



traffic sign
recognition

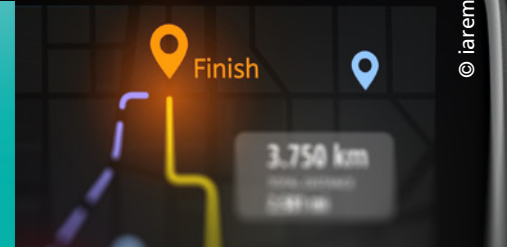


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TimestampsAI: Faster and Data Reduced Solution for High-resolution LiDAR Systems

Our Latest Development for your Applications to Capture Complex
Scenes in 3D in Any Environment



Distance Determination Method TimestampsAI

Our distance determination method
TimestampsAI bypasses data-driven problems
for all future LiDAR sensor solutions.

A pixel-wise quality information given in ad-
dition to the resulting point cloud allows con-
fident decision-making of automated systems.

With the compact feature extraction and
machine learning algorithms directly based on
LiDAR timestamps, future LiDAR systems can
be more efficient, effective and robust.

Features of TimestampsAI:

- High data reduction rate and foreseeably
less transmission and energy consumption
- Reliable machine learning prediction
- Short-range detection: distance determina-
tion using extremely few measurements
- Middle-range detection: high resilience
software-level under tough conditions
- Provides pixel-wise measurement quality
information



Example system: TimestampsAI on
LiDAR camera Owl

Examples of our implementation

	Short-range	Middle-range
Detection range	< 10 m	< 60 m
Generated data before reduction	10.55 MB/s	46.6 MB/s
Data reduction rate	90 %	85 %
Measurements per prediction	10	400
Performance	0.12 m	91.15 %
Processing time	20 µs	289 µs
Background photon rate	< 0.2 MHz	< 5 MHz
Number of pixels	24 × 32	24 × 32

Let's Build Outstanding LiDAR Systems Together!

In factory automation and autonomous driving applications, complex scenes are required to be precisely captured with 3D sensors. Therein, high-resolution LiDAR systems are one promising solution.

Such LiDAR systems generate a large amount of data, bringing great challenges

to data transmission and processing on a resource-constrained embedded system.

With our services, such as TimestampsAI, you can overcome these issues and get smarter and faster LiDAR solutions for your products. **Check out, what Fraunhofer IMS can do for your LiDAR systems.**

LiDAR Data Reduction

- Timestamp/histogram-based feature extraction
- Design of processing workflow based on timestamps
- Combination of digital processing and machine learning

Near-Sensor-Side Machine Learning Solutions

- Timestamp/histogram-level training data generation
- Application-specific method design using machine learning
- Algorithm optimization on customer specified sensor systems
- Implementation solution on embedded systems

Informative Point Cloud Generation

- Point cloud simulation under various conditions
- Point cloud generation with pixel-wise measurement quality information
- Support for sensor fusion

Contact

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