CHIPS.

Newsletter
June 2020

Imagination is more important than knowledge - knowledge is limited.

Albert Einstein

CEO's Note

Dear Reader,

"How does our life look in 10 years? With some thought we can imagine one or the other thing. For example: We will have to fight probably with even bigger traffic chaos and a real avalanche of cars. One shouldn't tempt fate, but the conflict in the Near East will probably still not be over then. But we even can imagine, that a big crisis – an economic or political war – will rule the world. All these scenarios, we are able to imagine to some extent."

I wrote this text in April 2002. I considered an economic or political war responsible for a big crisis. But I did not consider a pandemic outbreak at that time. Now, the world is at a crossroads and we should think more deeply about our future. How does our world look in 100 years? In 100 years, unimaginable things can happen. The unimaginable will be reality – for sure! It is, of course, that knowledge does not help us to see how our future will then be. But with our imagination, our fantasy, we can influence the way things go to the future. This happens, when we can imagine which needs will grow. With that we can develop the required products and services and offer them to the market at the right time. This sounds easy, but it is everything else than that! Above all, it needs - next to a solid basis of knowledge – fantasy!

Unfortunately it's a fact that we can't learn fantasy anywhere. We study languages, history, mathematics, physics, and business administration, but fantasy falls by the wayside. Our parents, schools, studies and work teach us crafts, but not how to activate fantasy and how we can use it. I, at least didn't learn it at any school! My tip: Lean back, forget your textbooks, forget the headlines of the media. Think about the future and give free rein to your imagination. You will not regret it! Don't forget: Imagination and fantasy are more important than knowledge, according to Mr. Einstein.

Beat De Coi

Forklifts with ESPROS TOF technology

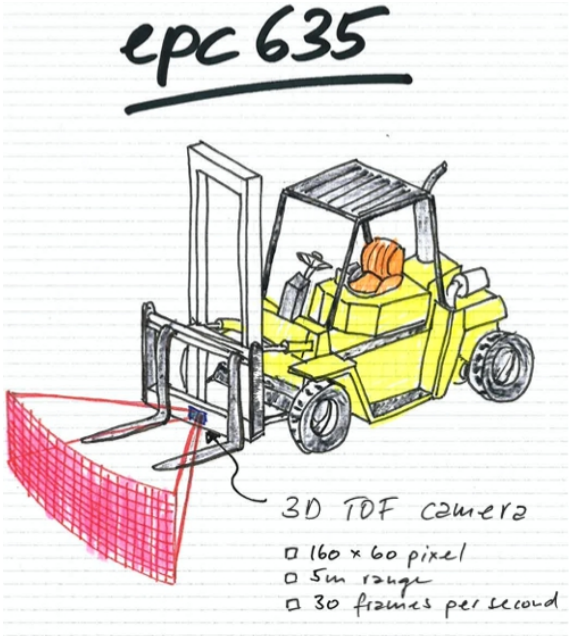
The infrastructure-free navigation that has commercially matured in the past decade has enabled fully self-driving industrial vehicles to adapt to their environment based on sensor input. There is no dependence on an explicit landmark infrastructure.

LiDAR is the standard out-of-the box solution for infrastructure-free navigation because it's relatively easy. Unfortunately, it performs poorly in real-world production settings, where environments are dynamic. In factories and warehouses, everything is moving, including people, so the machines have to navigate carefully and reliably. Companies don't buy automated forklifts to have them only work some of the time, they buy them so they never again have to worry about moving pallets 24/7.
Consequently more and more self-driving forklifts use cameras for navigation. They're fully self-driving: they sense the surrounding environment and decisions are made independently onboard the vehicle. An array of cameras has a major advantage over LiDAR as it affords wide coverage of an environment.

ESPROS develops and produces TOF cameras into which an anti-collision software can be implemented. ESPROS time-of-flight technology provides safe and efficient solutions to keep your business under control even in demanding applications.

TOF>frame611, TOF>range611, TOFcam-635 and TOF>cam635-S are complete TOF modules which are ideal for this challenging application.

More information from sales@espros.com



3D TOF camera for forklifts

Interview with Walter Bürkli; CFO

What are your responsibilities at ESPROS?
As CFO I am responsible for finance, personnel and other administrative issues.

How long have you been working with ESPROS?
I joined the company on 1st January 2018.

Where do you come from?
I grew up in a small village called Untervaz in the beautiful canton of Graubünden. This is a 20 minute drive from ESPROS Headquarters. For some years now I have lived in Igis, which belongs to the community of Landquart and also not far away from Sargans. I have remained loyal to the canton of Graubünden up till now.

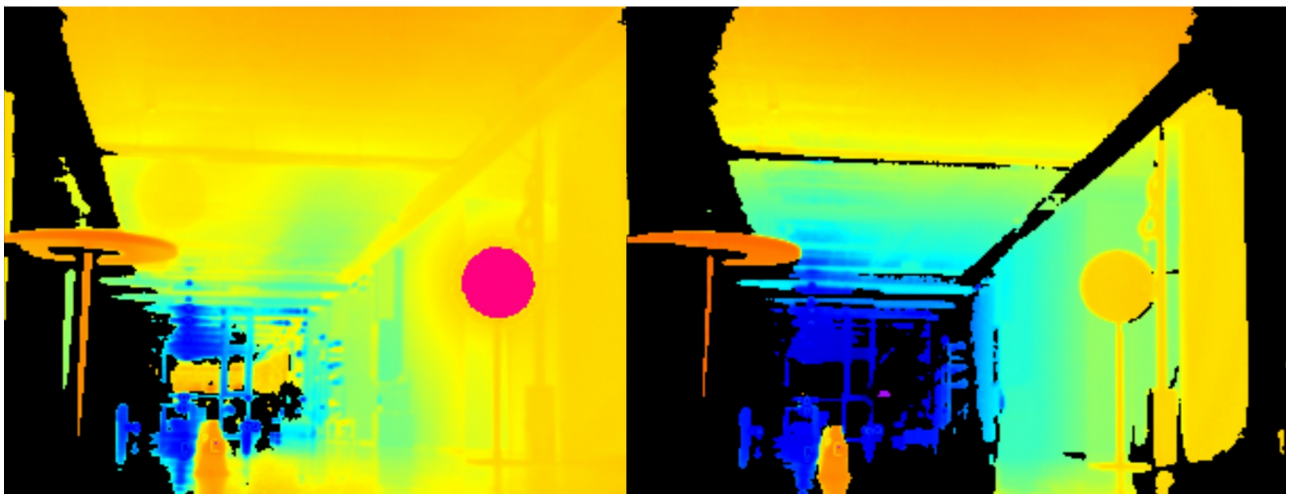
What do you like about your job and working for ESPROS?
The work is very varied and brings new exciting challenges almost every day. The experience I can gain is priceless. In addition, I can actively work on and help shape the future, incredible where else can you do that!

Can you tell us about your hobbies?
My biggest hobby is my family. Together with my wife and my 20 month old son who is very active and keeps me going, I like to spend my time hiking, cycling, swimming, building sandcastles and in winter I like to go sledding, build snowmen and much more.

The importance of the Lens in a TOF System

The most critical issue of the lens is straylight. A standard lens, which is typically used for megapixel imagers, will provide disastrous results. The reason is because in a TOF camera an ultra bright illumination source (several watts) is very close to the imager lens. An object in close distance to the camera or a high reflective object like a road sign will create lots of straylight which make distance measurement impossible.

On the right side of the picture is the same scene with an excellent TOF lens. The back wall is dark blue which represents the correct distance. Thus, make sure your imager lens is designed and manufactured for TOF applications. It means they should have a suitable, high performance anti-reflection coating (ARC) matching the used wavelength and a lend mount design which absorbs straylight with traps.



Good (right) an bad (left) lens in a TOF camera

The picture on the left side shows an image taken with a unsuitable lens. The road sign, the red spot in the image, reflects a lot of the illumination back to the camera. Due to the high amount of light from the road sign, objects farther away get a wrong distance. due to straylight. E.g. the back wall appears closer than it really is. It is shown in yellowish color which represents a short distance.

Rules of thumb:

- Lens transmission at operating wavelength should be better than 93% due to excellent AR coating
- Low lens MTF of approx. 20 lp/mm can be accepted because TOF pixels are rather large

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