

Smart Infrastructure Monitoring and Analytics Using LiDAR Innoviz

LiDAR solution enhances safety by monitoring the behaviors of mobility users and providing analytics and traffic junctions and along critical infrastructure.



About the Customer

Sensagrate is a computer vision software company that provides traffic AI solutions on the edge to bring state-of-the-art innovation solutions that provide real-time, predictive analytics data to decrease congestion and emissions and improve public safety. SensaVision intelligent transportation system (ITS) products include computer vision software, computer vision on the edge, and traffic and safety data and analytics.

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The Need

Approximately 1.3 million people die each year as a result of road traffic crashes. More than half of all road traffic deaths are among vulnerable road users: pedestrians, cyclists, and motorcyclists (WHO). SensaVision addresses pedestrian fatalities by utilizing infrastructure to monitor the movements and incidents between vehicles, pedestrians, and cyclists to optimize the environment with data-driven design and awareness. By making roads safer and smarter, there is also the opportunity to reduce the environmental impact caused by traffic jams, idling, and other inefficiencies caused by non-smart infrastructure.

Safety is hard to ensure both on the roads and for pedestrians. One step towards improving safety is by building safer infrastructure based on data. Data collection can be limited because of a lack of adequate equipment. Once sensors (e.g., LiDARs, cameras, RADARs) are installed, the city becomes “smarter and safer”. LiDAR can accelerate this digitization by providing a sensor that is resilient to weather and environmental conditions. It provides the high KPI that is necessary for planning, implementation, and navigation decisions that have lives at stake. Moreover, the data collected needs to be abide by privacy and equity.



The Challenge

InnovizOne LiDAR is deployed into a “smart intersection corridor”. The LiDAR is installed on existing infrastructure, and the InnovizOne’s point cloud, when combined with Sensagrate’s perception software and analytics, gathers data on traffic volume, near-miss collisions, counts of mobility objects, and other roadside safety metrics. InnovizOne’s high resolution and range specifications enable it to scan and analyze in a detailed way while abiding by privacy and equity (e.g., GDPR) considerations.

Moreover, the partners are testing an I2V (infrastructure-to-vehicle) communication concept with UCLA university vehicles to further drive traffic analysis, improve vulnerable road user safety, predictive analytics.

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The Solution

The smart intersection corridor is a demonstration site for multiple concepts including smart sensing for intersections, V2X (vehicle-to-everything communication) between vehicles and infrastructure all empowered by edge computing.

Sensagrate is integrating InnovizOne LiDARs at an intersection and fusing it with data from RADAR and camera sensors to create a “smart intersection corridor” between the UCLA campus and Westwood Village. Sensagrate’s SensaVision will gather data on traffic volume and vulnerable road users’ safety metrics.

Project Details

LiDAR has an advantage relative to other sensors in that it can provide accurate 3D detection and data during adverse weather and lighting conditions, whereas Innoviz’s robust build provides durability and easy installation. In addition, while detecting objects with a fine resolution, LiDAR does not impinge on privacy concerns making it an equitable solution as compared to other sensors, which may have difficulty abiding by GDPR and other privacy laws.

The LiDAR, point cloud, and analytics gather data, while promoting pedestrian, automobile, and other vulnerable road user safety by optimizing traffic design and flow. This is done by collecting data for root cause analysis of pedestrian-related incidents (or near-miss collisions) through intelligent data collection and predictive analytics.

“Innoviz’s LiDARs provide an unparalleled resolution for its field of view and range. This is critical as we look to detect different objects in various settings,” said Darryl Keeton, President of Sensagrate. “Innoviz has provided a great product and is proving its strong partnership abilities to promote safety. We are excited by the UCLA demonstration site to prove how an InnovizOne and SensaVision integration can promote smarter and safer cities.”