

tofmotion

3D-Machine Vision and 3D-Image Processing
the most important Prerequisite for
Machine Autonomy and Machine Learning

Potential



Perceiving their own situation and environment gives power to machines to evaluate, decide and act autonomously. Conclusions from results leads to machine learning. 3D-cams are a prerequisite to do so.

Logistics

Assistance warehousing & commissioning.
Object identification & tracking.
Sizing & damage control.

Factory automation

Control sensor on production lines.
Components & objects detection.
Material & tool handling.

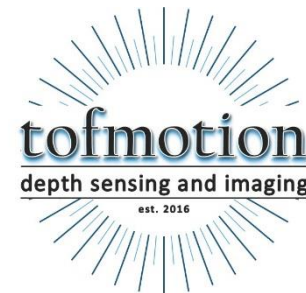
Autonomous transport

Material & tool transport.
Precision approach & docking.
Obstacle detection & collision avoidance.

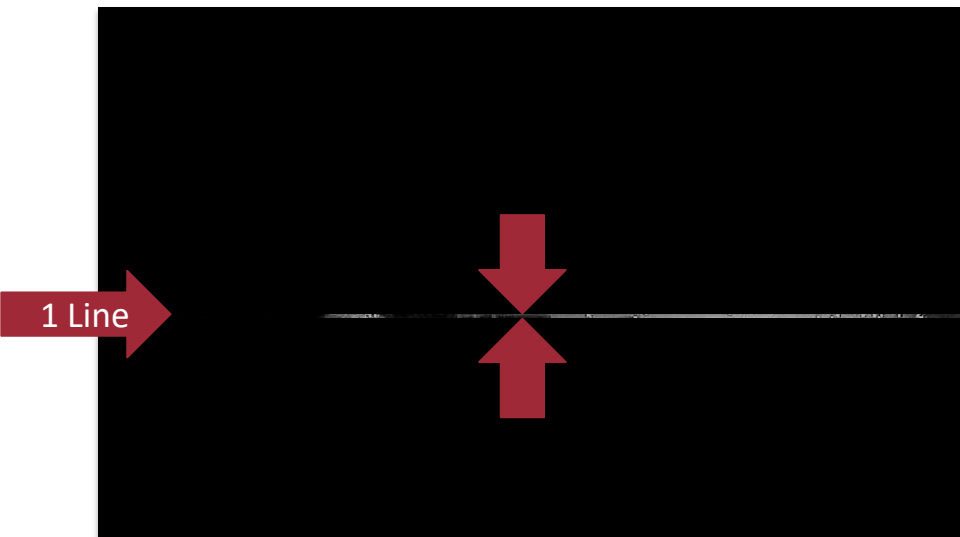
Robotics

Dynamic safety perimeter.
Workpiece identification.
Human machine collaboration (HMI).
Gesture control and behavioral prediction.

No kidding!



Example: this is a scene of a floor shop, captured by a single line laser scanner, which is the common technology actually used for Automated Guided Vehicles.



- Only 1 (ONE !!!) line of image scan.
- Dissatisfying exhausted technology.
- Susceptibility to interference.
- Inacceptable low frame rate.
- Inacceptable high latency.
- Additional computing power required.

Same fate?

Contemporary great, but swept away by new technology available.



Tiny field of view.

Aligned to certain tasks. Inflexible.

Low on attention, adaptability and interaction.

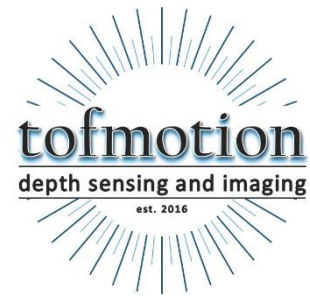
Service demanding OPEX.

Expensive CAPEX.

Easy to irritate.

Intolerant to fast changing environment.

Switch to full image!

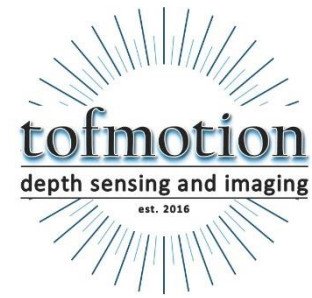


Solution: this is the same scene of a floor shop, as being captured by our ToF-camera, which is the future technology. Obviously. Undeniably.



Full pic in QVGA resolution.
Every detail, every information.
All dimensions, full 3D.
No blind spots.
No irritation by shadows or low contrast.
Faster than human.
Image processing on board.

tofmotion Industrial Cams 3D



TFM IC1 and TFM IC5, the world only automotive-certified 3D-sensor board on ToF.



TFM IC1.075 (indoor)
TFM IC5.075 (outdoor)

Cutting-edge Time-of-Flight (ToF) Technology.

100x faster than common technology.

Mechanically robust and maintenance free.

Independent from ambient lightning.

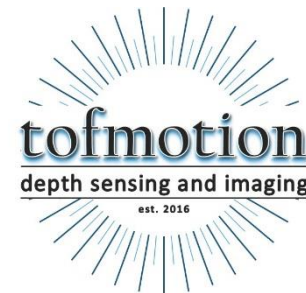
Certified for industrial and outdoor use.

Internal image processing to classify objects.

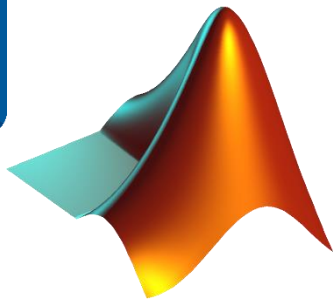
Direct connection to automation, control and robotics.

Complementary services and support.

tofmotion Software Development Kit



TFM SDK, easy and fast integration of TFM IC1 and TFM IC5 into your applications.



All Logos: Source Wikipedia, property of named parties.

TFM SDK the interface to our TFM IC1 and TFM IC5.

Full and dynamic access to 3D-cam's setup.

Access to filter and analysis algorithms onboard.

Choose transfer of raw images up to fully processed metadata.

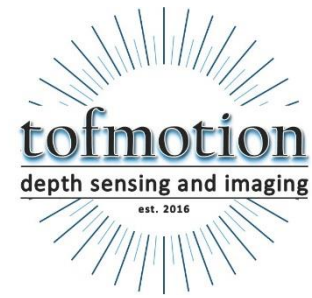
Direct connectivity to control systems addressing C++.

TFM MatLab® API enables rapid application development.

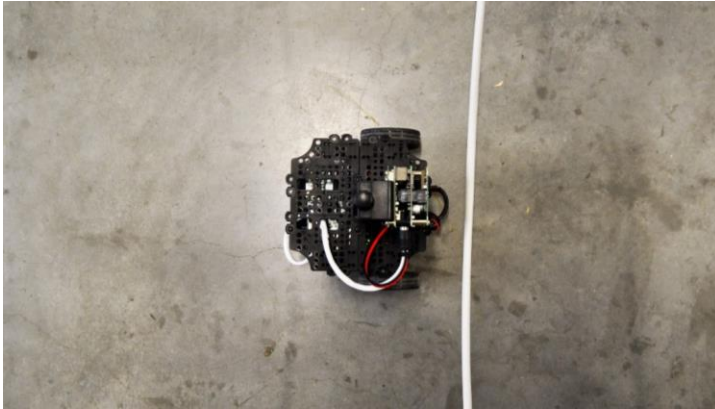
Direct integrating of TFM IC1 and TFM IC5 into MatLab®.

TFM ROS® API provides a full plug-in for TFM IC1 and TFM IC5 to the leading industrial robot framework ROS®.

tofmotion Evaluation System for Autonomous Transport



TFM tESAT, demonstration of TFM IC1 as sole sensor for complete and safe control of autonomous vehicles based on ROS.



TFM tESAT detects smallest objects and stops in front of a hanging cable

Cessation of multiple expensive, high-maintenance sensors, e.g. laser scanner, ultrasonic sensors, IR-curtains.

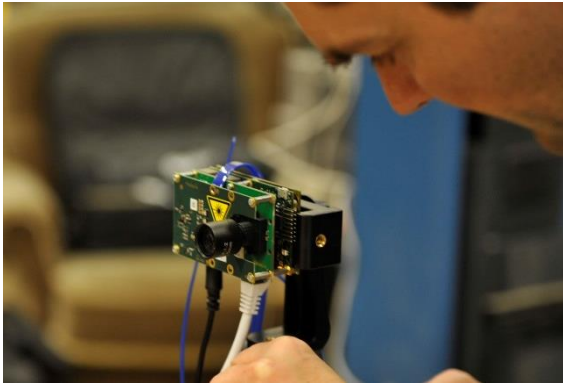
Minimum 10x driving speed.

Value added use of 3D-image, e.g.
detection of obstacles, object identification, fine target recognition
goods inspection, damage control, billing information

Smart Robot, e.g.

transfer of object data, direct connection to MES and ERP.

TFM TTC, comprehensive training programs and consulting services.



TFM provides deep insight into TFM IC1 and TFM IC6

Ensure rapid market launch of customers' product innovations.

Training program on all topics of ToF technology, e.g.
hardware, optics, operation,
software interfacing TFM SDK, TFM MatLab API, TFM ROS API,
embedded applications.

Development and test environment for customers.

Let's talk facts.

tofmotion's founders provide unique **knowledge** and **practice** > 6 years on Time-of-Flight. We are the **frontrunner** of this state-of-the-art technology. In a **global** context.

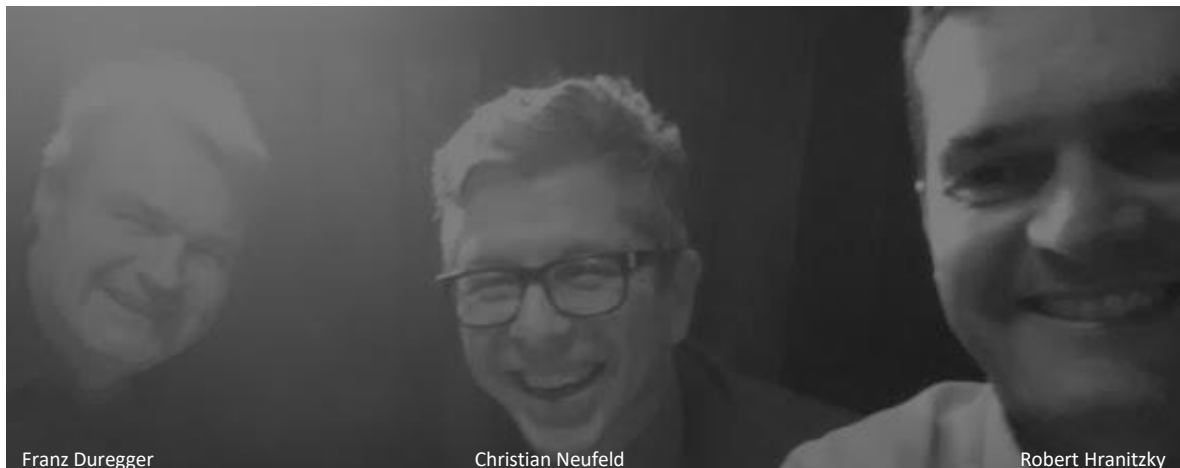
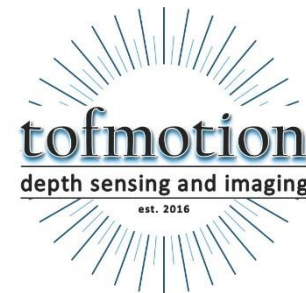
Suffering from inadequate outdated common technology, most customers have seen far too many prototypes and academic trials. They are simply astonished that our **TFM IC1** and **TFM IC5** excels **industrial standards** and their boldest expectations by far, providing **superior technical specifications**. Even **outdoor**. Ready to use.

Customers always highlight the radically **short training time**, **practicality**, and **outstanding performance** of our **TFM SDK**. First functional results within first day. Our **onboard image processing** gets a big Wow!

tofmotion is **global support house** for ToF of MELEXIS^x), they entrust their customers to us. We are engaged on their next generations chip designs, years in advance of general product launch. So we will be the **frontrunner in future too**.

X) MELEXIS N.V. (MELE:BRU) among the top5 global suppliers of micro-electronic semiconductor solutions, specialized on automotive electronics.

About us

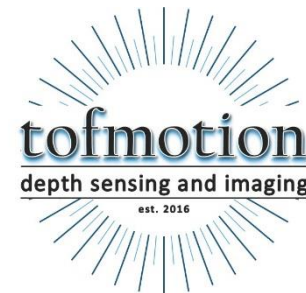


Christian N. Neufeld PhD, CEO experienced industrial manager, supervisory and management board mandates of global industrial companies, contacts with industry and interest representatives.

Robert Hranitzky PhD, CTO specialized in system architecture, embedded systems and digital signal processing. Holds several patents for multi-system applications and automotive.

Franz Duregger, CSO several senior sales positions in multinational companies in electronics and IT. Focus on market strategies for complex technology-based applications and industrial 3D image processing.

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"the standard is not our limit"



