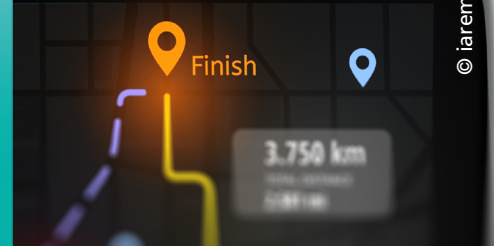surround view ON

STOP

STOP

FRAUNHOFER
IMS

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

Finish

3.750 km

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 addition to the resulting point cloud allows confident 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 determination 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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