

# L3CAM



Safe navigation  
for any vehicle

For any kind of autonomous vehicle



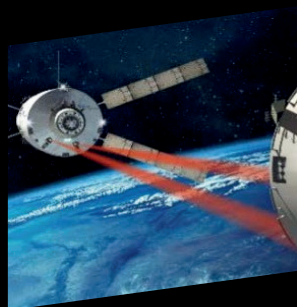
Automotive



Off-road vehicles



Unmanned surface vessels



Satellite docking



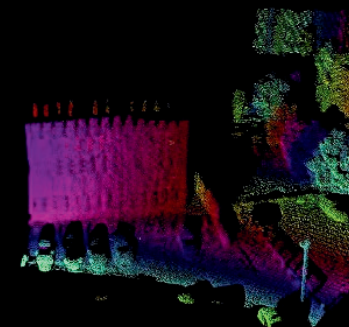
Railway



Aeronautics

## High resolution for safe autonomous navigation

- Long range without high spatial resolution is not enough for a safe autonomous navigation
- Smallest obstacles (<10cm) need to be detected at a distance as well
- The L3CAM offers a wide range of imaging configurations to fulfill all potential use cases
- Angular resolution can be adjusted by configuration to reach outstanding values as good as 0.05° in both axes
- **Safe drivable space detection is made possible by the L3CAM!**



**RN Embedded Solutions Private Limited.**

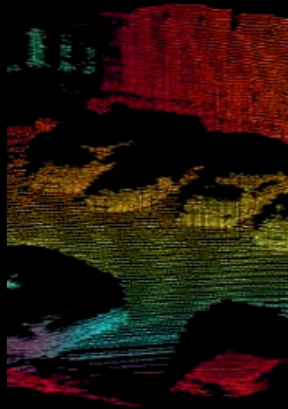
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# At a glance

- Integrated camera system composed by 3 imaging modes:
  - High-resolution and solid-state 3D LIDAR
  - CCTV camera
  - Thermal camera
- Embedded data fusion in-house calibrated
- Embedded AI perception software for human detection and tracking
- Designed to eliminate false alarms through multimodal image analysis
- Stable in all weather conditions (rain, snow, fog, dust and wind)



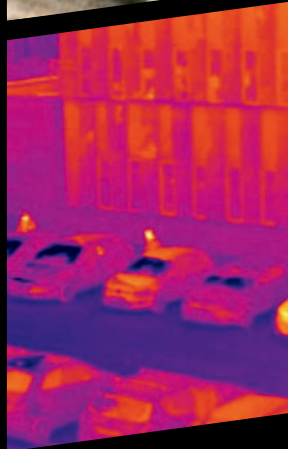
# Why 3D LIDAR?

- Stable in complex environments with people, buildings and vehicles
- Fully compatible with metallic and small cross-section objects
- Insensitive to illumination conditions
- Geometrical info is used to identify objects according to its size at any distance. That solves aspect ratio issues typical from 2D imaging



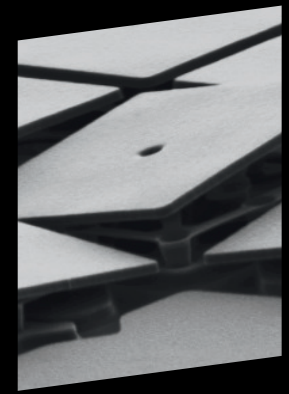
# Why multicamera fusion?

- Perception AI eliminate false alarms thanks to multimodal imaging
- Redundancy guarantees unprecedented robustness and reliability
- Complementary imaging technologies make the system reliable in all scenarios regardless of object type, size, material or weather conditions



# Patented solid-state scanning LIDAR

- Patented MEMS-based solid-state concept (12 patents)
- No mechanical moving elements
- Long range detection in Class 1 laser power levels
- High angular resolution at the 3D point cloud
- **Customized specs are possible!**

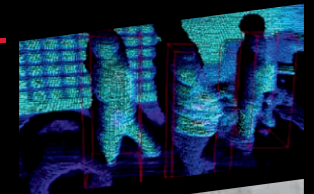


## HARDWARE CONFIGURATION

	Wide FOV	Long Range
Range: Ambient Light 500W/m <sup>2</sup>	60m @ 10% object reflectivity 130m @ 50% object reflectivity	120m @ 10% object reflectivity 270m @ 50% object reflectivity
Field-of-View (HxV)	60 x 20 deg	20 x 20 deg
Point cloud resolution	460 x 150 px	460 x 150 px
Angular resolution	0.13 x 0.13 deg	0.08 x 0.06 deg
Point rate	600 Kpx/s	
Frame rate	8 Hz	
Range accuracy	± 2 cm	
Number of returns	4 hits	
Laser wavelength	1064 nm	
Laser product class	Class 1 eye-safe per IEC 60825-1:2007 & 2014	

# Embedded Perception AI

- Unprecedented stability and robustness
- Neural network pretrained to detect humans
- Other types of objects are possible under customer demand
- Close to zero false alarm rate in any environment
- Embedded inside the sensor casing
- Ultralow latency: real-time execution boosted by multicore GPUs
- Output data types:
  - Alarm messages
  - Real-time images from any sensor



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