris software. The compact design specification focuses use of the product on sites where large infrastructure cannot be supported. Both the camera and the recogniser processor are housed within a single IP68 sealed enclosure. It is designed for use in the highest performance applications where it is necessary to provide the ALPR function across a full 4 metre carriageway (3.5m with 0.5m overlap/ 11.48ft with 1.64ft overlap/137.8in with 19.69in overlap).

Marrying the Idris data with the ALPR data generates information such as:

- Average speed
- Vehicle length
- Class and headway.

The unit comprises a high resolution monochrome CCD camera with high sensitivity in the infra-red (IR), surrounded by two banks of IR LEDs. Patented filter / flash technique gives suppression of headlights and bright sunlight. Field-by-field control of camera parameters allows the use of the patented 'triple flash' technique to reduce problems of plate-to-plate variability.The 264 wide-angle LED's allow illumination of up to 4 metres (add feet) of road and allows the camera to read multiple number plates in a single field of view.

How it works: Idris smart loops register a vehicle travelling over the loop site and track it for the duration of its time within the site. All the data from the loop signature is collected by Idris and processed to provide a Per Vehicle Record (PVR). At the same time as Idris is collecting the data to create each vehicle's PVR, it is registering each ALPR

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read that occurs, noting the lane and time of each read. As a vehicle's PVR is being created, Idris analyses the position of ALL vehicles over the site with respect to all ALPR reads which might be associated with the vehicle of interest. It then uses all the spatial information available to match the vehicle it is processing to the correct ALPR record, associating the corresponding number plate to this vehicle. If no acceptable ALPR record is found for a vehicle, a trigger is sent to the camera to take an overview picture of the vehicle for enforcement purposes.

In addition to associating each license plate to a vehicle, Idris notes the location of the read with respect to the site and summarises the read location information for diagnostic purposes. This enables early detection of bad camera adjustment or impending failure indicated by a changed read location or high spread in the locations.

The Vehicle Enforcement System (VES) application software offers socket based transfer of Summary and Evidential Records via either push or pull protocols with full key handling, authentication, encryption and local storage of up to 60,000 events. Pre and post event contextual images showing the direction of travel may also optionally be captured along with the direction of travel.

The camera has four or more powerful processors but, with 50ftps (frames taken per second) plate-finder there is little additional processing required for larger images, so the majority of this is available for improved processing. Real-time JPEG hardware compression is provided for both IR and colour images and can be used to provide a real-time IP video stream of the traffic. This can be used to record the image stream for ground-truthing.

The power requirements and communication structure remain the same with GSM, GPRS, WiFi and Ethernet as standard. Both the SpikeHD and Idris run on embedded Linux operating systems offering standard Linux connectivity and encrypted links. The product offers a pluggable terminal-strip rear connection for rapid cable termination in the field, whilst maintaining a hermetically sealed, purged camera. The standard metal gland cable seals have greater robustness and allow up to 3 separate cable entries for connection to DSRC or other equipment.

Outcome: This innovative and cost effective product will serve the needs of a variety of applications such as road user charging, tunnel safety, enhanced incident detection and lighter open road tolling applications. This product combines two of the most well established and proven technologies available for road user charging and congestion mitigation available today.

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