NEOLOGY IDRIS AVC SOLUTION

Neology Idris Automatic Vehicle Classification Solution

Tolling customers typically face two major challenges – how to accurately classify a vehicle in order to apply the correct toll rate, and in Open Road Tolling (ORT), how to identify a vehicle that does not have a valid RFID or DSRC tag. In challenging ORT applications, vehicles can be in any position in the roadway (middle of a lane, on the shoulder, or straddling two lanes), traveling at high speeds, towing a trailer, closely following or being followed by another vehicle, or have six or more axles. Any misclassification, whether it is due to bad weather or other factors, can lead to public relations problems, including customer complaints, refunds, and negative media attention. While Automatic License Plate Recognition (ALPR) cameras can convert vehicle license plate images into a license plate number, these cameras typically require a "trigger" from an external sensor in order to determine the best time to capture a vehicle's license plate image. Missed or inaccurate triggers can lead to missed license plate images, which in turn leads to missed revenue, or it can lead to increased operating costs by having to perform additional manual image reviews.

The Neology Idris Automatic Vehicle Classification (AVC) system was designed to address these challenges using sophisticated software algorithms. This software runs on a dedicated hardware platform that is able to generate highly accurate results. A typical Neology Idris AVC system includes three components:

- Inductive loops installed in the pavement
- AVC Software
- A dedicated processor that runs the AVC software

The Neology Idris AVC system surpasses accuracy levels that were previously achieved using multiple detection technologies. With a carefully designed loop array in each lane, many capabilities are available, including: precise vehicle separation detection, axle-based vehicle classification, RFID tag correlation and VES triggers for ALPR cameras. These can be achieved using a single integrated system to provide multi-lane, free flow tolling with high accuracy.

The performance of the Neology Idris AVC system is not affected by external weather conditions, such as snow, rain, fog, smog, etc. Snow plows or heavy duty equipment will not damage loops that are properly installed in the pavement. As a result, the maintenance cost for the Neology Idris AVC system is low because there are no exposed sensors or moving parts.

Features

- Intelligent profiling and wide area tracking for multi-lane free flow tolling
- Supports ORT, Single Lane Free Flow, or post-classification
- Handles Stop-n-Go traffic
- Supports vehicle classification and/or Video Enforcement System (VES) triggers
- Supports single gantry design
- Loop-based vehicle detection and classification
- Reports vehicle length, axle count, speed, direction, position, and more.
- Performance is immune to bad weather conditions such as rain, snow, smog, fog, etc.
- Supports reversible lanes
- Optional Automatic Vehicle Identification (AVI) Correlation

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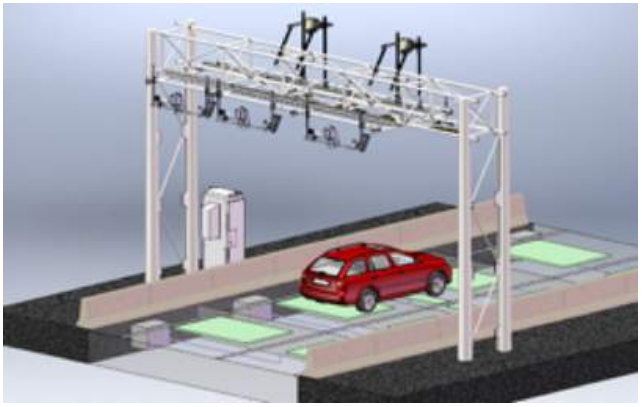
Loop Based Vehicle Classification Technology

Neology Idris AVC starts with loop detection technology. Analog loop data generated by a detector is passed as digital information to the AVC processor via a serial output. This loop output is commonly referred to as a loop signature. This signature contains a wealth of information that is used by the AVC system to determine and track events on all loops simultaneously.



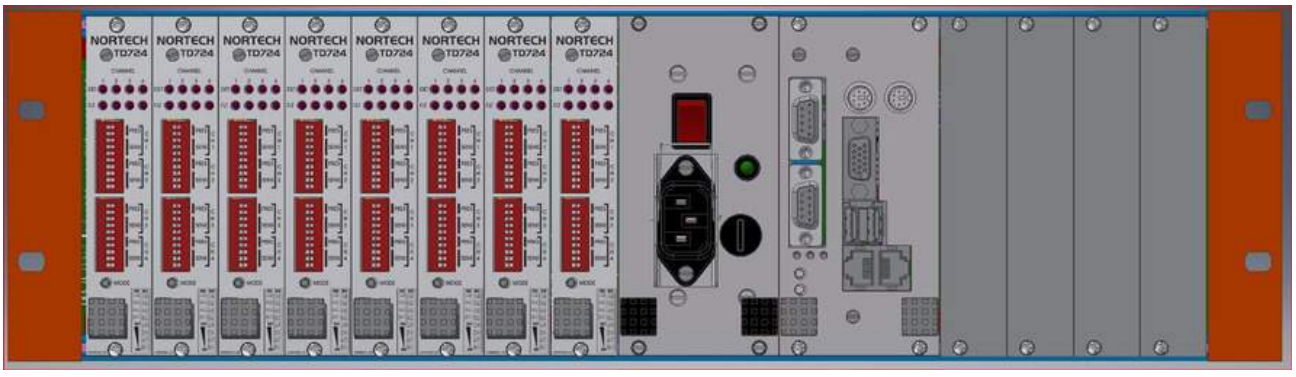
By analyzing all loops simultaneously and comparing the signatures, the AVC software is able to determine exactly what transpired on each loop in the array, calculating the relational effects of each loop. The results are then used to provide precise and consistent outputs regardless of traffic flow and environmental conditions.

Using information gathered from loop data, Neology Idris AVC provides a record of each vehicle that transits through the loop array. These records are known as Per Vehicle Records (PVRs); PVRs provide important information on a vehicle's speed, length, class and number of axles. Vehicle classes are defined during system configuration and can be easily altered to suit a tolling agency's requirements.

Neology Idris Automatic Vehicle Classification technology uses a special loop array installed in each lane. Each array consists of at least two large loops, with four (optional) patented axle loops installed in-between. This loop array is able to reliably separate, profile and track each vehicle as it transits the toll zone. When installed correctly, loops are extremely reliable, requiring very little maintenance from toll operators.

Trigger to Video Enforcement System

Neology Idris AVC is also designed to work with Video Enforcement System (VES) technology by delivering consistent and reliable triggers to ALPR cameras under most weather conditions. The in-pavement VES trigger is used to activate an ALPR camera that captures vehicle license plates. A typical Video Enforcement System is designed to work at speeds ranging from 0 to 100mph. Neology Idris AVC consistently achieves position accuracy regardless of the vehicle speed or environmental conditions. The system is also capable of differentiating between two vehicles tailgating (providing two triggers) and a vehicle in tow (which issues a single trigger).



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RFID Tag Correlation

In ORT applications, vehicles can travel close to each other. Multiple tags belonging to different vehicles could be read by multiple antennas at the same time. This creates a challenge to correctly assign one or multiple tags to a certain vehicle. Neology Idris AVC is capable of accurately locating multiple vehicle positions in a toll zone at particular times, even if they are traveling at high speeds, changing lanes, or tailgating. When spatial information is correlated from Neology Idris AVC with the timing and antenna/channel information from an RFID system, a lane system gains intelligence as to where a vehicle is located when its tag is read, enabling it to assign the correct RFID account number to the vehicle. Correctly assigning RFID accounts to their rightful owner prevents customer complaints due to wrong billing, which in turn eliminates bad public relations, thus reducing costs and increasing revenue.

Accuracy Across Multiple Applications

Neology Idris AVC offers reliable precision in multi-lane, free-flow tolling across multiple applications and infrastructure types. Installations at live toll plazas and test sites have demonstrated the ability to accurately separate and count vehicles, distinguish between towing and tailgating, allocate vehicles to a toll class, and pinpoint the location of front and rear license plates (to trigger a photograph). The unique straddling algorithm ensures very accurate separation is achieved, even as drivers change lanes on multi-lane expressways. As a result, the Neology Idris AVC system is suitable for a variety of tolling applications, such as Open road Tolling (ORT), Single Lane Free Flow (SLFF), reversible lanes, express lanes, etc.

Due to its superior performance and competitive Total Cost of Ownership (TCO), Neology Idris AVC has been widely adopted by the tolling industry. Thousands of lanes have been put into production with the Neology Idris AVC solution installed. Customer locations range from snowy Massachusetts and New Jersey, to rainy British Columbia and Washington, to sunny Florida and Texas.