



Stand stuff, not a vehicle.

unknown

CEO's Note

Dear Reader,

Cars are great if you have one. You get in, turn the ignition key or press the start button and drive off. Wherever you want or have to go. Flexibility and freedom, almost limitless. In reality this only applies in the countryside. In the cities and especially in their agglomerations, freedom of movement is history. You get into your car, start it and take the most direct route into the turmoil. It is unbelievable how much stress road users must experience. Because, on Swiss highways at least, there is pure anarchy. It seems that everyone has to squeeze out the last few seconds of their journey to their destination. And when one has reached the destination, the search for the parking space begins. The result: You still end up walking a long way to your destination.

If we do the math now, things will get much worse. I drive 43.6 kilometers a day. According to the onboard computer statistics. My average speed is 48km/h, I have worked out that I spend 53 minutes and 30 seconds in my car. Mostly driving, sometimes standing still. Every day. And what does the

car do for the rest of the day? It stands still. It's basically stuff that just stands there.

In my opinion, the car as an individual means of transport has reached the last stage of life. At least in cities and agglomerations. It is inefficient, requires (too) many resources and spends most of its time parked.

We humans need freedom and flexibility. That's why today's modes of public transport aren't very good either. They are anonymous diggers moving humans, virus spreaders, not only that, in many places there is no public transport at all after midnight. What we need is an **individual public transport system** (IPTs). Available anytime, anywhere. The key term here is autonomous-driving. But not your own vehicle, publicly available, autonomous vehicles. I am convinced that humanity will (must) experience a huge change in its habits in the next ten to twenty years. Nothing will be the same anymore. Believe me.

Beat De Coi

South Korea's Cygbot orders TOF imagers for key applications

Cygbot, one of the emerging names in the Korean 3D intelligent sensor industry has selected the epc635 and epc660 TOF imagers. For its latest range of powerful and cost effective products the epc635 as the key component in Cygbot's 2D/3D Dual Solid-State ToF LiDAR product for a robotic cleaner as it can detect any obstacles in the robot's path allowing it to navigate them

The epc635 is a fully integrated 3D-TOF imager with a resolution of 160x60 pixels (Half-QVGA). As a system on chip, the epc635 contains next to the CCD pixel-field the complete control logic to operate the device.

The epc660 is a fully integrated 3D TOF imager with a resolution of 320x240 pixels (QVGA). It is a highly integrated system-on-chip camera system. Apart from the actual CCD pixel-field, it includes the complete control logic to operate the device.

Cygbot is located in Seoul, South Korea and specializes in 3D depth sensing, gesture recognition, image processing for 3D sensing, short and medium range LiDAR, TOF cameras, devices and modules, structured light Cameras and Modules.

The company has embarked on a major development program and is making exceptional progress in the areas of a TOF Camera and dedicated program for Short Range LiDAR: pedestrian detection (part of an autonomous driving system) as

well as a TOF Camera Module for Automatic door safety.

The epc635 is also the key component in Cygbot's 3D industrial camera providing automatic door safety, which detects the number of people using the door and the direction of their movement.

Both the epc635 and epc660 TOF imagers are used for passenger detection. As part of a LiDAR autonomous driving application, being mounted in the vehicle's side mirror and the headlamp housing, to detect any pedestrians in the vicinity of or path of the vehicle.



2D/3D Dual Solid State ToF LiDAR

More information here: www.cygbot.com

Interview with Manuel Sommerhalder; Optical Design Engineer

What are your responsibilities at ESPROS?

I am responsible for the optical parts in our cameras. I design, improve and/or adapt the illumination of our cameras for customer based applications. As a Part Manager I maintain the Modules section in our ERP-Tool.

How long have you been working with ESPROS?

This September exactly one year.

Where do you come from?

I was born, raised and still live in Chur, the capital of the biggest Kanton in the world, Grison.

What do you like about your job and working for ESPROS?

I like the different challenges I approach in every project. It is never boring. I can learn new things and improve my skills. The co-workers are great and we have a good harmony in and between the teams.

Can you tell us about your hobbies?

My main hobby is martial arts. I practice Mei Yarinage Senshu for about 12 years. I also like playing video games or spend time with my friends (playing boardgames, cards, Dungeons and Dragons or doing outdoor activities).



Manuel practice Mei Yarinage Senshu

Pedestrian crossing detection with TOF

Currently, the presence detection of pedestrians for traffic management systems are done by infrared (IR) or microwave (MW) sensors. Such systems have very poor spatial resolution and thus rely on pedestrian motion. Consequently, the reliability of detection is very limited. For example, the detection of pedestrians walking very slowly can fail, leading to a dangerous occurrence. Or a car too close to the crossing can trigger the stop sign and thus stops all traffic.

3D cameras from ESPROS have the capability to monitor reliably day and night a pedestrian crossing zone. They acquire a 3D image of the scenery with very high resolution. This allows to solve many use cases, e.g. object classification including movement detection. Also objects lying on the road can be detected. Or people crossing the road can be counted. All this increases safety on pedestrian crossing and enables intelligent traffic management.

About TOFcam-660

The TOFcam-660 is a cost optimized 3D camera. It is based on the ESPROS proprietary time-of-flight technology using the epc660 TOF flagship chip. The camera controls the illumination and the imager chip to obtain distance and grayscale images. The depth images are compensated against ambient light, temperature and reflectivity of the scene. Thanks to the high performance of the imager chip with the unique ambient light suppression, the camera can be used in many cases under full sunlight condition. The TOFcam-660 outputs depth and

grayscale images – allowing a variety of new applications, e.g. for mobile robotics. This module brings you right in front with the latest technology of 3D depth sensing. All the complex engineering and time consuming design tasks regarding optics, illumination and signal processing are already solved. Detailed features [here](#).



- Pedestrian crossing detection
 - Object classification
 - Day & night
 - SIL-rating possible
 - Range up to 12 m
- 3D

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