

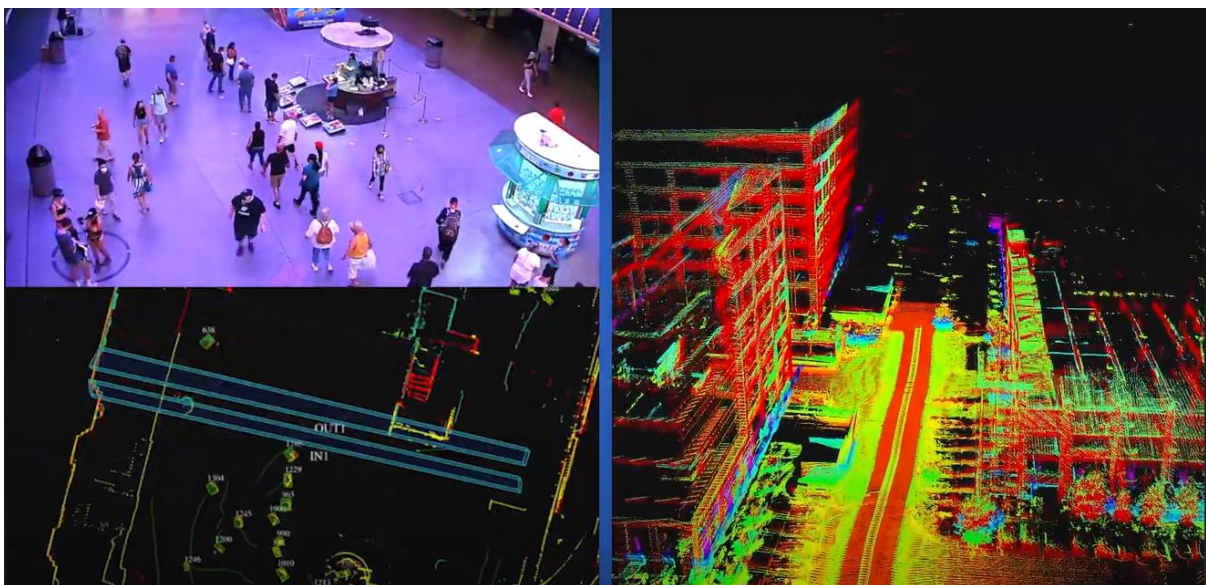
LIDAR: Revolutionizing Retail Analytics and Crowd Management

In recent years, LIDAR (Light Detection and Ranging) technology has evolved beyond its traditional applications in the automotive industry and topographical mapping. It has now made significant inroads into crowd analytics, especially in large public spaces like airports, railway stations, and retail environments.

Challenges with Current Technology

The current industry standard for crowd analytics relies on 3D stereoscopic camera sensors. However, these cameras face multiple limitations in expansive areas due to architectural layouts and limited Fields of View (FoV). This often necessitates the installation of numerous sensors to cover blind spots caused by physical obstructions like pillars, banners, and equipment. This approach is not only logistically challenging but also costly.

Additionally, with rising concerns over data privacy, the future of camera-based sensors is uncertain. Strict data protection laws, like GDPR in Europe, highlight the growing demand for non-intrusive surveillance methods.



Why LIDAR is a Game-Changer

Enter LIDAR—a device that emits light beams and uses the reflections to measure the distance of objects from the sensor. The data collected is transformed into a 3D Point Cloud, offering a detailed 3D map of the scanned area. When integrated with machine learning algorithms, LIDAR can accurately classify and map both animate and inanimate objects within its range.

- **Privacy Compliance:** Unlike camera sensors, LIDAR does not capture identifiable images, making it GDPR-compliant.
- **Wider Coverage:** A single LIDAR device can cover areas up to a 300-meter radius, replacing the need for multiple cameras and reducing both installation time and costs.

Applications in Retail and Public Spaces

LIDAR technology is now being explored to enhance customer journey mapping in large spaces such as airports and retail centres. Early trials have shown that LIDAR can provide advanced analytics on:

- **Footfall Traffic:** Tracking customer movements to understand traffic trends.
- **Conversion Ratios:** Analysing the journey from store visits to actual purchases.
- **Heat Maps:** Identifying popular areas within a store or venue.
- **Queue Management:** Predicting and managing queue times to improve customer experience.

Moreover, LIDAR can monitor crowd density, helping to prevent overcrowding by opening additional stalls or queues as needed.



The Future of LIDAR in Retail

While the initial cost of LIDAR technology is high due to its primary use in autonomous vehicles and UAVs, its adoption in retail is set to increase as demand grows and manufacturing scales up. Businesses that adopt LIDAR early stand to gain a competitive edge by leveraging the detailed data it provides to optimize product placement, enhance customer experiences, and improve overall operational efficiency.

The future of retail analytics lies in the ability to make data-driven decisions, and LIDAR is poised to play a pivotal role in this transformation.

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